The State of State Standards—and the Common Core—in 2010

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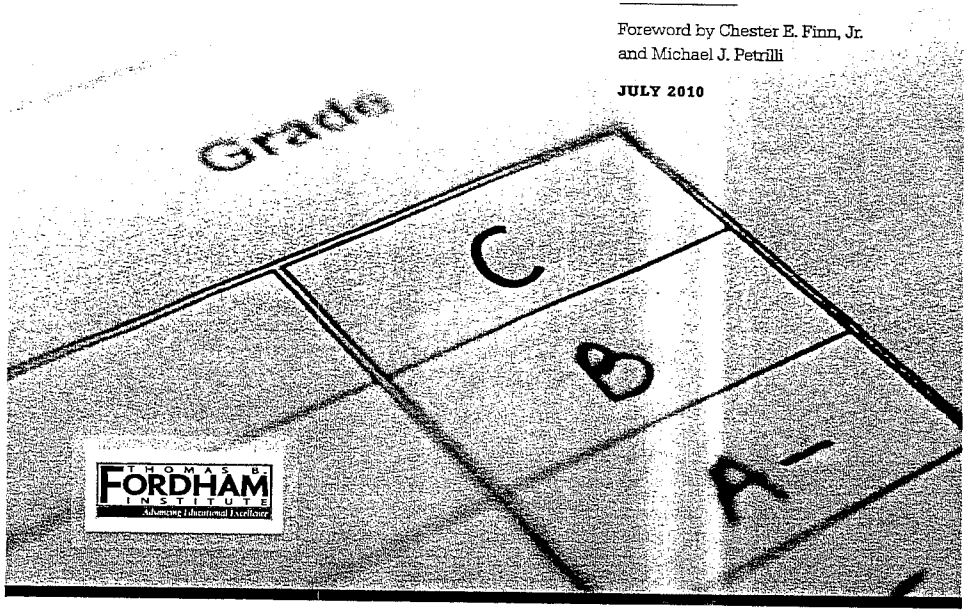

Contents

Contents (Continued)

Foreword

Chester E. Finn, Jr. and Michael J. Petrilli

Fordham's very first publication, released in July 1997, was Sandra Stotsky's *State English Standards*.[1] One of us wrote at the time:

> Unlike earlier (and often controversial) efforts to set "national standards" for education, the discussion about standards that matters most—and that this report focuses on—is the discussion taking place at the state level. Constitutional responsibility for providing education rests with the states, and it is the states that (in most, though not all, cases) have finally begun to accept the obligation to set academic standards and develop tests and other assessments keyed to those standards.

In the thirteen years since, we returned several times to examine state standards—both in English language arts (ELA) and in math, science, U.S. history, world history, and geography. Mostly, these were exercises in disappointment, as we repeatedly found few states willing and able to set clear, rigorous, content-rich expectations for their students. By 2006, we were nearly ready to give up on the states[2]:

> We're left with a dilemma: the few jurisdictions that implement standards-based reform will see great results. Yet most states muck it up—and the situation hasn't improved in at least six years. Pushing and prodding states to get their act together hasn't worked...So what else? The only way to fundamentally solve this problem, as we see it, is to build on the success of states like Massachusetts and move to a system of national standards and tests.
>
> We understand that national standards would face the same perils as state standards. If written by committee, or turned over to K-12 interest groups, they could turn out to be vague, politically correct, encyclopedic, and/or fuzzy. If linked with real consequences for schools, they could be pressured downward. They could even wind up doing more harm than good.
>
> But if done right, they could finally put the entire country on the sturdy path of standards-based reform. And if great standards can be written in Sacramento or Indianapolis or Boston, perhaps they could be created in Washington, D.C.

Mirabile dictu, sometimes things *do* change in education—and not always at glacial speed. By the end of this summer, dozens of states are expected to replace their own standards with those promulgated by the Common Core State Standards Initiative. As longtime supporters of national standards and tests, we're excited by the possibilities that this creates. But we're wary, too, because, as we wrote four years ago, national standards could turn out to be just as bad as state standards. (In a few much-discussed episodes in the early 1990s, what passed for national standards turned out to be appalling.)

Now, however, we can replace such speculation with analysis. A live set of "common" standards is upon us for review, inspection, and possible adoption. And we can now compare those standards with the versions in place in the fifty states (and the District of Columbia). We can thereby assist state officials to determine whether their students might be better off under a K-12 education regime aligned with the common standards, or whether they may be wise to keep those they've already got—which is exactly what we do in these pages.

The centrality of standards...and their limitations

As we've argued for a dozen-plus years now, standards are the foundation upon which almost everything else rests—or should rest. They should guide state assessments and accountability systems; inform teacher preparation, licensure, and professional development; and give shape to curricula, textbooks, software programs, and more. Choose your metaphor: Standards are targets, or blueprints, or roadmaps. They set the destination: what we want our students to know and be able to do by the end of their K-12 experience, and the benchmarks they should reach along the way. If the standards are

vague, watered-down, or misguided, they can point our schools down perilous paths. If there are no standards worth following, there is no education destination worth reaching.

Yet everyone also knows that standards often end up like wallpaper. They sit there on a state website, available for download, but mostly they're ignored. Educators instead obsess about what's on the high-stakes test—and how much students actually have to know in order to pass—which becomes the *real* standard. After making the most superficial adjustments, textbook publishers assert that their wares are "aligned" with the standards. Ed schools simply ignore them.

So it's no great surprise that serious analysts, recently including the Brookings Institution's Russ Whitehurst, have found no link between the quality of state standards and actual student performance.[3] That's because standards seldom get real traction on the ground. Adopting good standards is like having a goal for your cholesterol; it doesn't mean you will actually eat a healthy diet. Or like purchasing a treadmill; owning that machine only makes a difference if you tie on your sneakers and run.

But when great standards are combined with smart implementation, policy makers can move mountains. That's the lesson we take from Massachusetts, with its commendable expectations, well-designed assessments, tough-minded (yet humane) accountability system, rigorous entrance requirements for teachers, and "high-stakes" graduation requirements for students.[4] It should surprise no one that the Bay State now tops the charts of the National Assessment of Educational Progress (NAEP) in reading and math in both fourth and eighth grades, or that it's posted solid gains for its neediest students. Furthermore, when Massachusetts students took the international TIMSS exam in 2007, Bay State fourth graders scored among the world's elite in mathematics, behind only Singapore and Hong Kong and tied with Taiwan and Japan. So standards do matter—but only when implemented aggressively.

Yet the vast majority of states have failed even to adopt rigorous standards in the first place, much less take the actions that give them traction in thousands of classrooms. It's not just the "content standards" that our previous reports have found to be lacking, but also the "performance standards": how much kids have to know and demonstrate in order to pass the test. In 2007, we published a groundbreaking study with the Northwest Evaluation Association, *The Proficiency Illusion*, which used a common metric to compare states' "proficiency" standards to one another.[5]

The results were more than disturbing: In some states, students could score below the tenth percentile nationally and still be considered "proficient." In other states, meanwhile, they had to reach the seventy-seventh percentile to wear the same label. And this was just the tip of the iceberg; quoting ourselves again:

> Those who care about strengthening U.S. K-12 education should be furious. There's all this testing—too much, surely—yet the testing enterprise is unbelievably slipshod. It's not just that results vary, but that they vary almost randomly, erratically, from place to place and grade to grade and year to year in ways that have little or nothing to do with true differences in pupil achievement. America is awash in achievement "data," yet the truth about our educational performance is far from transparent and trustworthy. It may be smoke and mirrors. Gains (and slippages) may be illusory. Comparisons may be misleading. Apparent problems may be nonexistent or, at least, misstated. The testing infrastructure on which so many school reform efforts rest, and in which so much confidence has been vested, is unreliable—at best.

Moving toward national standards and tests entails risks, no doubt about it. But so does standing still.

Fordham's reviews: What's new in this report

Even though we took a five-year break from appraising state ELA and math standards, we haven't been idle. In 2007, we examined the curricular content of the Advanced Placement and International Baccalaureate programs to determine whether they deserve their "gold star" status. (For the most part, they do.) For that project, we revised the criteria we previously used to judge state standards. We revised them again last year for our landmark study, *Stars by Which to Navigate? Scanning National and International Education Standards in 2009*, in which we judged the content tested on the NAEP, TIMSS, and PISA exams.[6] For that exercise, we wanted to be able to make comparisons across subject areas, as well as between test frameworks and standards documents. So we simplified, standardized, and strengthened our criteria. And those are the criteria, with a few more small tweaks, that we used for the present report. (They are available for your review in Appendix A.) They are—let's be clear about this—*not* the same as we used in examining state standards five years ago. But they're better. (See Appendix C for a brief summary of the 2005 criteria.)

For example, we can now make fairer and more precise comparisons between ELA and math. We can more easily compare state standards with the Common Core and with NAEP, PISA, and other test frameworks. The corresponding downside is that comparisons over time become trickier. While the spirit and orientation of our criteria haven't changed, the details have. Readers should keep that in mind when presented with longitudinal data about the quality of state standards. (It also means that a handful of states received slightly different grades this year for standards that didn't actually change since 2005.)

Also new since 2005 are our reviewers. For ELA, Sheila Byrd Carmichael is this year's primary examiner. She has been a leading figure in the standards movement for almost two decades. She served as the deputy executive director of the California Academic Standards Commission and as founding director of the American Diploma Project. But she's hardly new to Fordham's efforts in this area, as she also penned the ELA reviews for our AP/IB report, and last year's *Stars by Which to Navigate* study.

Assisting Byrd were Elizabeth Haydel and Diana Senechal. Haydel has worked for numerous education organizations, including Achieve and the American Institutes for Research. No stranger to the standards movement, she assisted in drafting the *Ohio Academic Content Standards* in ELA and served as the project manager for Indiana University's Center for Innovation in Assessment. Senechal served on the English Language Arts Work Team for the Common Core State Standards Initiative after having taught English and theatre in New York City Public Schools. She holds a Ph.D. in Slavic Languages and Literatures from Yale and has written extensively for *Education Week*, *American Educator*, and various education blogs.

Our math reviews this year were led by W. Stephen Wilson, professor of mathematics at Johns Hopkins University. He, too, is a Fordham veteran, having been part of our six-member math review team in 2005 as well as the math analyst for our *Stars* report. He has participated in numerous projects on standards, curricula, and textbooks. He received his Ph.D. in mathematics from M.I.T. and has published over sixty mathematics research papers in the field of algebraic topology. Wilson was joined by Gabrielle Martino, who has worked as an adjunct mathematics instructor, writer, and consultant. In 2009, she coauthored *Doing the Math*, a report comparing high school mathematics curricula and college expectations in Maryland. She received her Ph.D. in mathematics from Johns Hopkins University.

Shepherding this massive undertaking was Fordham's own Kathleen Porter-Magee, who had overseen our last standards reviews before heading off to serve as director of professional development and recruitment for the District of Columbia Catholic Schools. She went on to Achievement First, where she oversaw development of AF's nationally recognized system of interim assessments and managed professional development for the network's more than 500 teachers. Also providing much editorial assistance and methodological oversight was Amber Winkler, Fordham's research director, who holds a Ph.D. in education policy and evaluation from the University of Virginia and previously served as senior study director at Westat. She has published widely on education accountability, teacher quality, and technology, among other topics, and began her career as a high school English teacher.

The main takeaways

What's the state of state standards in 2010? And how does the Common Core compare?

The Common Core math standards earn a grade of A-minus while the Common Core ELA standards earn a B-plus, both solidly in the honors range. Neither is perfect. Both are very, very strong.

Indeed, the Common Core standards are clearer and more rigorous than the ELA and math standards presently used by the vast majority of states. Out of 102 comparisons—fifty-one jurisdictions times two subjects—we found the Common Core clearly superior seventy-six times.

But the story gets more complicated, because we also discovered that the present ELA standards of three jurisdictions—California, the District of Columbia, and Indiana—are clearly better than the Common Core. (To be precise, these ELA standards earned straight As, compared to the Common Core's B-plus.) Furthermore, the ELA standards of eleven other states are roughly equivalent in quality to the Common Core, or "too close to call." That means they earned grades of B, B-plus, or A-minus, in the same range as Common Core's B-plus. As for math, the current standards of eleven states plus the District of Columbia are roughly equivalent in quality to the Common Core, also "too close to call." That's because these state math standards earned grades of B-plus, A-minus, or A, in the same range as Common Core's A-minus.

Frankly this is more states in pretty good shape on the standards front than we expected.

What does this mean for the adoption decisions currently facing many states? In this report, we do not make recommendations. Much as we would love to see every state with high standards—as good as or better than the Common Core—and as many advantages as we see in America having a uniform set of core academic expectations for its students,

we're also aware that the quality of the standards—and the uniformity of the standards—is not the only factor that state educators and officials must ponder.

The several states with "clearly superior" ELA standards, plus the larger number of "too close to call" states in both ELA and math, face a bona fide quandary. There are plenty of benefits to signing on with Common Core, including potential savings from scale, the advantages of comparability, the expectation that forthcoming Common Core assessments will also be good, and the national resources that will be made available to teachers. (Of course, there's also the Race to the Top (RTT) money....) On the other hand, states with good standards of their own that have recently invested *beaucoup* bucks in teacher training and diagnostic assessments tied to those standards might have reason to pause, and wait and see how the Common Core effort plays out over the next few years.

But that's not all, at least not if the present move toward common standards is to be more than lip-service—a façade of "adoption" that conceals the same old teachers teaching the same old stuff and assessing it via the same old tests. Policy makers should also ask themselves:

- Does the state (and its districts) have the political, organizational, and financial capacity to infuse new and different standards throughout its K-12 system—and all the other systems that connect to it?
- If the new standards are indeed more demanding than the old, and assuming that these loftier expectations are mirrored by new assessments and definitions of "proficiency," do state (and local) leaders have the intestinal fortitude to deal with the likeliest short-term consequence, namely a lot more kids *not* being promoted or graduated?
- Does the state have the resolve—and the means—to do all this in ELAand math without short-changing the rest of what educated people must learn in school: science and history, obviously, but also the arts, civics, health, languages, and more?
- How, if at all, will the state augment the Common Core with additional standards (or examples, reading lists, etc.) that it deems especially valuable? (CCSSI says that states may add up to 15 percent—a limit that we doubt anybody will actually enforce.)

States will do their kids no favor if they mess up this decision or just go through the motions of embracing new standards, maybe only long enough to qualify for RTT funding. In short order, everyone in those jurisdictions will recognize that this was a false messiah—and educators and voters alike will grow even more cynical about standards-based education reform.

And then there's Massachusetts

As for the singular case of Massachusetts, there we find the state that has led the nation in achievement gains over the past decade, thanks in large part to its excellent standards—and their serious implementation. (A similar case cannot be made for California or Indiana, where lackluster follow-through has left excellent standards without traction. And it's too early to know what impact D.C.'s standards, adopted just a few years ago, might be having in the nation's capital, though encouraging hints can be found in the latest NAEP results.)

We understand the position of the "MCAS stalwarts" in the Bay State: Why fix something that isn't broken? On the other hand, Massachusetts has a chance to play a key role in developing a new assessment pegged to the Common Core, which could result in even stronger achievement in the Bay State and better implementation of standards nationwide. We can't resolve this tension on Beacon Hill. But we can declare that the Common Core standards are in the same ballpark as those already on the books in Massachusetts. In some ways, they are stronger; in other ways they don't quite measure up. We note, too, that the recently drafted revisions of Massachusetts's decade-old state standards are, for the most part, even stronger than the version in use today.

What lies ahead?

Is this the end of the road for Fordham's work on state standards, considering that, within a few months, perhaps only a handful of states will have retained their own distinctive standards? Hardly. In the fall, we'll update and amplify our *Stars by Which to Navigate* report to include appraisals of *all* of the major national and international standards and testing frameworks across *all* major subjects. Early in 2011, we'll release an updated review of state standards in science and U.S. history. After all, the Common Core is currently only focused on ELA and math. And while these subjects are critical and foundational, they hardly embody all we want students to know and be able to do. (We're mindful of stirrings already underway with respect to "common" science standards.)

We're also busy on the "governance" front, contemplating the thorny issues that will determine the *long-term* viability of the Common Core endeavor. Simply stated: In 2020, who will be in charge of the multi-state standards-and-testing effort? What will they do? Who will pay for it?

These aren't just mundane questions of organizational ownership and budget. States considering the Common Core are legitimately concerned about how it will work tomorrow. Will those standards get dumbed down? Ratcheted up? Joined by curriculum? Will they reach from ELA and math into other subjects? Will universities take them seriously? Employers?

Critics and doubters are also eyeing governance, asking what will keep the Common Core from slipping under Uncle Sam's control, and fretful, too, that the loopiest of educationists will infiltrate until they are in control of academic expectations that will then drown in dubious fads like whole-language reading and "rain forest" math.

How this venture is governed (or misgoverned) in the future will do more than anything else to deter—or invite—such a fate. We've already published some excellent background papers to stir discussion about this critical topic.[7] We've been querying experts for their wise counsel in this regard. And we'll be back with some of our own ideas in the fall. Stay tuned.

Acknowledgments

Generous support for this massive undertaking came from four sources: the Bill & Melinda Gates Foundation, the Louis Calder Foundation, The Brookhill Foundation, and our own sister organization, the Thomas B. Fordham Foundation. We are grateful to one and all.

We'd also like to thank the many individuals who made this endeavor possible. First and foremost, we are deeply grateful to our content-area experts and report authors, Sheila Byrd Carmichael for ELA, and W. Stephen Wilson and Gabrielle Martino for math. Besides providing thoughtful analysis of the state concrete suggestions for improving the Common Core draft, they worked on exceptionally tight deadlines to ready these insightful reviews before the August 2, 2010, Race to the Top CCSS adoption deadline.

We are grateful as well to Diana Senechal, Elizabeth Haydel, and Douglas Lasken (for ELA) and to Bastiaan J. Braams (for math), who served as independent reviewers of many of our analyses, for their excellent counsel and guidance.

At the Fordham end, a special thanks goes to Daniela Fairchild who helped steer this project toward the finish line, working long hours and ensuring that each of the 106-plus moving parts was completed well and on deadline. Thanks also to interns Kyle Kennedy and Saul Spady who pitched in to ready reviews for copyedit and generally helped to ensure that all loose ends were tied up, and to interns Jack Byers and Shelly Cheung who worked diligently to gather the states' standards.

We are also grateful to Marci Kanstoroom, Kathryn Ciffolillo, and to Fordham research assistant Janie Scull for the help they supplied in editing several of the state reviews.

Special thanks go as well to the Fordham production team—Stafford Palmieri, Amy Fagan, and Laura Pohl—for the work they did to ensure the final report was properly edited, published, and disseminated. And to Erin Montgomery and Alton Creative for their help with copyediting and layout (respectively) of the final report.

Executive Summary

This review of state English language arts (ELA) and mathematics standards is the latest in a series of Fordham evaluations dating back to 1997. It comes at a critical juncture, as states across the land consider adoption of the Common Core State Standards. (At press time, roughly half of states had already done so.)

Here are our major findings:

» Based on our criteria, the Common Core standards are clearly superior to those currently in use in thirty-nine states in math and thirty-seven states in English. For thirty-three states, the Common Core is superior in *both* math and reading.

» However, three jurisdictions boast ELA standards that are clearly superior to the Common Core: California, the District of Columbia, and Indiana. Another eleven states have ELA standards that are in the same league as the Common Core (or "too close to call").

» Eleven states plus the District of Columbia have math standards in the "too close to call" category, meaning that, overall, they are at least as clear and rigorous as the Common Core standards.

Figure 1: State English Language Arts Standards Compared to the Common Core

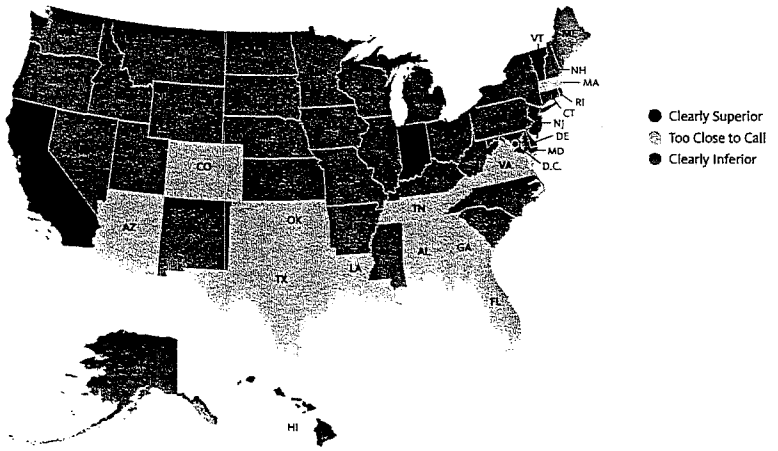

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Figure 2: State Mathematics Standards Compared to the Common Core

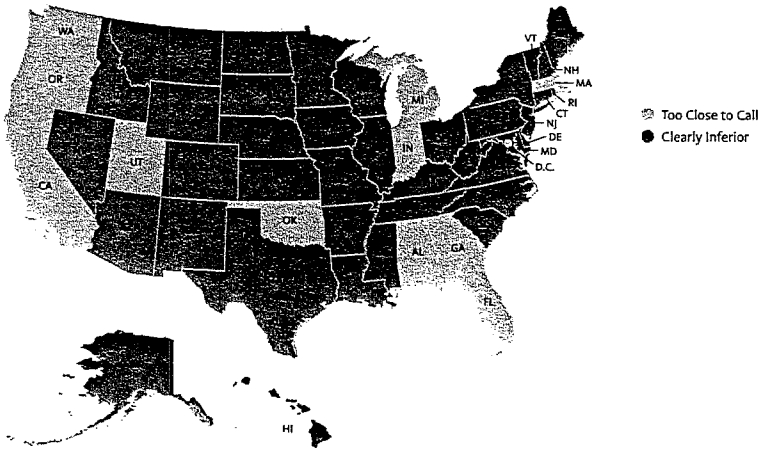

Table 1: State English Language Arts and Mathematics Standards Compared to the Common Core

Jurisdiction	English Language Arts	Math
Alabama	Too Close to Call	Too Close to Call
Alaska	Clearly Inferior	Clearly Inferior
Arizona	Too Close to Call	Clearly Inferior
Arkansas	Clearly Inferior	Clearly Inferior
California	Clearly Superior	Too Close to Call
Colorado	Too Close to Call	Clearly Inferior
Connecticut	Clearly Inferior	Clearly Inferior
Delaware	Clearly Inferior	Clearly Inferior
District of Columbia	Clearly Superior	Too Close to Call
Florida	Too Close to Call	Too Close to Call
Georgia	Too Close to Call	Too Close to Call
Hawaii	Clearly Inferior	Clearly Inferior
Idaho	Clearly Inferior	Clearly Inferior
Illinois	Clearly Inferior	Clearly Inferior
Indiana	Clearly Superior	Too Close to Call
Iowa	Clearly Inferior	Clearly Inferior
Kansas	Clearly Inferior	Clearly Inferior
Kentucky	Clearly Inferior	Clearly Inferior
Louisiana	Too Close to Call	Clearly Inferior

KSDE001987

Jurisdiction	English Language Arts	Math
Maine	Clearly Inferior	Clearly Inferior
Maryland	Clearly Inferior	Clearly Inferior
Massachusetts	Too Close to Call	Too Close to Call
Michigan	Clearly Inferior	Too Close to Call
Minnesota	Clearly Inferior	Clearly Inferior
Mississippi	Clearly Inferior	Clearly Inferior
Missouri	Clearly Inferior	Clearly Inferior
Montana	Clearly Inferior	Clearly Inferior
Nebraska	Clearly Inferior	Clearly Inferior
Nevada	Clearly Inferior	Clearly Inferior
New Hampshire	Clearly Inferior	Clearly Inferior
New Jersey	Clearly Inferior	Clearly Inferior
New Mexico	Clearly Inferior	Clearly Inferior
New York	Clearly Inferior	Clearly Inferior
North Carolina	Clearly Inferior	Clearly Inferior
North Dakota	Clearly Inferior	Clearly Inferior
Ohio	Clearly Inferior	Clearly Inferior
Oklahoma	Too Close to Call	Too Close to Call
Oregon	Clearly Inferior	Too Close to Call
Pennsylvania	Clearly Inferior	Clearly Inferior
Rhode Island	Clearly Inferior	Clearly Inferior
South Carolina	Clearly Inferior	Clearly Inferior
South Dakota	Clearly Inferior	Clearly Inferior
Tennessee	Too Close to Call	Clearly Inferior
Texas	Too Close to Call	Clearly Inferior
Utah	Clearly Inferior	Too Close to Call
Vermont	Clearly Inferior	Clearly Inferior
Virginia	Too Close to Call	Clearly Inferior
Washington	Clearly Inferior	Too Close to Call
West Virginia	Clearly Inferior	Clearly Inferior
Wisconsin	Clearly Inferior	Clearly Inferior
Wyoming	Clearly Inferior	Clearly Inferior

- The Common Core ELA standards, which earned a B-plus in our review, are particularly strong when it comes to providing useful and explicit guidance about the quality and complexity of reading and writing that should be expected of students each year, including providing annotated samples of student writing. On the other hand, those states with "clearly superior" standards tend to treat both literary and non-literary texts with more systematic detail, addressing the specific genres, sub-genres, and characteristics of both text types.
- The Common Core mathematics standards, which received an A-minus from our reviewers, set arithmetic as a clear priority in the elementary grades and develop the often-difficult subject of fractions with clear and careful guidance. On the other hand, compared to many of the "close call" states, the presentation of high school content is disjointed and mathematical coherence suffers.
- Several states made great improvements to their math standards since we last reviewed them in 2005. However, similar progress was generally not visible for ELA. (In 2005, we reported the opposite: States had made greater improvements to their ELA standards, but not their math standards, since 2000.)

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Table 2: Grades for State English Language Arts Standards, 2005 and 2010[A]

Jurisdiction	2010	2005
Alabama	B	A
Alaska	F	D
Arizona	B	B
Arkansas	D	C
California	A	A
Colorado	B+	C
Connecticut	D	F
Delaware	F	C
District of Columbia	A	C
Florida	B	C
Georgia	B+	B
Hawaii	C	C
Idaho	C	B
Illinois	D	B
Indiana	A	A
Iowa	F	N/A[B]
Kansas	C	C
Kentucky	D	C
Louisiana	B+	A
Maine	C	C
Maryland	C	C
Massachusetts	A-	A
Michigan	D	D
Minnesota	C	B
Mississippi	D	B
Missouri	D	C
Montana	F	F
Nebraska	F	C
Nevada	C	B
New Hampshire	C	B
New Jersey	C	C
New Mexico	C	D
New York	C	B
North Carolina	D	B
North Dakota	D	C
Ohio	C	C
Oklahoma	B+	C
Oregon	C	B
Pennsylvania	D	C
Rhode Island	D	C
South Carolina	D	B
South Dakota	C	B
Tennessee	A-	D
Texas	A-	B

KSDE001989

Jurisdiction	2010	2005
Utah	C	C
Vermont	D	C
Virginia	B+	B
Washington	C	F
West Virginia	D	C
Wisconsin	D	C
Wyoming	D	F

[A] Please see the *Foreword* and *Appendix C* for a discussion of how our criteria changed from 2005 to 2010. This complicates any comparison over time.
[B] Iowa adopted its first set of state standards in ELA and math in 2007.

Table 3: Grades for State Mathematics Standards, 2005 and 2010[A]

Jurisdiction	2010 Grade	2005 Grade
Alabama	B+	B
Alaska	D	D
Arizona	B	C
Arkansas	C	F
California	A	A
Colorado	C	D
Connecticut	D	F
Delaware	B	F
District of Columbia	A	D
Florida	A	F
Georgia	A-	B
Hawaii	C	F
Idaho	B	D
Illinois	D	C
Indiana	A	A
Iowa	C	N/A[B]
Kansas	F	F
Kentucky	D	C
Louisiana	C	C
Maine	C	D
Maryland	D	C
Massachusetts	B+	A
Michigan	A-	C
Minnesota	B	D
Mississippi	C	D
Missouri	D	F
Montana	F	D
Nebraska	C	D
Nevada	C	C
New Hampshire	D	F
New Jersey	C	D
New Mexico	C	B

Jurisdiction	2010 Grade	2005 Grade
New York	B	C
North Carolina	D	C
North Dakota	C	C
Ohio	C	D
Oklahoma	B+	C
Oregon	B+	D
Pennsylvania	F	D
Rhode Island	D	F
South Carolina	C	D
South Dakota	C	C
Tennessee	C	D
Texas	C	C
Utah	A-	D
Vermont	F	D
Virginia	C	C
Washington	A	F
West Virginia	B	C
Wisconsin	F	D
Wyoming	F	F

[A] Please see the *Foreword* and *Appendix C* for a discussion of how our criteria changed from 2005 to 2010. This complicates any comparison over time.
[B] Iowa adopted its first set of state standards in ELA and math in 2007.

Introduction and National Findings

This study examines the English language arts (ELA) and mathematics content standards of the fifty states and the District of Columbia, and compares their rigor and clarity to those recently published by the Common Core State Standards Initiative (CCSSI). The bulk of this report provides detailed reviews of 104 sets of standards (fifty states plus the District of Columbia, plus the Common Core standards times two—for ELA and math). In the next few pages, we provide a brief overview of the study's methodology and our national findings.

Please note that this report focuses solely on the quality of the standards themselves, not on whether they are being effectively implemented in the schools or driving improvements in student achievement. We are critiquing the cookbook, so to speak, not the dish itself.

Methodology

Our approach, as in past Fordham reviews of state standards, is straightforward. We gather the most recent versions of academic standards from all the states and ask trusted content experts to apply a set of criteria to them. We've already described (in the *Foreword*) our reviewers and their updated criteria for 2010. (More on this can be found in the Appendices.) It's worth saying a few words about the standards documents themselves.

Identifying a state's ELA or mathematics standards is no easy task, because there is very little state-to-state consistency about what materials constitute the essential academic "standards." In some states, a concise list of expectations suffices. Elsewhere, states deliberately pair standards with assessment frameworks. And in a few places, standards and assessment frameworks are accompanied by a third set of documents—curriculum frameworks—that are meant to be viewed together to paint the complete picture of what students should know and be able to do.

What's more, states use this terminology interchangeably. In some places, traditional standards documents are called "curriculum frameworks" or even "assessment frameworks." Adding to the confusion, standards documents can be slippery. In many states, they are live documents, posted clearly on websites, but subject to change—sometimes often and without notice.

Because our purpose was to analyze each state's most recently adopted standards and compare them to the Common Core, it was vital to navigate this confusion. So, beginning in spring 2009, Fordham staff searched state department of education websites and downloaded all of the relevant and up-to-date standards documents posted. (Twice during the study period, most recently in May 2010, Fordham staff re-checked available standards, updating states that had adopted new standards since the initial collection, and making every effort to review each state's most-recently adopted standards.) Then, we contacted content-area experts in every state department of education to verify the accuracy of what we had found.

This exhaustive search yielded, for some states, hundreds of pages worth of documents, consisting of everything from standards to assessment materials to curriculum guides. All of these documents were sent to our expert reviewers for their consideration.

Working together with the Fordham team, our expert reviewers—Sheila Byrd Carmichael for ELA, and W. Stephen Wilson and Gabrielle Martino for math—identified the following broad guidelines to determine which of those documents would be reviewed as part of this standards analysis:

1. The documents are readily available or distributed to teachers for use in the classroom;
2. The documents are meant to guide instruction and not simply test preparation or assessment; and
3. The documents are used to define student outcomes and are not focused primarily on guiding pedagogy.

These were the documents we examined, as designated in each of the state reviews. To the best of our knowledge, they were current as of May 2010.

KSDE001992

Our content experts then applied a set of criteria to the standards. (The criteria themselves are available in Appendix A.) They assigned two scores to each set of standards: one for "Content and Rigor," the other for "Clarity and Specificity." Content and Rigor is scored on a 0-7 point scale while Clarity and Specificity is scored on a 0-3 point scale.

To get full points for Content and Rigor, standards had to be top-notch in terms of the content chosen. Furthermore:

> The coverage of the subject is suitable, good decisions have been made about what topics to include, and nothing of importance has been overlooked. (No more than 5 percent of the content outlined in the subject-specific content expectations is missing.)

In ELA, for example, the standards would include specific expectations for reading excellent literary and non-literary texts. And in mathematics, for example, the standards would expect high school geometry students to understand proofs, including the Pythagorean Theorem.

To get full points for Clarity and Specificity, standards had to be coherent, clear, and well organized. Furthermore:

> The scope and sequence of the material is apparent and sensible. They provide solid guidance to users (students, teachers, curriculum directors, test developers, textbook writers, etc.) about the content knowledge and skills required to do well on the exam. The right level of detail is provided. The document(s) are written in prose that the general public can understand and are mostly free from jargon. The standards describe things that are measurable (i.e., can lead to observable, comparable results across students and schools). The standards as a whole clearly illustrate the growth expected through the grades.

Scores for Content and Rigor and Clarity and Specificity were added together and translated into letter grades as follows:

Table 4: Grading Scale

Grade	Points
A	10
A-	9
B+	8
B	7
C	5 or 6
D	3 or 4
F	0, 1, or 2

One major objective of this study was to make fair comparisons between the CCSSI standards and those currently in place in each of the states. We decided that our criteria and grading scale were not sensitive enough to declare, with confidence, that a set of standards earning just one point more than another set was clearly superior. So we adopted the following decision rule: To be considered "clearly superior," standards had to best another set of standards by at least two points.

As a result, the Common Core ELA standards, which earned eight points, or a B-plus, are "clearly inferior" to state standards that earned a ten (or a straight A), "clearly superior" to those that earned a six or lower (a C, D, or F), and "too close to call" for those that earned seven, eight, or nine points (B, B-plus, or A-minus). And the Common Core math standards, which earned nine points, or A-minus, are "clearly superior" to those that earned a seven or lower (a B, C, D, or F), and "too close to call" for those that earned eight, nine, or ten points (B-plus, A-minus, or A). (In math, no state's standards were "clearly superior" to CCSSI.)

Findings

The Common Core standards are clearly superior to those in place in the vast majority of states. But there are some notable exceptions, as detailed in Tables 5 and 6.

KSDE001993

Table 5: 2010 Grades for English Language Arts Standards

Jurisdiction	2010 Grade
California	A
District of Columbia	A
Indiana	A
Massachusetts	A-
Tennessee	A-
Texas	A-
Common Core	**B+**
Colorado	B+
Georgia	B+
Louisiana	B+
Oklahoma	B+
Virginia	B+
Alabama	B
Arizona	B
Florida	B
Hawaii	C
Idaho	C
Kansas	C
Maine	C
Maryland	C
Minnesota	C
Nevada	C
New Hampshire	C
New Jersey	C
New Mexico	C
New York	C
Ohio	C
Oregon	C
South Dakota	C
Utah	C
Washington	C
Arkansas	D
Connecticut	D
Illinois	D
Kentucky	D
Michigan	D
Mississippi	D
Missouri	D
North Carolina	D
North Dakota	D
Pennsylvania	D
Rhode Island	D
South Carolina	D
Vermont	D

States whose ELA standards are **"clearly superior"** compared to the Common Core.

States whose ELA standards are **"too close to call"** compared to the Common Core.

States whose ELA standards are **"clearly inferior"** compared to the Common Core.

KSDE001994

Jurisdiction	2010 Grade
West Virginia	D
Wisconsin	D
Wyoming	D
Alaska	F
Delaware	F
Iowa	F
Montana	F
Nebraska	F

States whose ELA standards are **"clearly inferior"** compared to the Common Core.

Table 6: 2010 Grades for State and Common Core Mathematics Standards

Jurisdiction	2010 Grade
California	A
D.C.	A
Florida	A
Indiana	A
Washington	A
Common Core	**A-**
Georgia	A-
Michigan	A-
Utah	A-
Alabama	B+
Massachusetts	B+
Oklahoma	B+
Oregon	B+
Arizona	B
Delaware	B
Idaho	B
Minnesota	B
New York	B
West Virginia	B
Arkansas	C
Colorado	C
Hawaii	C
Iowa	C
Louisiana	C
Maine	C
Mississippi	C
Nebraska	C
Nevada	C
New Jersey	C
New Mexico	C
North Dakota	C
Ohio	C

States whose math standards are **"too close to call"** compared to the Common Core.

States whose math standards are **"clearly inferior"** compared to the Common Core.

KSDE001995

Jurisdiction	2010 Grade
South Carolina	C
South Dakota	C
Tennessee	C
Texas	C
Virginia	C
Alaska	D
Connecticut	D
Illinois	D
Kentucky	D
Maryland	D
Missouri	D
New Hampshire	D
North Carolina	D
Rhode Island	D
Kansas	F
Montana	F
Pennsylvania	F
Vermont	F
Wisconsin	F
Wyoming	F

States whose math standards are **"clearly inferior"** compared to the Common Core.

KSDE001996

Analysis

As should be clear by now, most state standards are woefully inadequate. What makes them so? Let's take a look.

English language arts

In one important respect, state ELA standards are much stronger than they were a decade ago. Thanks no doubt to the recommendations of the National Reading Panel, most states now include reasonably strong and detailed expectations for phonemic awareness, phonics, comprehension, fluency, and vocabulary. However, in many other respects, most ELA standards still have a long way to go. Here are the five most common, and most pernicious, shortfalls.

Problem #1: A focus on metacognition instead of essential content

While early reading standards are generally strong, too many states prioritize metacognitive reading strategies over mastery of essential reading content. Such standards, which often ask students to "activate prior knowledge" or "ask and answer questions" to aid in comprehension, focus more on dubious pedagogical suggestions than they do on clearly defining measurable student outcomes.

For example, while a student may be struggling through a text because (s)he isn't engaging in close reading or pausing to ensure that (s)he's understood what (s)he has read, comprehension challenges are more likely due to a lack of critical content knowledge. State standards should, therefore, place a greater emphasis on defining the essential content that students must master to become proficient readers than on suggesting strategies that may or may not help them to comprehend complex texts.

Problem #2: Skimpy genre-specific and grade-specific expectations

Few states sufficiently delineate genre-specific standards for reading or writing. Instead, many seem to give a perfunctory nod to this important content by saying something fairly general about comparing genres of prose, identifying literary elements, or recognizing the structures of informational text. They sometimes follow those statements with an example or two, but usually fail to go any deeper or to adequately scaffold this content across grades.

Many states have standards that convey no content at all, as in "Respond to a variety of literary (or informational) texts" or "Write for a variety of purposes." On the other hand, we also see overstuffed standards like this fourth-grade one:

> Describe the defining characteristics of narrative and informational genres (e.g., folk tales, poetry, historical fiction, biographies, chapter books, textbooks) (grade 4, Nebraska)

In this standard, while some genres are named, the content is a mess. Literary and informational texts are conflated when each should be treated separately. Too many genres are addressed together, especially for fourth grade, when students do not yet have a firm grasp of essential differences among important genres. And nowhere else in the standards are critical genre-specific characteristics themselves identified. Such standards, therefore, leave little confidence that students will learn the differences between genres, and even less confidence that they'll become proficient readers of these genres as the texts themselves increase in complexity.

Done well, such standards would address genres and their characteristics systematically and distinctly, as Indiana does in this exemplary eleventh-grade standard:

KSDE001997

> Analyze characteristics of sub-genres, types of writings such as satire, parody, allegory, and pastoral that are used in poetry, prose, plays, novels, short stories, essays, and other basic genres.
> - Satire: using humor to point out weaknesses of people and society
> - Parody: using humor to imitate or mock a person or situation
> - Allegory: using symbolic figures and actions to express general truths about human experiences
> - Pastoral: showing life in the country in an idealistic—and not necessarily realistic—way (grade 11, Indiana)

Problem #3: What happened to American literature?

Few states prioritize or even mention American literature specifically. The few that do generally include a standard at eleventh grade only, the year in which many students take an American literature course (and, often, a concurrent U.S. history course). There is a rich body of American literature to which students should be exposed beginning much earlier and, in order to help produce well-read and culturally literate citizens, state standards should prioritize the study of our common literary heritage throughout the grades.

Problem #4: Where are the reading lists?

The study of literature is only as rigorous as the texts that students read. Unfortunately, few states provide adequate—or any!—guidance about the quality and complexity of reading that they expect of students. Many merely mention that students should be reading "grade-appropriate" texts, an empty caveat that leaves far too much room for interpretation.

Problem #5: Vague expectations for student writing

Too few states provide adequate guidance regarding the quality of writing expected of students. In some states, the writing standards are written in vague language that fails to clearly delineate what, precisely, students should know or be able to do. Instead, many merely provide a long list of genres students should study, as in this example from Iowa:

> Write using different formats:
> - Letter
> - Journal
> - Narrative
> - Expository paragraph
> - Research report
> - Poetry
> - News article/editorial
> - Script
> - Radio announcement
> - Blog (grades 3-5, Iowa)

Such standards are so vague as to be instructionally meaningless.

Even when states attempt to clarify some genre-specific content, they frequently fall woefully short, as in this example from Mississippi:

> The student will compose formal persuasive texts, providing evidence as support (grade 11, Mississippi)

To be sure, persuasive writing should provide evidence as support, but there is *much* more that students need to master to become proficient writers of different genres.

What's more, in order to paint a complete picture of the quality of writing expected of students at each grade level, states should provide annotated examples of student writing; few states presently provide such guidance.

Finally, very few states adequately prioritize the genres that students should focus on each year. A rigorous K-12 writing program would logically start in the early grades with a focus on personal narrative, narrative, and letter writing, but would build through the years to focus on more complex genres such as persuasive writing and advanced literary

analysis. While many states do thoughtfully introduce persuasive, literary analysis, and research writing at appropriate grades, few clearly indicate that, as these new genres are introduced, they should take priority over the narrative writing that was emphasized in the early grades.

Comparison to the Common Core

The Common Core State Standards admirably avoid some of the pitfalls noted above. They generally avoid the pernicious problem of overemphasizing metacognitive reading strategies, particularly in the early grades; they prioritize essential writing genres, and provide annotated samples of student writing; and they include explicit guidance—including a list of exemplar texts—about the quality and complexity of reading that should be expected.

Unfortunately, like too many state standards, the Common Core fails to address the specific genres, sub-genres, and their characteristics for both literary and non-literary text. And, once again, we find only a single eleventh-grade standard that explicitly addresses American literature.

Mathematics

What are some of the reasons that so many state mathematics standards come up short? Here are five problems found in many, and in some cases most, of the standards documents that we reviewed.

Problem #1: Arithmetic is not a priority

In order to ensure that students are prepared early for rigorous math courses, K-12 standards in the elementary grades should emphasize critical arithmetic content, including arithmetic development and general number sense. Many states include solid arithmetic standards, but these are buried among a multitude of distracting and less important content. By failing to clearly prioritize this essential content, states fail to ensure that it gets the attention it deserves. Only a few states either explicitly or implicitly set arithmetic as a top priority. More often, states devote fewer than 30 percent of their standards in crucial elementary grades to arithmetic. The best states, however, devote more than 50 percent.

Furthermore, the four arithmetic operations for whole numbers cannot be mastered if the single-digit addition and multiplication facts (and corresponding subtraction and division facts) have not been learned to automaticity. For multiplication and division, only eleven states (plus Common Core) use key words or phrases such as automaticity, memorize, instant, or quick recall. Another fifteen states either fail to mention these "math facts" or specify only that students be able to compute them. But "fluency" with calculating the basic facts is not the same as instant recall. The other twenty-five states lie in between, usually because they say something that can be interpreted either way, for example:

> Demonstrate fluency with basic addition and subtraction facts to sums of 20 (grade 2, Colorado)

This can be interpreted as either computational fluency or instant recall. This lack of specificity means that some students might not be required to actually internalize the basic facts.

Problem #2: States duck the standard algorithms

Arithmetic forms the foundation of K-16 mathematics, and whole-number arithmetic forms the foundation of arithmetic. The proper goal for whole-number arithmetic is fluency with (and understanding of) the standard algorithms. Only seven states explicitly expect students to know the standard algorithm for whole-number multiplication as their capstone standard for multiplication of whole numbers. (This is a marked improvement from the number of states that included similar standards in our previous review!) But twenty-four states explicitly undermine this goal by offering, even expecting, alternatives to the standard algorithm, as demonstrated by this New York example:

> Use a variety of strategies to multiply three-digit by three-digit numbers (grade 5, New York)

This standard fails even to mention the standard algorithm, and thus leaves little confidence that students across the state will master this essential content.

Other states pay homage to the standard algorithm while still avoiding the goal:

> Solve multi-digit whole number multiplication problems using a variety of strategies, including the standard algorithm, justify methods used (grade 4, West Virginia)

Here, while the standard algorithm is mentioned, students can clearly move on without having mastered it, leaving open the possibility that teachers will accept any strategy that yields the correct answer. The problem, of course, is that a strategy that yields the correct answer in fourth grade will likely become less and less effective as students progress to more advanced mathematics.

Problem #3: States fumble fractions

If the basic necessities of whole-number arithmetic are hard to find in state standards, the development of fractions is even more difficult to see done well. Most states require students to learn the arithmetic operations for fractions, but many continue to eschew the standard algorithms, instead allowing students to use a "variety of strategies," or even to "develop" their own approach to computing fractions. Still others just remain silent on how the operations should be performed.

After the foundation of whole-number arithmetic, fractions form the core of mathematics. Only fifteen states even mention common denominators, something essential in the development for adding and subtracting fractions. Likewise, standards specifying fractions as division are rare. Good development of this essential content is simply missing from most states' standards.

There are a few notable exceptions. The Common Core admirably builds a short course on fractions into its standards, and California does the same in its curriculum framework.

Problem #4: Calculator clutter

Impressively, more than twenty states have purged calculators entirely from their elementary school standards, thus demonstrating that students should master basic computation without the use of technology. Unfortunately, for those states that have kept them, a typical standard is:

> Use a variety of methods and appropriate tools for computing with whole numbers; e.g., mental math, paper and pencil, and calculator (grade 4, Ohio)

Nothing but "appropriate" specifies when a calculator should or should not be used, and what is "appropriate" is not well established. It could mean anything a reader wants it to mean. But, by having calculators in the standard, they will be used and, when calculators are an option, they undermine the development of fluency with the standard algorithms.

Problem #5: Dysfunctional on functions

The study of functions has a place toward the end of high school mathematics to help unify what has been learned about linear, quadratic, exponential, logarithmic, and other equations to help make the transition to calculus. Unfortunately, many states introduce the concept of function before it can be of much mathematical use. This causes a number of problems.

We begin with an outrageous example:

> Explain how one variable produces a change in another variable (grade 2, West Virginia)

This would be considered too vague and too general if stated as a high school standard, but it is just ludicrous in the second grade. At that stage, students have learned nothing about the different types of equations (mentioned above), and so it is inappropriate to introduce the concept of functions and variables.

Similar problems exist in high school standards, as, for example:

> Provide a convincing argument (or proof) regarding the inverse relationship of two functions (Advanced Algebra, Mississippi)

As it stands, this standard is essentially useless. It is not possible to know if it is intended that students know the inverse trigonometric functions.

These standards fail because they are both vague and missing essential prerequisite content.

KSDE002000

Comparison to the Common Core

The Common Core standards are exemplary in many ways. The K–8 standards avoid many of the common pitfalls mentioned above. In particular, they are admirably focused on the most important content and provide clear and careful guidance on what exactly needs to be included. They do not include a lot of inflationary statements of the kind strewn through many states' standards. There are no mentions of calculus in Kindergarten, for example. For the most part, they do not exhort elementary-age children to become algorithm developers, or statistical experts, but focus instead on asking them to master basic mathematics that will prepare them to continue learning mathematics. They do not promote the use of technology over the use of reasoning and brain power, but insist on mathematical coherence and proficiency with the basics. This insistence on mathematical rigor is refreshing in the landscape of standards. Equally refreshing is the restraint shown in asking for inappropriate levels of sophistication from young children.

The high school material is somewhat less satisfactory. In a presumed attempt to provide guidance that would suit many different curricular approaches, the content is not really organized in a way that reflects mathematical topics. The specific content is almost always there, but it is often not presented in a way that outlines a clear and coherent curricular approach. Statements about mathematical topics, such as quadratic equations, are not always presented together so as to promote the rigorous development of the topic as a whole. The crucial material is generally included, but there is little guidance implicit in the organization to outline an appropriate, cohesive approach.

Conclusion

Clearly, state standards vary dramatically—something we've known for more than a decade and have demonstrated on multiple occasions. A small handful of them are strong, but most lack the content and clarity needed to provide a solid foundation for effective curriculum, assessment, and instruction. Averaged together, the standards now in place in states across the U.S. earn a C in both ELA and math. The Common Core standards, by contrast, merit a B-plus and an A-minus, respectively. For most states, they present a significant improvement and a rare opportunity. Still, much as a solid foundation does not guarantee a great structure atop it, getting standards right is not enough to ensure a great education for America's students. Yet it is a critical starting point in our effort to drive outstanding student achievement.

1 Sandra J. Stotsky, *State English Standards* (Washington, D.C.: Thomas B. Fordham Foundation, 1997), http://www.edexcellence.net/detail/news.cfm?news_id=308&id=.

2 Chester E. Finn, Jr., Michael J. Petrilli, and Liam Julian, *State of State Standards 2006* (Washington, D.C.: Thomas B. Fordham Foundation, 2006), http://www.edexcellence.net/detail/news.cfm?news_id=358&id=.

3 See, for example: Grover J. "Russ" Whitehurst, "Don't Forget Curriculum," *Brown Center Letters on Education*, no. 3, Brookings Institution, October 2009, http://www.brookings.edu/papers/2009/1014_curriculum_whitehurst.aspx.

4 For more, see here: Charles D. Chieppo and James T. Gass, "Accountability Overboard: Massachusetts Poised to Toss out the Nation's Most Successful Reform," *Education Next* 9, no. 2 (Spring 2009), http://educationnext.org/accountability-overboard/.

5 John Cronin, Michael Dahlin, Deborah Adkins, G. Gage Kingsbury, *The Proficiency Illusion* (Washington, D.C.: Thomas B. Fordham Institute, 2007), http://www.edexcellence.net/detail/news.cfm?news_id=376&id=.

6 Sheila Byrd Carmichael, W. Stephen Wilson, Chester E. Finn, Jr., Amber M. Winkler, and Stafford Palmieri, *Stars by Which to Navigate? Scanning National and International Education Standards in 2009* (Washington, D.C.: Thomas B. Fordham Institute, 2009), http://www.edexcellence.net/doc/20091008_NationalStandards.pdf.

7 These background papers can be found here: http://www.edexcellence.net/index.cfm/news_common-education-standards-tackling-the-long-term-questions.

KSDE002001

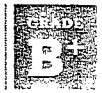
Common Core • English Language Arts

DOCUMENTS REVIEWED

Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science and Technical Subjects. June 2, 2010. Accessed from: http://www.corestandards.org/the-standards/english-language-arts-standards

Overview

The *Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects* seek to provide "the next generation of K-12 standards in order to ensure that all students are college- and career-ready in literacy no later than the end of high school."[1] Fordham reviewed an earlier draft of these standards in March 2010, and a number of improvements have been made since that iteration.[2]



Clarity and Specificity:	2/3
Content and Rigor:	6/7
Total Score:	**8/10**

These final standards indeed reflect a thoughtful attempt to define skills in each area of English language arts, (ELA) as well as an effort to define how those skills might be nurtured in "history/social studies, science and technical subjects." Although they would be more helpful to teachers if they attended as systematically to content as they do to skills, especially in the area of reading, the standards—accompanied by a well-aligned and content-rich curriculum—could provide a valuable tool to classroom teachers.

General Organization

The document includes two categories of standards. The first is a list of "College and Career Readiness" (CCR) standards in each of four strands (reading, writing, listening and speaking, and language). These CCR standards are broad statements about what students should know and be able to do in each strand by the time they graduate from high school. The second category includes grade-appropriate learning expectations for each grade, K-12. These expectations are designed to provide "additional specificity" by translating the CCR standards into detailed, grade-specific learning objectives.

In grades 6-12, the standards also include a section devoted to "literacy for history/social studies, science, and technical subjects," which breaks the reading and writing CCRs into grade-level expectations for history and science teachers. (Note, though, that this review focuses on the core standards for ELA.)

Finally, the standards include three appendices. The first provides definitions of text complexity, more detailed guidance about early reading foundations, and definitions of text types. The second lists "exemplar" literary and informational texts by grade spans, as well as "sample performance tasks," which describe suggested instructional activities involving some of the cited texts. The third provides annotated student writing samples that demonstrate what kind of writing is expected of students at each grade. The appendices must be considered components of the standards themselves in order for the standards to be effective.

Clarity and Specificity

For the most part, the standards are fairly specific about the skills that students should master each year, as in the following examples:

KSDE002002

> Describe characters in a story (e.g., their traits, motivations or feelings) and explain how their actions contribute to the sequence of events) (grade 3)
>
> Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis and tone used (grades 11-12)

In other places, however, the language of the standards is a bit bloated or confusing, as in this vocabulary standard:

> Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g., wildlife, conservation, and endangered when discussing animal preservation) (grade 4)

It is hard to imagine which words are not included in this all-encompassing standard, and it is not clear how using words "that signal precise actions, emotions, or states of being" should be counted among "general academic" and "domain-specific" words. Moreover, what is the expected student outcome here, and how could it be measured?

Similarly puzzling standards can be found here and there, including the following:

> With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting (grade 5)

How would a teacher measure students' "interacting and collaborating with others"? Are students collaborating with others to produce and publish writing or for some other purpose?

In the following conventions standard, it is difficult to determine how a teacher would use this directive to drive instruction:

> Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations (grades 9-10)

This standard implies that a writer can "add interest" simply by using different phrases and clauses. Most uninteresting sentences, by virtue of being sentences, have phrases and clauses. Sometimes, interest is much better generated with simple, straightforward language. Encouraging students to overcomplicate their sentences to make them seem more interesting seems like confusing, if not misguided, advice. Depending on the genre, word choice might, for example, be a better technique than sentence construction for "adding interest." It looks as though this standard is designed to unnecessarily rationalize the study of "clauses and phrases" by assigning it an artificial purpose.

In other cases, the language is repeated verbatim across grades, for example:

> Provide an objective summary of the text (grades 7-12)
>
> Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings... (grades 6-12)

Such standards should either be included only as a capstone standard in a particular grade, or should be scaffolded from grade to grade to demonstrate a clear progression of rigor.

Finally, the organization of the reading standards is hard to follow. They are organized into four categories: "Key Ideas and Details," "Craft and Structure," "Integration of Knowledge and Ideas," and "Range of Reading and Level of Text Complexity." This framework creates a false sense of separation between inextricably linked characteristics, such as themes in a literary text (treated under "Key Ideas") and point of view (treated under "Craft and Structure"). Since many kinds of texts, genres, sub-genres, and their characteristics are discussed in each category, it is also difficult to determine whether a logical sequence covering all of this important content has been achieved. What's more, because the standards often offer a choice of genres to teachers, as in "Analyze how particular elements of a story *or* drama interact," (emphasis added) coverage of essential genre-specific content is even harder to track.

KSDE002003

Clarity and Specificity Conclusion

Where clarity and specificity are concerned, the standards are an improvement on the March draft. In some strands, they illustrate more clearly the growth expected across grades. Still, the organization of the reading strand, as well as the instances of vague and unmeasurable language, mean that the standards do not ultimately provide sufficient clarity and detail to guide teachers and curriculum and assessment developers effectively. They therefore earn two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Reading

As noted in Fordham's review of the March draft, the standards lay a clear foundation for reading acquisition in the early grades by outlining straightforward expectations in phonemic awareness, phonics, and fluency. It should be noted, however, that the useful examples included in the March draft (about the progression of specific phonological awareness skills, for example) have been moved to the the standards' Appendix A, making it somewhat less likely that teachers will use these critical examples as a guide for instruction.

The standards for vocabulary development are mostly thorough; they consistently address word analysis and etymology. They maintain, however, that students should choose "flexibly from a range of strategies" to "determine or clarify the meaning of unknown words...," suggesting that the strategies mentioned (the use of context clues, word analysis, and consulting a dictionary) are all equally useful. In grades 6-12, students "verify the preliminary determination of the meaning of a word or phrase by checking the inferred meaning in context *or* in a dictionary" (emphasis added). This statement appears tautological, since an inferred meaning and a preliminary determination would likely be the same thing. The dictionary is the place for verification.

To illustrate the quality and complexity of what students should read, the standards include lists of "exemplar" texts for grade spans K-1, 2-3, 4-5, 6-8, 9-10, and 11-12. These lists include some welcome additions to the March draft, particularly in high school, such as Voltaire, Kafka, and Sophocles at grades 9-10, and Hawthorne, Poe, and Melville in grades 11-12. The lists now represent a range of solid literature and informational texts, as well as titles for "history/social studies" and "science, mathematics, and technical subjects."

The exemplar text lists also include "sample performance tasks," designed to "illustrate specifically the application of the standards to texts of sufficient complexity, quality, and range." For example, this task is listed following the informational text exemplars for grades 2 and 3:

> Students explain how the main idea that Lincoln had "many faces" in Russell Freedman's *Lincoln: A Photobiography* is supported by key details in the text (grades 2-3)

The task cites the standard to which it is tied. These simple examples throughout the appendix are minimalistic but helpful additions for teachers.

Common standards for U.S. students should emphasize the importance of reading grade-appropriate works of outstanding American literature that reflect our common heritage. The standards now include one clear and rigorous standard that prioritizes this essential content:

> Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics (grade 11)

In addition, the "informational text" strands include the analysis of essential American documents:

> Analyze seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail"), including how they address related themes and topics (grades 9-10)

Although it would be ideal to find standards focused on American literature in all grades, these high school standards are welcome additions. In most cases, they cite essential texts specifically and leave little doubt in teachers' minds about what knowledge and skills students need to master.

KSDE002004

In other places, however, the reading standards for both literature and informational text fail to address the specific text types, genres, and sub-genres in a systematic intersection with the skills they target. As written, the standards often address skills as they might apply to a number of genres and sub-genres. As a result, some essential content goes missing.

For example, CCR reading standard number one states:

> Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text (reading, CCR 1)

The grade-specific articulation of these CCRs are intended to illustrate how the standard should be applied when dealing with different text types, such as literary and informational, yet in many places they fail to do so. Take, for example, the following standards addressing literary texts for grades 3-5:

> Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers (grade 3)
>
> Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text (grade 4)
>
> Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text (grade 5)

The related standards for grades 6-12 continue in this vein, exhibiting only minor distinctions across the grades, such as citing evidence "to support analysis of what the text says explicitly as well as inferences from the text."

Several problems surface here. First, these standards don't properly scaffold skills from grade to grade. For example, quoting from text is arguably easier than paraphrasing, but the standards require mastery of paraphrasing first.

Second, these standards are also repeated verbatim in the informational text strand, thus making no distinction between applying this skill to literary and informational text. To illustrate how the standards apply to different text types, and to determine the true rigor of these standards, they should be more explicitly linked to specific genres and sub-genres in each category.

What's more, while some genres are mentioned occasionally in the standards, others, such as speeches, essays, and many forms of poetry, are rarely if ever mentioned by name. Similarly, many sub-genres, such as satires or epic poems, are never addressed. While the appended list of exemplar texts can be helpful in shaping teachers' choices about texts, the standards themselves should provide specific guidance about the genres and sub-genres to be prioritized at each grade level to ensure that students are exposed to a wide range of literary and non-literary texts across the grades. Without such guidance, students could easily end up reading novels almost exclusively, year after year.

Many defining characteristics of the various genres are also rarely, if ever, mentioned. For example, the standards don't specifically address the use of alliteration and extended metaphors in speeches, or internal rhyme in poetry.

Where literary elements *are* mentioned, their treatment is spotty. CCR reading standard number three, for example, is a wide-ranging statement: "Analyze how and why individuals, events, and ideas develop and interact over the course of a text." The grade-specific standards for literature in this category deal largely with the literary elements of plot, setting, and characterization, but not in a systematic progression across grades. Students are never asked, for example, to define plot, nor to identify the elements of a plot so that they would be capable of doing what the standards ultimately demand of them in the upper grades, such as this broadly worded—and ambitious—standard for grades 11-12:

> Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama...(grades 11-12)

This seems like a fine skill for students to acquire and practice, but on closer examination, we can't be sure which elements of the story *or* drama students should know and analyze: Symbolism? Characterization? Stage directions? How are teachers to ensure that sufficient attention is given to all literary elements over the course of twelve years if these are not specified and if no systematic treatment is afforded them?

The treatment of informational text is similarly problematic in places. Although the standards do a decent job of asking students to trace the reasoning in arguments, the types of reasoning, such as inductive and deductive (including the reli-

KSDE002005

ability of each), are not named. Logical fallacies, such as ad hominem attacks and appeals to pity, are also never named, meaning that students will have no common language for wrestling with the skills that the standards ask them to master later, such as "identifying false statements and fallacious reasoning" in grades 9-10.

Writing

The Common Core Writing standards are somewhat repetitive, but they do include much essential content, especially by cross-referencing the Language standards for grammar, usage, and mechanics throughout. The rigor of the Writing standards is illuminated by student work samples that help teachers understand the kind of writing that is expected of students across the grades for the three genres they include: "arguments," "informative/explanatory texts," and "narratives." The writing samples are also annotated to help clarify the general expectations laid out in the grade-specific standards.

On the other hand, the Writing standards include too many expectations that begin with the phrase, "With guidance and support from adults…" For example, in grade 2:

> With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing (grade 2)

Such standards are problematic because they fail to adequately scaffold or clearly delineate what *students* should be able to do. There are certainly revision and editing skills that students can master independently in second grade. For example, they could revise for word choice, or for capitalization and end marks. Unfortunately, by merely stating that students should revise and edit "with guidance and support," teachers themselves are left with very little guidance about what grade-appropriate skills they should be working to ensure students master.

One troublesome aspect of the writing standards is the persistently blurry line between an "argument" and an "informative/explanatory essay." Appended material seeks to clarify the distinction, and summarizes by saying that "arguments are used for persuasion and explanations for clarification." Yet not all explanations clarify ("because I said so!") and not all arguments must be persuasive. An argument merely introduces, develops, and establishes a claim by providing evidence to support the claim, as in a literary analysis. Here, however, a literary analysis is not an argument; it is categorized as an informative/explanatory essay, which is arguably another category altogether. Still, if arguments here are all persuasive, then they should include the essential characteristics of persuasive writing in their description, such as a recommendation or call to action—and the category should in fact be called "persuasion." As they are, these new definitions are likely to confuse teachers, curriculum developers, and publishers.

Listening and Speaking

The Common Core standards for Speaking and Listening have improved since the March draft, in which standards for discussion versus group work were not clearly delineated. Now the standards for "Comprehension and Collaboration" more clearly address both seminar-style and other kinds of classroom discussions (including those that are teacher-led), in addition to standards for collaborating to accomplish a task.

The standards for "Presentation of Knowledge and Ideas" include expectations for making oral presentations but are vague regarding the specific products required of students, citing "a range or formal and informal tasks," even in grades 11-12. It would be more helpful to teachers if specific student outcomes were described.

Oral and Written Language Conventions

Oral and written language conventions are systematically addressed in the Language strand. Conventions are addressed in grade-by-grade expectations with acknowledgment of the fact that some will need to be addressed repeatedly across grades, such as subject-verb and pronoun-antecedent agreement. In most ways, these standards reflect a marked improvement over the March draft by specifying more grammar content in a more logical progression across grades.

Research and Media

Research and media are both addressed, though more could be done in both areas, given the emphasis they receive nowadays from employers and postsecondary faculty. The research expectations are embedded in the Writing section and, on the plus side, many key elements of the research process are discussed, as in this standard:

> Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation (grades 9-10)

The standards assert in introductory material that "research and media skills and understandings are embedded throughout the standards," yet the embedding of the media standards does not appear to be systematic. They are sporadic in their rigor. For example, a rather vague grade 6 standard says:

> Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study (grade 6)

In that same strand, however, a more rigorous standard appears at grade 8:

> Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation (grade 8)

Greater consistency (and perhaps a separate media strand) would have improved these standards.

Content and Rigor Conclusion

The final Common Core standards represent an improvement over the March draft, although some problems remain to be set right in later editions. Most are relatively minor, but the overwhelming focus on skills over content in reading combined with the confusion about the writing standards, the lack of detail about oral presentations, and the sporadic rigor of the media standards leaves as much as 15 percent of the essential content missing, thus earning the Common Core standards six points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

Despite their imperfections, the Common Core ELA standards are far superior to those now in place in many states, districts, and classrooms. They are ambitious and challenging for students and educators alike. Accompanied by a properly aligned, content-rich curriculum, they provide K-12 teachers with a sturdy instructional framework for this most fundamental of subjects.

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1 *Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects* (Washington, D.C.: Common Core State Standards Initiative , 2010), p. 3. http://www.corestandards.org/assets/CCSSI_ELA%20Standards.pdf.

2 See Sheila Byrd Carmichael, Gabrielle Martino, and W. Stephen Wilson, *Review of the Draft K-12 Common Core Standards* (Washington, D.C.: Thomas B. Fordham Institute, 2010), http://www.edexcellence.net/doc/20100323_CommonCoreReview.pdf.

Common Core • Mathematics

DOCUMENTS REVIEWED

Common Core State Standards for Mathematics. June 2, 2010.
Accessed from: http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf

Overview

The final version of the Common Core State Standards for math is exemplary in many ways. The expectations are generally well written and presented, and cover much mathematical content with both depth and rigor. But, though the content is generally sound, the standards are not particularly easy to read, and require careful attention on the part of the reader.

Clarity and Specificity:	2/3
Content and Rigor:	7/7
Total Score:	**9/10**

The development of arithmetic in elementary school is a primary focus of these standards and that content is thoroughly covered. The often-difficult subject of fractions is developed rigorously, with clear and careful guidance. The high school content is often excellent, though the presentation is disjointed and mathematical coherence suffers. In addition, the geometry standards represent a significant departure from traditional axiomatic Euclidean geometry and no replacement foundation is established.

Despite some weaknesses, the Common Core standards provide a solid framework for learning rigorous mathematics.

General Organization

The K-8 standards are organized into grade-specific content "domains" such as "Numbers and Operations—Fractions" and "Expressions and Equations." The domains are further divided into grade-specific topic "clusters," and the grade-level standards are listed within these topic clusters. Each grade includes an overview that describes the most important content for that year.

The high school standards follow a slightly different structure. First, they are organized into five "conceptual categories," such as "functions" and "algebra." Each category comes with an introduction to the mathematics covered in that category and the list of topics. The standards are then presented by topic, and more advanced standards ("that students should learn in order to take advanced courses such as calculus, advanced statistics, or discrete mathematics") are given a special label.

Finally, the standards are introduced with a set of eight overarching "Standards for Mathematical Practice," which are basically process standards and are intended to be integrated into the teaching of mathematics at all levels.

Clarity and Specificity

With some exceptions, the K-8 standards are well organized. While many states apply one set of strands or topics to all grade levels, the Common Core varies the content domains and topic clusters from grade to grade, which results in relatively few extraneous or overly inflated standards.

Many standards are clear and specific. In addition, they make frequent and exemplary use of examples to clarify intent, such as:

> Tell and write time in hours and half-hours using analog and digital clocks (grade 1)
>
> Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure (grade 4)

KSDE002008

> Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed? (grade 6)

Though the standards are not succinct, which detracts from the ease of reading, careful reading reveals that they are generally both literate and mathematically correct—a rare combination in standards. The following excessively specific standard illustrates this:

> Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps (grade 1)

Unfortunately, despite the inclusion of examples, some standards are not specific enough to determine the intent, and they are subject to quite a bit of interpretation on the part of the reader. For example:

> Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time (grade 6)

This dense standard is difficult to follow, and the example does not provide enough guidance to help the reader understand what, precisely, students should know and be able to do.

The high school standards, in particular, are often too broadly stated to interpret. For example:

> Define appropriate quantities for the purpose of descriptive modeling (high school)
>
> Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods (high school)
>
> Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant (high school)

The high school standards also manifest organizational problems. Grouping them into conceptual categories rather than by content artificially separates standards covering related topics. A clearer organizational structure would group such standards together in a mathematically coherent way.

The treatment of quadratics illustrates this problem. A complete and coherent analysis of quadratics provides students with experience with deep mathematics and exposure to many real-world applications, yet the basic analysis of quadratics is not placed in one coherent section. Instead, standards dealing with quadratics appear in three conceptual categories, and are even further separated by topic within the conceptual category of "algebra." An example of this is the following two closely related standards. The first is found under algebra, and the second under functions:

> Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form (algebra)
>
> Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context (functions)

This presentation is artificial; it would be improved by presenting these related standards together to reflect a rigorous development of theory and techniques.

The conceptual category of "functions" is particularly problematic. Ideally, linear functions and equations should be grouped together, and quadratic equations and functions should be grouped together. The Common Core, however, includes expectations that lump all of this content together. Take, for example, the following:

KSDE002009

> Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
>
> a. Graph linear and quadratic functions and show intercepts, maxima, and minima (functions)

In this standard, linear and quadratic functions are inappropriately lumped together and then maxima and minima are asked for, and this only applies to quadratics.

Clarity and Specificity Conclusion

The K-8 Common Core standards are generally well organized and presented. An excellent feature is their use of examples to clarify intent. However, the standards are often long and difficult to read, and some of them are not clear. In addition, in high school, the presentation is not always coherent. The standards "do not quite provide a complete guide to users" and therefore receive a Clarity and Specificity score of two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Standards should clearly articulate what is most important for students to learn. Many existing standards, however, fail to explicitly set priorities for the content, which leaves the reader with no guidance about which standards are most important. This is unfortunate, particularly in the elementary grades, because the early development of arithmetic is the foundation for future mathematics and should be distinguished as the most important content. For example, crucial standards about learning to add should take priority over predicting the result of playing with dice (or spinners). Unfortunately, both of these are frequently mentioned in the early grades and, in the absence of any guidance, appear to have equal priority.

Common Core avoids this widespread problem. It sets excellent priorities that are expressed both explicitly and implicitly. The grade-level overviews for elementary school offer explicit guidance by identifying the three or four areas that students are expected to master in each grade and making it clear that arithmetic is the most important topic in the early grades. This is further supported by the standards themselves, of which well over half deal with arithmetic. This prioritization of arithmetic, which provides the foundation for the subsequent study of mathematics, is exemplary.

Content Strengths

The standards have many strong features and cover a lot of rich mathematics. The K-8 standards are well presented and not overly numerous. In particular, and in marked contrast to many existing state standards, they are not overwhelmed with extraneous standards in the early grades. In addition, they are generally mathematically sound, and the content is usually presented coherently.

Arithmetic is well covered. Instant recall of the number facts is required for addition and multiplication, though, as noted below, not for corresponding subtraction and division facts. The capstone standards for whole-number arithmetic are stated clearly and unambiguously:

> Fluently add and subtract multi-digit whole numbers using the standard algorithm (grade 4)
>
> Fluently multiply multi-digit whole numbers using the standard algorithm (grade 5)
>
> Fluently divide multi-digit numbers using the standard algorithm (grade 6)

Properties of the arithmetic operations are well developed and covered thoughtfully.

Fractions are developed rigorously and with a great deal of specificity. (In fact, the excellent guidance included here would improve the presentation of fractions in most textbooks.) The often-confused concept of fractions as numbers is introduced early and clearly, as demonstrated by the third-grade topic, "Developing an understanding of fractions as numbers." The arithmetic of fractions is carefully developed using mathematical reasoning. For example, part of the sequence is:

> Understand a fraction as a number on the number line; represent fractions on a number line diagram
>
> a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line
>
> b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line (grade 3)
>
> Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4) (grade 4)
>
> Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd) (grade 5)

Fractions are considered as division, and the standards include multiplying fractions by whole numbers, and then by fractions. They also include dividing unit fractions by whole numbers and whole numbers by unit fractions, and then, finally, fractions by fractions. This careful and rigorous development is seldom seen in standards.

The standards develop place value quite well. Decimals are defined as special fractions and connected to place value. The goal of the operations is fluency with the standard algorithms for decimals.

Word problems are introduced early and appear throughout the standards, including multi-step problems. In the middle grades, the exemplary work with fractions and decimals is well utilized in the coverage of proportions, percents, rates, and ratios, which are covered with rigor and include many strong standards.

Area is begun nicely with:

> A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area (grade 3)
>
> Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths (grade 3)
>
> Apply the area and perimeter formulas for rectangles in real-world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor (grade 4)

The high school material, despite its sometimes incoherent presentation, is often strong. The coverage of linear equations, which begins in eighth grade, includes some rigorous standards. For instance, the Common Core standards expect students to know that slope is well-defined, a rarity among standards:

> Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b (grade 8)

Quadratic functions are well covered. For geometry, while there are some issues (discussed below), much of the content is well covered. Classical theorems of geometry are explicitly included *and* proven:

> Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point (high school)

The important skills of arithmetic operations with rational expressions are included among the high school algebra standards:

> Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions (high school)

In addition, the standards cover most STEM-ready topics, including trigonometric identities, series, exponential functions, and inverse trigonometric functions.

Content Weaknesses

The foundation of K-12 mathematics is whole-number arithmetic. The basic number facts are the building blocks for such arithmetic, and instant recall of these facts should be required. Students should not need to concern themselves with computing such facts as they attempt to master more difficult techniques. The Common Core standards require memorization for the addition and multiplication facts but there is no mention of the corresponding subtraction and division facts.

Despite the good beginning for area, no formulas are developed for triangles and parallelograms.

Linear equations are missing point-slope form and an explicit mention of being able to find the equation of a line from two points.

Polar coordinates are not in the standards except briefly in a subservient role for complex numbers under "number and quantity":

> Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number (high school)

High school geometry has very good coverage of content, and proofs are included throughout the standards. There is, however, no obvious foundation for geometry, in part because axioms and postulates are never mentioned. Instead, the standards approach geometry through transformations. Unfortunately, it takes a good deal of work in Euclidean geometry (based on axioms) to work with transformations.

Content and Rigor Conclusion

The Common Core standards cover nearly all the essential content with appropriate rigor. In the elementary grades, arithmetic is well prioritized and generally well developed. In high school, there are a few issues with both content and organization, but most of the essential content is covered including the STEM-ready material. The standards receive a Content and Rigor score of seven points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

Despite their imperfections, the Common Core mathematics standards are far superior to those now in place in many states, districts, and classrooms. They are ambitious and challenging for students and educators alike. Accompanied by a properly aligned, content-rich curriculum, they provide K-12 teachers with a sturdy instructional framework for this most fundamental of subjects.

KSDE002012

Alabama • English Language Arts

DOCUMENTS REVIEWED

Alabama Course of Study: English Language Arts Including Reading. 2007.
Accessed from: http://www.alsde.edu/html/sections/documents.asp?section=54&sort=2&footer=sections

Overview

The Alabama standards cover the critical ELA content and skills, including some essential skills that are often overlooked in state standards, such as vocabulary development, grammar, and the study of American literature. Unfortunately, while much of the essential content is included, the standards themselves could be more systematic and clearer in their detail and organization.

Clarity and Specificity:	1/3
Content and Rigor:	6/7
Total State Score:	**7/10**

(Common Core Grade: B+)

General Organization

The *Alabama Course of Study*, as the standards collectively are called, is organized by grade into the strands of Reading, Literature, Writing and Language, Research and Inquiry, and Oral and Visual Communication. Within each strand are standards, followed by bulleted lists of related concepts and skills. In some cases, these bullets are followed by examples. For example:

> Compose narrative texts using an introductory paragraph, specific time frames, clear sequencing of events, and a conclusion...
> - Using figurative language to enhance written text
>
> Examples: simile, onomatopoeia, metaphor, alliteration...(writing and language, grade 3)

Grade-level summaries precede the standards at each grade level.

Clarity and Specificity

The organization makes it difficult to track progression of content and skills across grades, and the format of overarching statements and bullets does not work well. In general, the overarching statements cover broad swatches of content and skills, while the bullets underneath only sometimes track directly to what appears above. For example, consider the following fifth-grade writing standard:

> Compose expository texts using an introductory paragraph that includes a main idea; supporting paragraphs with a minimum of three reasons, explanations, or steps in a process; and a conclusion.
> - Determining purpose and audience prior to writing
>
> Examples: purpose—writer addresses topic in correct mode;
> audience—writer uses appropriate tone
> - Demonstrating clarity and organization in a composition
> - Using appropriate transition words in a composition
> - Using appropriate prewriting strategies
>
> Examples: brainstorming, using graphic organizers

KSDE002013

- Composing persuasive texts, including a minimum of three reasons that support a stance or position
- Composing narrative texts using a definite time frame, a clear sequence of events, and a selected tone
  Examples: selected tone—sarcastic, humorous, respectful
- Composing descriptive texts using an introductory paragraph, sensory details, vivid language, and a conclusion
- While the focus here is ostensibly on expository texts, other types of writing are also referenced in the bullets, making it difficult to understand what the focus really is (grade 5)

In other places, the language is simply difficult to understand. One second-grade reading standard states, "Exhibit vocabulary skills, including explaining simple common antonyms and synonyms and using descriptive words." The standard itself is weak, exhorting the student as if by fiat to "exhibit vocabulary skills." This standard also needs to be bolstered with examples of how to create and strengthen vocabulary, rather than bullet points that are scattered in different directions, e.g., "responding to questions" and "recognizing possessive forms." Also, the meaning of the first-grade Reading standard, "recognizing words in the environment," is elusive. The *word* is not in the environment; its referent is.

In some cases, the standards are just confusing, as is often the case for the writing and language standards. Although much good content is ultimately addressed, it gets lost in organizational weaknesses. For example, the treatment of clauses is scattered across different grade levels and mixed with other writing skills, making it difficult to track a coherent progression.

For these reasons, the standards earn one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

Alabama's K-2 (primary) standards do a good job of covering the important elements of phonemic awareness and other early reading content and skills identified in the criteria. The elementary standards also address vocabulary development, although they could be improved by better emphasizing etymology and dictionary skills.

The Reading and Literature standards do a commendable job of calling out specific literary genres, elements, and devices. In addition, the standards include recommendations about the quality and complexity of reading by appending sample reading lists organized by genre and grade level. Finally, standards writers attempt to address American literature specifically in several places at the high school level, as in the following tenth-grade standard:

Compare literary components of various pre-twentieth-century American authors' styles.
- Identifying examples of differences in language usage among several authors
  Examples: Anne Bradstreet, Jonathan Edwards, Phillis Wheatley, Edgar Allan Poe, Henry David Thoreau (grade 10)

Although its treatment of American literature is a little sporadic, and included almost exclusively in grades 9-12, Alabama does much more than most states do to address this essential content at any level of detail.

Alabama's research strand is generally thorough and thoughtful; it includes references to all aspects of the research process, including proper citation and documentation of sources. The standards for Oral and Visual Communication include important content for recognizing propaganda and persuasive strategies, which are included among the standards for reading informational text as well.

Finally, throughout the grades, the Alabama Writing and Language standards address specific content regarding grammar and usage. They also address writing outcomes by genres appropriate to grade levels, although the characteristics of the genres are not always described systematically or distinctly, as noted under "Clarity and Specificity," above.

Content Weaknesses

The weaknesses in the Alabama standards are almost all attributable to problems with clarity and specificity, as discussed above, but a few instances of missing content or lack of prioritization also surface.

KSDE002014

In grade 2, for example, where it is laudable that the construction of a paragraph is included as content, the standard is stuffed with writing process standards—yet omits the importance of using supporting sentences:

Organize sentences into a paragraph to address a topic or tell a story.
- Sorting information using graphic organizers
- Generating a topic sentence and a concluding sentence in a paragraph
- Drafting a written piece, including an introductory paragraph and a concluding paragraph
- Editing for spelling, punctuation, capitalization, and sentence variety
- Publishing final draft
- Using descriptive, narrative, and expository modes of writing
- Writing free verse poetry to express ideas (grade 2)

Such a standard also makes it hard to tell where Alabama's priorities lie; many standards exhibit the same characteristic.

The Reading standards, for example, appear to place a heavy emphasis on metacognitive reading strategies. In grade 3, two voluminous sets of reading strategy standards are included under Reading, and much of the content and skills there seem heavy handed and repetitious as well. The standards writers appear not to have made tough choices about what to prioritize.

Overall, the content here is good, but some missing content and the lack of prioritization yield six points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

Alabama's standards addressing specific literary genres, elements, and devices are generally clearer and more detailed than those in the Common Core. In addition, the standards place a greater emphasis on the study of American literature throughout high school, whereas Common Core mentions it just once, in eleventh grade.

On the other hand, Common Core's standards are generally clearer and more specific than those of Alabama. They also place no emphasis on unmeasurable reading comprehension strategies, which are unnecessarily prioritized among Alabama's reading standards. In order to provide clearer and more explicit guidance about the quality and complexity of reading and writing that is expected of students, Common Core includes both sample student writing and a helpful list of exemplar texts. Such enhancements would significantly improve Alabama's standards.

KSDE002015

Alabama • Mathematics

DOCUMENTS REVIEWED[1]

Alabama Course of Study: Mathematics. July 2003.
Accessed from: http://www.alsde.edu/html/sections/documents.asp?section=54&sort=3&footer=sections

Overview

Alabama's 2003 standards are generally very strong. They are well presented and easy to read and understand. Their main drawback is their weak support for fundamental arithmetic skills. Note, however, the additional review, below, of Alabama's 2009 math standards.[2]

Clarity and Specificity:	3/3
Content and Rigor:	5/7
Total State Score:	**8/10**
(Common Core Grade: A-)	

General Organization

Alabama's K-8 standards are organized by grade level and content strands such as "algebra" and "geometry." Each grade is introduced with an overview, but these provide little illumination of the mathematics included. The grade-level standards do, however, frequently include bulleted lists that delineate more specific expectations within the standard.

The high school standards are unusually structured. They are organized by course, but the content strands (some of which are also course names) are used to subdivide the standards within the course. For example, the geometry course has a strand called geometry, but also strands for algebra and for data analysis. This structure makes for a disjointed presentation.

Clarity and Specificity

The K-8 standards are well organized and easy to read. There are not too many for each grade, and they are often succinctly stated. They generally give solid guidance about what students should know and be able to do, and some include helpful sample problems to clarify expectations.

As noted above, the high school courses are further divided by strand. This sometimes detracts from their clarity, both by artificially separating related content and by including extraneous content (explained below).

The standards are generally easy to understand and exceptionally clear and specific, despite the organizational flaws in high school. They earn three points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Though Alabama does not explicitly prioritize standards within the document, priorities are implicitly set by the number of them devoted to critical content. Using this as a guide, Alabama prioritizes content quite well. The standards are not excessive in number, and the elementary grades devote a near majority of the standards to the crucial development of arithmetic.

Content Strengths

High school content is generally well covered, including STEM-ready standards, such as:

KSDE002016

> Determining the maximum or minimum values of quadratic functions both graphically and algebraically (Algebra II)
>
> Determining the amplitude, period, phase shift, domain, and range of trigonometric functions and their inverses (Pre-Calculus)

As noted above, arithmetic is well prioritized and reasonably well covered. In particular, the standards include standards addressing place value for decimals, such as:

> Determining the place value of a digit in a whole number through the hundred-thousands and in a decimal to the hundredths (grade 4)

The inclusion of place value is important but rare.

Finally, the state avoids some common pitfalls by requiring students to develop computational fluency without the use of technology.

Content Weaknesses

A few important shortcomings appear mainly in the area of arithmetic. Instant recall of number facts is missing, replaced with:

> Demonstrating computational fluency for basic addition and subtraction facts with sums through 18 and difference with minuends through 18, using horizontal and vertical forms (grade 2)
>
> Demonstrating computational fluency in multiplication and division fact families through 12 (grade 4)

These are appropriate preliminary standards supporting the goal of mastery of number facts, but they are not sufficient. Students must know these facts with automaticity and not have to stop and compute them each time they see them.

The capstone standard for whole-number arithmetic is:

> Demonstrating computational fluency with addition, subtraction, multiplication, and division of whole numbers (grade 5)

While this is a desirable standard, a rigorous treatment of it would include the standard algorithms, which are not mentioned at all in Alabama's standards. This omission could result in arbitrary computational techniques, and students without true mastery of whole-number manipulation are at a serious disadvantage as they move on to more difficult topics.

The development of fraction arithmetic is similarly lacking in specificity. While fluency with the arithmetic of fractions is a clearly stated goal, the standards do not offer a clear path to such mastery. The culminating standard for fraction arithmetic is:

> Formulating algorithms using basic operations on fractions and decimals
> - Example: [D]determin[e] a systematic set of steps that can be used to divide fractions (grade 6)

There is no further elaboration or example problems accompanying this standard and, as stated, the algorithms to be formulated are left to student discretion. This potentially leaves students with only their own methods to perform arithmetic rather than requiring them to master efficient and appropriate techniques.

In high school, algebra is generally well covered, including STEM material, though some of the foundational material for lines and quadratic equations is missing. The Geometry course is missing the basic vocabulary of axioms and proofs for Euclidean geometry and some of the standard statements and proofs of geometry are missing.

As noted earlier, the inclusion of strands within the high school courses results in some unfortunate standards. One such example is this standard in the data analysis and probability strand for the geometry course:

> Analyze sets of data from geometric contexts to determine what, if any, relationships exist.
> - Example :Collect data and create a scatterplot comparing the perimeter and area of various rectangles. Determine whether a line of best fit can be drawn (Geometry)

KSDE002017

This standard is extraneous in a geometry class, and the example asks a meaningless mathematical question: a line of best fit will always exist for a scatterplot, but defining "best fit" and producing the equation for a line of best fit is college-level mathematics.

Overall, Alabama's standards cover much content well, despite some weakness in high school geometry. The chief problem is with the development of arithmetic. Given the overall simplicity and clarity of these standards, it is unfortunate that instant recall and the standard algorithms are not explicitly required. These "important shortcomings" (see *Common Grading Metric*, Appendix A) result in a score of five points out of seven for Content and Rigor.

The Bottom Line

With some minor differences, Common Core and Alabama both cover the essential content for a rigorous, K-12 mathematics program. Alabama's standards are briefly stated and usually clear, making them easier to read and follow than Common Core. In addition, the high school content is organized so that standards addressing specific topics, such as quadratic functions, are grouped together in a mathematically coherent way. The organization of the Common Core is more difficult to navigate, in part because standards dealing with related topics sometimes appear separately rather than together.

The chief weakness in Alabama's standards stems from the lack of specific content expectations in the development of arithmetic. Common Core provides admirable focus and explicitly requires standard methods and procedures, enhancements that would benefit Alabama's standards.

Alabama 2003 Standards and Updated 2009 Standards Comparison

Introduction

The Fordham team began to review math and ELA standards early in 2009. At the time, the 2003 Alabama standards, reviewed in detail above, were the most recently adopted—and official—documents. Since that time, however, Alabama has adopted new mathematics standards.

Seeking to provide state officials with as much information as possible as they weigh the important decision about whether or not to adopt the Common Core, our content experts have also reviewed the updated 2009 standards. Below is a summary of the differences between the 2003 and 2009 versions.

DOCUMENTS COMPARED

Alabama Course of Study: Mathematics. July 2003.
Accessed from: http://www.alsde.edu/html/sections/documents.asp?section=54&sort=3&footer=sections

—COMPARED TO—

2009 Mathematics Course of Study Adopted Draft. 2009.
Accessed from: http://www.alsde.edu/html/sections/doc_download.asp?section=54&id=12208&sort=21

Overview

The new Alabama mathematics standards include several improvements. Many standards have been revised to make them clearer and more readable. In some cases, the content itself has improved.

More importantly, the state has made significant changes in the development of arithmetic. Recall these expectations about basic number facts from the 2003 standards:

> Demonstrating computational fluency for basic addition and subtraction facts with sums through 18 and difference with minuends through 18, using horizontal and vertical forms (grade 2)
>
> Demonstrating computational fluency in multiplication and division fact families through 12 (grade 4)

The 2009 standards replace these with the much stronger:

> Demonstrating computational fluency, including quick recall, of addition and subtraction facts with sums through 20 and differences with minuends through 20 (grade 2)
>
> Demonstrate computational fluency, including quick recall, of multiplication facts through 12 x 12 and division facts with divisors and quotients through 12 (grade 3)

Although those standards are much improved, others appear inconsistent with them. In grade 4, they abandon recall and revert back to "computation strategies" with:

> Demonstrating computational fluency in multiplication and division facts with products through 144 and quotients with dividends through 144 using horizontal and vertical forms
>
> • Example: [U]tiliz[e] a variety of mental computation strategies to complete one hundred basic multiplication and division facts with 80 percent accuracy within a five-minute time limit (grade 4)

In addition, standard algorithms are still not required. While the introduction claims they are included in the standards, they are not.

The Bottom Line

The changes made in the updated 2009 Alabama math standards are a mixed bag. While some standards have improved, too many of the original content gaps remain. In addition, some of the changes have introduced inconsistencies that make the progression of content and rigor confusing and difficult to follow. Thus, our final grade of the Alabama standards has not changed.

1 In this 2010 review, Fordham reviewed the same standards document as we did in our previous evaluation, the *State of State Math Standards 2005*. However, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Through this new lens, Alabama's math grade improved from a B in 2005 to a B-plus in 2010. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=338&pubsubid=1143%1143.

2 On March 10, 2010—after Fordham had reviewed Alabama's math standards—the state adopted its 2009 *Alabama Mathematics Course of Study*, replacing the 2003 version reviewed. To ensure reliability, and to better inform Alabama state officials, we provide a comparison of the 2003 standards to the 2009 version, also in this review.

Alaska • English Language Arts

DOCUMENTS REVIEWED

Content and Performance Standards for Alaska Students. 2006.
Accessed from: http://www.eed.state.ak.us/standards/pdf/standards.pdf

Overview

The Alaska standards cover some important content and skills, but gaps exist, and the language is often unclear and repetitive, making prioritization difficult. The format and complex numbering system also make the document nearly impossible to follow. Still, the most egregious problem is that no expectations are included at all for grades 11 and 12. This means that Alaska fails to present college and career-ready standards. Further, listening and speaking standards are completely missing.

Clarity and Specificity:	1/3
Content and Rigor:	1/7
Total State Score:	**2/10**
(Common Core Grade: B+)	

General Organization

Alaska's ELA document is prefaced by a two-page list of "content standards" which are far-reaching statements not organized by grade level. For example, one declares that "a student should be a competent and thoughtful reader, listener, and viewer of literature, technical materials, and a variety of other information." This laudable list is aligned with up to eight sub-standards that are not much more detailed than their "parent" standard. The document also includes forty-two performance standards/grade-level expectations (PSGLEs) that are organized first by grade span, then by grade level. The link between the content standards and the PSGLEs is tenuous at best. The latter are cross-referenced to the former yet sometimes bear little relationship to one another.

Finally, the individual PSGLEs are repeated across grades and customized at each grade level. For instance, one PSGLE reads "The student reads text aloud." At grade 3, this becomes "The student reads text aloud by: Reading orally with rhythm, flow, and expression showing understanding of punctuation and other conventions of print." And in grade 7, it is "The student reads text aloud by: Orally interpreting short stories, poetry, and drama to an audience." In short, though the organization sometimes makes sense, it is far more convoluted than it needs to be.

Clarity and Specificity

In almost every strand, Alaska's ELA standards are dense and vague, using far more words than necessary to convey expectations, and yet they manage to overlook important content. Then these dense, vague standards are repeated across grade levels. Consider this reading standard repeated across grades 7-10:

> The student connects themes by: Making thematic connections between a variety of texts and relating these themes to personal experiences, experiences of others, prior knowledge, and the broader world of ideas (grades 7-10)

Such expectations make it very difficult to determine what students are actually responsible for producing or mastering. The state earns a score of one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Alaska's standards cover early reading and reading comprehension well, but the coverage of subsequent reading and writing content and skills is sporadic throughout the grades. No standards are provided for listening and speaking. Most

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importantly—and mysteriously—no standards appear at all for grades 11 and 12, obviously making it impossible to know what is expected of students in those grades.

Content Strengths

The K-2 standards for reading acquisition are detailed, specific, and rigorous. They address all areas prioritized in the *ELA Content-Specific Criteria* (see Appendix A). Vocabulary development is good, including some etymology.

Content Weaknesses

In many strands, despite volume, important content goes missing. There are many broadly worded expectations in third through tenth grade regarding the study of literature from diverse cultures, for example, but no expectations for the study of American literature. The standards do not define the quality and complexity of reading through the use of reading lists or other exemplars. For example, it is apparently sufficient for students in early grades to "dramatize" a story rather than to retell it, which would be more rigorous. Standards for making inferences are included for grades 3-6, but not for grades 7-10.

No standards for speaking and listening are included. Expectations for oral presentations (included under a standard for "reading texts aloud") are not defined in any detail by genre or otherwise, as in the following eighth-grade standard:

> Giving an oral, formal presentation (e.g., research reports, literature responses) (grade 8)

No other detailed references are made to the research process or research products except general standards about "giving credit for others' ideas" when writing.

Students are not expected to write a complete paragraph until fourth grade, nor multi-paragraph essays until sixth grade. Specific genres are not addressed in detail; rather, they are mentioned superficially as part of a string of possible writing products. For example, consider the following "genre-free" standard:

> The student writes about a topic.
> Write a coherent composition that includes a thesis statement, supporting evidence, and a conclusion.
> Write a coherent composition with a thesis statement that is supported with evidence, well-developed paragraphs, transitions, and a conclusion (grades 7-10)

More detail is provided under these general standards, but genres are never mentioned. Later, through the writing for a variety of audiences and purposes, standards mention genres, expectations are vague:

> The student writes for a variety of purposes and audiences by:
> - Writing a narrative using elements of fiction to advance the plot
> - Writing in a variety of nonfiction forms (e.g., letter, report, biography, autobiography, and/or essay) to inform, describe, or persuade
> - Writing expressively when producing or responding to texts (e.g., poetry, journals, editorials, drama, reflective essays, and/or newsletters)
> - Using research-based information and/or analysis in research projects or extended reports (grade 9)

Too many vague standards here mean that both students and teachers are left to define high expectations on their own. It would be better to organize the standards by genre and offer specific details regarding each of the products at various grades.

The grammar standards are superficial and overlook much important content. This seventh-grade standard is typical:

> Applying rules of usage (i.e., verb tense, subject/verb agreement, possessives, pronouns, adjectives, adverbs, and sentence structure) (grade 7)

From fourth grade on, Alaska requires its students to write "simple and complex sentences," but never mentions compound sentences. Although there are references to "using commas correctly," there are none for the complexities of comma usage in compound and complex sentences.

KSDE002021

It is hard to imagine what eleventh- and twelfth-grade standards would look like, based on what we see for K-10. That said, omitting them altogether means that Alaska is missing an opportunity to describe more complex literary and informational text analysis, as well as more sophisticated expository writing standards, such as persuasive writing. Therefore, The Last Frontier earns one point out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of F, Alaska's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Last Frontier State has in place today.

KSDE002022

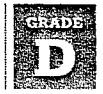
Alaska • Mathematics

DOCUMENTS REVIEWED

Content and Performance Standards for Alaska Students. Revised March 2006.
Accessed from: http://www.eed.state.ak.us/standards/pdf/standards.pdf

Overview

Alaska's standards are poorly organized and difficult to read. Grade-level standards are only provided through tenth grade, and important content for high school mathematics is largely missing.



Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(*Common Core Grade:* A-)	

General Organization

Alaska's standards are defined across five broad standards—a content standard and four integrated process standards. The content standard is divided into seven strands, such as "numeration" and "functions and relationships." The strands are first presented with grade-banded overall Performance Standards, and then each strand is further subdivided into topics broken into grade-level expectations for grades 3-10. These are presented in a chart, and the grade-level expectations for a topic all begin with the same phrase, or stem.

Clarity and Specificity

The presentation of the standards is bulky and convoluted. The organization of grade-level material around repeated phrase stems results in many standards that are both awkward and unclear. For example, the standard on basic number facts for multiplication in the fourth grade, with the stem indicated in bold, is unnecessarily wordy:

> **The student accurately solves problems (including real-world situations) by** recalling basic multiplication facts, products to 100, and corresponding division facts efficiently (grade 4) (emphasis original)

This organizational pattern affects the clarity of all the standards. In grades 3-7, students are expected both to estimate and measure various quantities with greater accuracy each year. This results in a completely unreasonable culminating standard on estimation in seventh grade:

> **The student demonstrates understanding of measurable attributes by** estimating length to the nearest sixteenth of an inch or millimeter, volume to the nearest cubic centimeter or milliliter, or angle to the nearest 30 degrees (grade 7) (emphasis original)

The grade-banded Performance Standards are not hampered by the stem structure pattern of grade-level expectations; as such, they are often clearer. For example, the Performance Standard for multiplication facts is:

> Recall and use basic multiplication and division facts orally and with paper and pencil and without a calculator (grades 4-6)

Differences between the Performance Standards and the grade-level expectations are usually not significant, but in the worst case, they are contradictory. For example, a Performance Standard for the grade band 9-10 states that students should be able to "add, subtract, and multiply polynomials"; but the grade-level expectations—which should be more specific—make no mention of polynomials at all.

These standards are difficult to read, inconsistent, and confusing. They are not a clear "guide for users" and earn one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

KSDE002023

Content and Rigor

Content Priorities

Alaska does not offer explicit guidance as to which content is the most important. In the elementary grades, arithmetic standards comprise slightly more than one-third of the whole. This relatively small presence of arithmetic does not give adequate priority to arithmetic.

Content Strengths

Alaska does cover some content well. For example, students are expected to recall the basic number facts, and conversions within measurement systems are explicitly documented.

Content Weaknesses

Alaska's arithmetic standards beg improvement. The development of whole-number arithmetic does not describe appropriate levels of mastery and is missing standard algorithms overall. For example, some standards require that students "accurately solve problems" in arithmetic, but the methods are not specified, and the standards make no mention of fluency. The development of the arithmetic of fractions is also weak. For example, multiplying fractions is jumbled among many other computation specifications:

> **The student accurately solves problems (including real-world situations) by** multiplying whole numbers by two- or three-digit numbers, dividing three-digit numbers by one- or two-digit numbers, or multiplying or dividing decimals that represent money by whole numbers, or multiplying or dividing proper fractions (grade 6) (emphasis original)

Other weak areas include the development of rates, ratios, and formulas for areas. In addition, calculators are explicitly and unnecessarily inserted into the standards in all grades, even appearing in a stem phrase for estimation for grades 1-6:

> The student determines reasonable answers to real-life situations, paper/pencil computations, or calculator results by... (grades 1-6)

Calculator inclusion is more egregious throughout the high school standards. In the following grade band 9-10 Performance Standard, students are asked to use calculators to graph even simple functions that college-bound students should be able to graph without the use of a calculator:

> Identify, graph, and describe the graphs of basic families of functions including linear, absolute value, quadratic, and exponential using a graphing calculator (grades 9-10)

The high school standards are missing much essential content. Proofs in geometry are not mentioned explicitly except in the process standards. High school algebra receives minimal attention. Some basics on linear equations are developed, but the standards barely touch upon theory and techniques for quadratic equations—though quadratic equations do appear in a few awkward standards, such as:

> The student demonstrates conceptual understanding of functions, patterns, or sequences...including those represented in real-world situations by describing or extending patterns (families of functions: linear, quadratic, absolute value) up to the nth term, represented in tables, sequences, graphs, or in problem situations (grades 9-10)
>
> The student demonstrates algebraic thinking by...selecting and using the quadratic formula to solve problems (grade 10)

This vague treatment offers little guidance on developing the theory of quadratics. These standards make no mention of complex roots, factoring, finding maximum and minimum values, or completing the square. As discussed above, polynomials do not appear in the grade-level standards. Many STEM-ready topics also go unmentioned, including logarithms and the graphs of trigonometric functions.

Alaska does not provide standards for eleventh and twelfth grades, and the material provided for ninth and tenth grades misses much of the essential content for high school. The standards include some treatment of arithmetic, but arithmetic is not prioritized or rigorously developed. These serious shortcomings in the standards result in a Content and Rigor score of three points out of seven. (See *Common Grading Metric*, Appendix A.)

KSDE002024

The Bottom Line

With their grade of D, Alaska's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Last Frontier State has in place today.

KSDE002025

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Arizona • English Language Arts

DOCUMENTS REVIEWED[1]

Reading Standard Articulated by Grade Level. March 31, 2003.
Accessed from: http://www.ade.state.az.us/standards/language-arts/

Writing Standard Articulated by Grade Level. June 28, 2004.
Accessed from: http://www.ade.state.az.us/standards/language-arts/

Standard 3: Listening/Speaking. July 8, 1996.
Accessed from: http://www.ade.state.az.us/standards/language-arts/

Standard 4: Viewing/Presenting. July 8, 1996.
Accessed from: http://www.ade.state.az.us/standards/language-arts/

Overview

The Arizona ELA standards are well written, specific, and thorough, and the organization is user-friendly. Some areas need improvement, but the overall coverage of content and skills is quite good.

Clarity and Specificity:	2/3
Content and Rigor:	5/7
Total State Score:	**7/10**
(Common Core Grade: B+)	

General Organization

Arizona's ELA grade-by-grade standards are divided into four areas: Reading, Writing, Listening/Speaking, and Viewing/Presenting. In Reading and Writing, the standards are broken into "strands," then into "concepts," and then into "performance objectives." Each layer provides an additional level of detail that further defines student expectations. Grade-by-grade standards are also presented all together in one separate chart that shows how the content and skills build upon one another in successive years.

The Listening/Speaking and Viewing/Presenting standards have been retained from an earlier (1996) iteration of the state's standards. They are organized into grade spans: K, 1-3, 4-8, and 9-12. In short, the organization of the standards is clear and user-friendly.

Clarity and Specificity

The Arizona standards are mostly clear and specific. Repetition of standards within some strands, however, weakens the overall effectiveness of the document, as does some unclear language.

In Writing, especially, standards repeat sometimes verbatim at many different grade levels, such as this one which appears in grades 6, 7, and 8:

> Develop a sufficient explanation or exploration of the topic (grades 6-8)

This standard, which is vague to begin with, should look different at grade 6 than at grade 8, and the document should provide more specific guidance, perhaps by genre. Including annotated samples of acceptable student writing would also help to illustrate the content and quality of student writing expectations.

Similarly vague standards appear from time to time in the Arizona framework. For example, consider the following fifth-grade reading expectation:

> Describe the historical and cultural aspects found in cross-cultural works of literature (grade 5)

KSDE002026

Or this "viewing and presenting" standard from grade span 4–8:

> Compare, contrast and establish criteria to evaluate visual media for purpose and effectiveness (grades 4-8)

This Kindergarten reading comprehension standard is confusing:

> Determine whether a literary selection, that is heard, is realistic or fantasy (Kindergarten)

Realism and fantasy are not opposites, nor are they mutually exclusive. Aspects of fantasy can in fact be realistic. This false dichotomy is repeated in various forms in higher grades. That said, such linguistic shortcomings are easily fixed.

Since the standards are "somewhat lacking in coherence, clarity, or organization" (*see Common Grading Metric*, Appendix A), they receive two points out of three for Clarity and Specificity.

Content and Rigor

Content Strengths

Arizona's Reading standards are generally strong. The early reading standards cover all areas identified in the *English Language Arts Content-Specific Criteria* (see Appendix A): phonemic awareness, phonics, fluency, and comprehension. Students must "decode words, using knowledge of phonics, syllabication, and word parts." Context clues are not emphasized in the early grades.

Arizona addresses vocabulary systematically and its development starts early, with word categories in Kindergarten, contractions and compound words in grade 1, prefixes and suffixes in grade 2, and dictionary use in grade 3. As the standards unfold, the vocabulary thread progresses with rigor through high school and even includes a welcome dose of etymology—in which students are to "[d]raw inferences about the meaning of new vocabulary, based on knowledge of linguistic roots and affixes (e.g., Latin, Greek, Anglo-Saxon)."

Literary and informational texts are treated distinctly, and both categories are addressed thoroughly. Structures and elements of both literary and non-literary text types are addressed. Informational text is broken into three categories (expository, functional, and persuasive texts), making it easy to understand how reading strategies vary across them. The standards for informational text progress logically. They include specific standards related to arguments, which require students, for example, to cite important aspects of reasoning and rhetorical techniques.

The Arizona Writing standards are also thorough. They address the writing process, "elements" of good writing (including grammar), and writing "applications," which expect students to understand how genres of writing (expressive, expository, persuasive, etc.) manifest in various products (e.g., speech, editorial, business letter, poem, etc.). Research is also systematically addressed, and the standards are cross-referenced with the standards for informational text, which allows reinforcement of these two related sets of expectations.

Content Weaknesses

Arizona's Reading standards address American literature and American literary heritage only in the eleventh grade (in strand 2, "Comprehending Literary Text"):

> Analyze culturally or historically significant literary works of American literature that reflect our major literary periods and traditions (strand 2, grade 11)

This examination could be strengthened by similar focus on American literature in other grades. Furthermore, students and teachers would benefit if the state were to define the quality and complexity of reading expected at each grade level via the use of reading lists.

The Writing standards, while commendable, attempt to do too much. Students are unnecessarily required to write in all genres at all grades. Students should not, for instance, be required to write personal narratives in every grade level. Some prioritization of writing genres by grade level is needed.

Arizona's standards for Listening/Speaking, organized by grade span only, are missing essential standards for one-to-one and group discussions. Revising the standards to include grade-specific expectations would likely force incorporation of some of this missing content. More thorough expectations for formal oral presentations would also be welcome.

KSDE002027

The standards for Viewing/Presenting read like the "media" standards in many states, though they are outdated by now, having been written in 1996. For example:

> Plan, organize, develop, produce and evaluate an effective multimedia presentation, using tools such as charts, photographs, maps, tables, posters, transparencies, slides and electronic media (grades 9-12)

Surely, today's multimedia presentations should include more Internet and video footage, and fewer posters and transparencies! Updating these standards would be advisable, as would delineating them by grade. Particular attention should be paid to cross-referencing them with the research strand, as it is done in the writing standards.

Though most of Arizona's standards are strong, some crucial content is missing and some is covered in a manner that is less than satisfactory (see *Common Grading Metric*, Appendix A); thus they receive five points out of seven for Content and Rigor.

The Bottom Line

Arizona treats literary and non-literary texts distinctly and thoroughly and in more detail than the Common Core. Genres, sub-genres, and the characteristics of both literary and non-literary text types are addressed. Informational text is broken into three categories, making it easy to understand how reading strategies vary among them.

On the other hand, the Common Core standards more thoroughly address listening and speaking skills, and they include samples of student writing to clarify grade- and genre-specific writing expectations. Common Core also includes a list specifying the quality and complexity of student reading as well as sample student writing. Such enhancements would significantly improve Arizona's standards.

1 Arizona's academic standards have not changed since Fordham's last evaluation, the *State of State English Standards 2005*. However, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Even through this new lens, Arizona's ELA grade remained a B. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=337&pubsubid=1032%1032.

KSDE002028

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Arizona • Mathematics

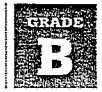
DOCUMENTS REVIEWED

Arizona Academic Content Standards: Mathematics. June 24, 2008. Accessed from: http://www.ade.state.az.us/standards/math/Articulated08/MathematicsStandard2008.pdf.

Mathematics Standards Articulated by Grade Level, with Explanations and Examples. June 24, 2008. Accessed from: http://www.ade.state.az.us/standards/math/Articulated08/

Overview

Arizona's standards are generally strong. They are well presented and often include sample problems to enhance clarity. But a serious weakness in these standards is their coverage of arithmetic, which is neither prioritized nor appropriately culminated.



Clarity and Specificity:	3/3
Content and Rigor:	4/7
Total State Score:	**7/10**
(Common Core Grade: A-)	

General Organization

Arizona's standards are divided into five content strands, such as "Geometry and Measurement." Each strand is subdivided into topics called "Major Concepts," and then further separated into grade-level "performance objectives." These performance objectives are what we refer to as standards in this analysis.

One of the five strands, "Structure and Logic," is actually a process strand that is primarily focused on skills, such as problem-solving and reasoning. The skills outlined in this strand are meant to be integrated across all content strands.

The high school standards follow the same organization but combine grades 9-10 and 11-12.

Clarity and Specificity

The standards are well presented: They are generally concise, comprehensible, and easy to read. The "Explanations and Examples" are often quite specific and serve to clarify the standards. The use of sample problems is an excellent feature, demonstrating for the reader exactly what kinds of problems students are expected to be able to do. For example, the following fifth-grade standard is broadly stated and the intent is subject to interpretation:

> Use ratios and unit rates to model, describe and extend problems in context (grade 5)

But the explanatory material for this standard includes sample problems, which helps reveal what a student is expected to know:

> If you can travel 20 miles in 4 hours on a bicycle, what is the unit rate (the distance you can travel in 1 hour)? (grade 5)

While the standards are generally clear, the explanatory material is not always specific enough to provide sufficient clarification. For example, consider the third-grade standard:

> Demonstrate fluency of multiplication and division facts through 10 (grade 3)

It is not clear if fluency means fluency with instant recall or fluency with computation. The distinction is important, as students who do not have instant recall will be at a serious disadvantage as they continue learning multiplication. The additional explanatory material could have served to clarify the intent of the standard, but it is, unfortunately, equally unclear:

KSDE002029

> Fact fluency includes working with facts flexibly, accurately, and efficiently. This means that students have quick recall using strategies that are efficient (grade 3)

It is not clear from this if students are required to memorize basic facts. The second sentence suggests memory by the use of the word "recall." However, the need to use "strategies that are efficient" in order to achieve "quick recall" is confusing and undermines any assumption of memorization.

Generally, the standards are clear, and the use of examples is an excellent feature that usually serves to clarify any ambiguity in the statements. Arizona receives three points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Arizona does not provide any guidance as to priorities. Worse, each grade has many standards, some of which are not important from a mathematical perspective. For example, from grade 2 through high school, one of the Major Concepts is "Vertex-Edge Graphs"; many standards are devoted to this topic, such as in third grade:

> Solve conflict problems by constructing and coloring vertex-edge graphs (grade 3)

This atypical and unimportant content is apparently equally weighted with crucial content such as mastery of arithmetic. More generally, Arizona fails to prioritize arithmetic—only one-third of the elementary school standards are devoted to it.

Content Strengths

The standards are often very strong. They cover some of the basic properties of arithmetic well, including commutativity, associativity, and distributivity. They also explicitly address the inverse relationship of addition and subtraction and of multiplication and division. The geometry standards include the development of formulas for areas, and the development of fractions is covered in some depth, including the use of the number line.

The high school standards cover many topics with both depth and rigor. Much of the STEM-ready content is covered.

Content Weaknesses

The development of arithmetic is Arizona standards' main weakness. There are many good culminating standards for arithmetic, fluency is mentioned in the explanatory material, and sample problems demonstrate student arithmetic proficiencies. However, the development of arithmetic is not adequately specific. To illuminate this shortcoming, the discussion below traces the development of whole-number multiplication.

As discussed above, instant recall of basic multiplication facts is not explicit. There are some desirable standards on multiplication, such as the fifth-grade capstone standard for whole-number multiplication:

> Multiply multi-digit whole numbers (grade 5)

A rigorous treatment of this standard requires fluency with the standard algorithm. However, the explanatory material does not specify any methods. The preceding fourth-grade standard on multiplication is:

> Use multiple strategies to multiply whole numbers: two-digit by two-digit and multi-digit by one digit (grade 4)

This standard could appropriately lead to mastery of the standard algorithm. However, the explanatory material for this standard includes four separate ways to multiply whole numbers, none of which is the standard algorithm. This suggests both a lack of exposure to the standard algorithm and a lack of expectation that a student must learn it.

The development of fraction arithmetic is problematic as well. Some standards ask that students manipulate fractions, but methodology is not specified. Common denominators are not mentioned in the standards, though they are mentioned in the explanatory material.

Arizona's standards have strong high school content, but do not properly develop or prioritize arithmetic. These "critical shortcomings" result in a Content and Rigor score of four points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of B, Arizona's mathematics standards are decent. Still, those developed by the Common Core State Standards Initiative earn an impressive A-minus, and thus are superior to what the Grand Canyon State has in place today.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Arkansas • English Language Arts

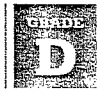
DOCUMENTS REVIEWED

English Language Arts Curriculum Framework: K-8. 2003.
Accessed from: http://www.arkansased.org/educators/curriculum/frameworks.html#language

English Language Arts Curriculum Framework: 9-12. 2006.
Accessed from: http://www.arkansased.org/educators/curriculum/frameworks.html#language

Overview

The Arkansas standards include some good content but lack specificity and, in many strands, a clear progression, making it hard to determine real levels of rigor.



Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(Common Core Grade: B+)	

General Organization

The Arkansas standards are divided into four strands: Oral and Visual Communications, Writing, Reading, and Inquiring/Researching. Each strand is broken into standards and sub-standards that are common across all grades. For example, the reading strand is divided into four standards—foundations of reading; comprehension; variety of texts; and vocabulary, word study, and fluency—and each standard is divided into two to seven sub-standards.

Finally, grade-level expectations are provided for each sub-standard for every grade K-12.

Clarity and Specificity

The language of the Arkansas standards is at times bloated, vague, and/or repetitive. For example:

> Discuss poetry to determine meaning (grade 4)
> Demonstrate voice in informal and formal writing (grade 9)

How would a teacher hold students accountable for such unmeasurable standards?

In some places, the language is politically tendentious at the expense of real content, such as:

> Determine the author's purpose by connecting own background knowledge, including personal experience and perspectives shaped by age, gender, class, or national origin (grade 9)

Such standards make for unreasonable reading expectations, and the experience-centric nature of them reduces their rigor.

Finally, due in part to the vague wording of the standards, demanding grade-level progressions are not always evident, as in the following sequence under the standard for "Vocabulary, Word Study, and Fluency":

> Refine the meanings of words through repeated encounters (grade 1)
> Self-monitor reading and self-correct (grade 2)
> Recognize the relationship between a pronoun and its referent (grade 3)
> Explain words with multiple meanings (grade 4)

KSDE002032

The combination of vaguely worded, repetitive, and jargon-filled standards leaves Arkansas teachers, curriculum developers, and assessment writers with limited guidance about what students are expected to know and be able to do at any given point in their schooling. As such, the standards earn one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The early-reading standards address reading fluency and comprehension skills. They include specific targets for accuracy and number of words per minute, both of which are laudable skills.

Some high school research standards are clear and rigorous, such as:

> Compare the credibility of authors and reliability of sources for strengths and limitations (e.g., analyze two or more texts addressing the same topic to determine how authors reach similar or different conclusions) (grade 11)

Noteworthy "logic" expectations also exist in the reading comprehension standards, such as the following grade 10 standard:

> Use logic to examine fallacies to determine purpose in both inductive and deductive arguments (grade 10)

Finally, an admirable attempt is made to include standards for English language conventions.

Content Weaknesses

The islands of good content in Arkansas's standards (described above) are surrounded by a sea of disjointed and unclear expectations in almost every strand.

The grade-level expectations provided in the "Utilizing Concepts about Print" and "Developing Phonological Awareness" sub-standards lack sufficient guidance to ensure that students will learn essential early-reading content. For example:

> Apply knowledge of letter and word (Kindergarten)
> Apply knowledge of first and last (i.e., letter, sounds, words, etc.) (Kindergarten)

Furthermore, the expectations provided in other reading sub-standards overemphasize unmeasurable comprehension strategies, such as "Using Prior Knowledge to Make Meaning" and "Using Connections to Make Meaning." The following is an example from grade 4:

> Form mental pictures reflecting vivid details and personal connections with the text (grade 4)

Finally, in a category called "Meaning-Based Word Recognition," students in grades 3 and 4 are asked to "use context clues to determine the precise meaning of new words" rather than analyzing the word's parts and/or referring to a dictionary.

Expectations for vocabulary development are not very systematic and are sprinkled across several strands and sub-strands. More attention should be paid to word families, etymology, and word parts.

Grade-level expectations for reading and analyzing literary and non-literary texts are hard to understand. For example, the standards for "reading, examining and responding to a wide variety of texts" focus more on process than on student outcomes. Consider this grade 4 standard:

> Respond to a wide variety of texts by contributing to a reading journal which demonstrates appropriate comprehension skills, including written responses, reading log interest list, and reading goals (grade 4)

Occasionally, the standards call out specific genres, structures, literary elements or devices, but these are not systematically addressed.

KSDE002033

Quality and complexity of reading are never addressed, nor do the standards include any specific mention of American literature. The following vague standard is the only one that hints at any literary heritage. It is repeated verbatim in grades 9-12:

> [Student] [r]eads a variety of literary and content prose including selections from American, British, and/or world literature (grades 9–12)

The Arkansas writing standards emphasize process over products and only nominally address writing conventions. The listening and speaking standards tender a mish-mash of expectations for formal and informal communication; moreover, they do not address formal oral presentations.

These shortcomings leave Arkansas teachers without the guidance they need to plan rigorous curriculum, instruction, and assessment. Consequently, the standards can earn no higher than three points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, Arkansas's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Natural State has in place today.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Arkansas • Mathematics

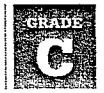
DOCUMENTS REVIEWED

K-8 Mathematics Curriculum Framework. Revised 2004.
Accessed from: http://arkansased.org/educators/pdf/k8_math_mayo5.pdf

High School Courses Curriculum Framework. Revised 2004; Amended 2006.
Accessed from: http://arkansased.org/educators/curriculum/frameworks.html#math

Overview

While Arkansas's standards seem easy to read and understand, they often lack clarity as to the content that is to be covered—particularly in K-8, where arithmetic is neither prioritized nor appropriately culminated. The high school content is thorough and includes most of the STEM-ready material.



Clarity and Specificity:	2/3
Content and Rigor:	3/7
Total State Score:	**5/10**
(*Common Core Grade: A-*)	

General Organization

Arkansas organizes its math standards into two categories: grades K-8 and high school. Within each, standards are divided into broad content strands such as "Algebra" and "Geometry," which are further divided into substrands (such as "Triangles" for the Geometry strand). Finally, specific grade-level expectations (GLEs) are provided for each substrand. (It is the GLEs that we refer to as "standards" in this review.)

Clarity and Specificity

Arkansas standards are succinctly stated and are easy to read and understand. Content is easily drawn from some standards, and examples are sometimes included to clarify intent:

> Identify the change over time
>
> Ex. We have recorded the morning and afternoon temperatures all week. Which day had the greatest change in temperature? (grade 3)

The use of examples is an excellent feature, and, as the above standard shows, often necessary. Still, many standards are not provided with examples and/or are far too broad:

> Describe repeating and growing patterns in the environment (grade 2)
>
> Develop an understanding of the associative and zero properties of multiplication using objects (grade 4)

It is not clear how students might use objects to show that zero times any number is zero.

Furthermore, many other standards pay insufficient attention to language. For example, the following fourth-grade standard implies that the size of a fraction can vary. This is not true.

> Utilize models, benchmarks, and equivalent forms to recognize that the size of the whole determines the size of the fraction (grade 4)

In addition to confusing language, the organization of the standards can sometimes be confusing. Related standards may appear under different topics. For example, standards on whole-number addition and subtraction in third grade appear

across many topics, including "Computational Fluency-Addition and Subtraction," "Whole-number Operations," and "Application of Computation."

The standards for high school are generally clearer, for example:

> Write an equation in slope-intercept, point-slope, and standard forms given
> - two points
> - a point and y-intercept
> - x-intercept and y-intercept
> - a point and slope
> - a table of data
> - the graph of a line (Algebra I)

There are some serious issues with the clarity of these standards, particularly in K-8. This is somewhat mitigated by the use of examples within the standards, and the high school standards are clearer. But the standards "do not quite provide a complete guide to users," and receive a Clarity and Specificity score of two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Arkansas has many standards, generally around fifty per grade. With so many standards, guidance as to the most important content is important. However, there is no explicit setting of priorities. Standards on arithmetic comprise less than a third of the standards in the elementary grades—an insufficiently small presence given the importance of mastering arithmetic skills at this age.

Content Strengths

The standards cover the basic structure of arithmetic—such as the commutative, associative, and distributive properties—as well as the inverse nature of addition and subtraction and of multiplication and division. The number line is used throughout. Although arithmetic is not culminated appropriately, some developmental standards are strong, such as:

> Write a fraction to name part of a whole, part of a set, a location on a number line, and the division of whole numbers, using models up to 12/12 (grade 4)

The high school standards are generally strong. The Algebra and Geometry courses are solid, and the Pre-Calculus course includes much STEM-ready material. Algebra II includes this important standard on the graph of a quadratic:

> Determine the maximum or minimum values and the axis of symmetry both graphically and algebraically (Algebra II)

Content Weaknesses

The most glaring problem with Arkansas's standards is the end product of the study of arithmetic. Automaticity with number facts is covered inadequately with:

> Demonstrate computational fluency (accuracy, efficiency and flexibility) in addition facts with addends through 9 and corresponding subtractions (grade 2)
>
> Demonstrate fluency with combinations for multiplication and division facts (12 x 12) and use these combinations to mentally compute related problems (grade 4)

In the development of whole-number arithmetic, standard methods are not specified. Methods are further undermined by the use of both technology and the "variety of algorithms" that students are expected to develop. The capstone standards for whole-number arithmetic are:

> Develop and use a variety of algorithms with computational fluency to perform whole-number operations using addition and subtraction (up to five-digit numbers), multiplication (up to three-digit x two-digit), division (up to two-digit divisor) interpreting remainders, including real-world problems (grade 5)
>
> Apply, with and without appropriate technology, algorithms with computational fluency to perform whole-number operations (+, -, x, /) (grade 6)

This lack of standard procedures and the inclusion of technology continue beyond whole-number arithmetic to fractions:

> Develop and analyze algorithms for computing with fractions (including mixed numbers) and decimals and demonstrate, with and without technology, computational fluency in their use and justify the solution [sic] (grade 6)

Common denominators are never mentioned.

The standards are strong in high school, but the use of technology and manipulatives is pervasive. For example, students are expected to solve equations "algebraically (including the use of manipulatives)." Students in high school algebra should have some facility with abstraction, and manipulatives are inappropriate in standards at this level.

Arkansas's standards are strong in places. High school content is covered well, including STEM-ready content. However, in the elementary grades, arithmetic is not prioritized or appropriately culminated. These serious problems result in a Content and Rigor score of three points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Arkansas's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Natural State has in place today.

California • English Language Arts

DOCUMENTS REVIEWED[1]

California Academic Content Standards: English Language Arts. December 1997.
Accessed from: http://www.cde.ca.gov/be/st/ss/documents/elacontentstnds.pdf

Overview

California's well-sequenced and thorough ELA standards explicitly address all of the essential content that students must master in a rigorous, college-prep K-12 curriculum. With very few exceptions, the standards are clear and concise and exhibit an appropriate level of rigor at each grade. Minor flaws are noted below, but overall these standards are exceptionally strong.

Clarity and Specificity:	3/3
Content and Rigor:	7/7
Total State Score	**10/10**
(*Common Core Grade: B+*)	

General Organization

California's K-12 standards are organized into four strands: Reading, Writing, Written and Oral Conventions, and Listening and Speaking. Each strand is then broken into sub-strands, and finally into grade-specific standards. The high school grades are grouped into pairs (9-10 and 11-12).

Clarity and Specificity

The standards are very clear and specific, making it easy for teachers and students to understand what students should know and be able to do. For example, while many states merely ask students to distinguish facts from opinions, California goes a step further:

> Distinguish facts, supported inferences, and opinions in text (grade 5)

In all strands, the California standards offer specific details and often include examples that help clarify expectations, such as in the following "Literary Response and Analysis" standard in grade 7:

> Narrative Analysis of Grade-Level-Appropriate Text
> - Identify events that advance the plot and determine how each event explains past or present action(s) or foreshadows future action(s)
> - Analyze characterization as delineated through a character's thoughts, words, speech patterns, and actions; the narrator's description; and the thoughts, words, and actions of other characters
> - Identify and analyze recurring themes across works (e.g., the value of bravery, loyalty, and friendship; the effects of loneliness)
> - Contrast points of view (e.g., first and third person, limited and omniscient, subjective and objective) in narrative text and explain how they affect the overall theme of the work (grade 7)

In a few places, the language is vague, which compromises the readability of the standard and the clarity of the state's expectation. For example:

> Analyze the philosophical arguments presented in literary works to determine whether the authors' positions have contributed to the quality of each work and the credibility of the characters (Philosophical approach) (grades 11-12)

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Such exceptions are rare, however, and overall these standards easily earn full marks, or three points out of three, for Clarify and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

California's standards for early reading delineate explicit and systematic expectations for phonemic awareness, phonics, fluency, and comprehension skills. Similarly, the Reading standards across all grades address systematic vocabulary development, including etymology.

Specific expectations for reading and analyzing literary and non-literary texts are included. There is a clear focus on exceptional American literature, though only in grades 11-12. California also supplies recommended reading lists for all grade levels that include many good works of American and other literature.

California admirably includes standards devoted specifically to logic, including:

> Critique the power, validity, and truthfulness of arguments set forth in public documents; their appeal to both friendly and hostile audiences; and the extent to which the arguments anticipate and address reader concerns and counterclaims (e.g., appeal to reason, to authority, to pathos and emotion) (grades 11-12)

Such detail in the reading section helps ensure that students not only understand the essential structures and elements of arguments, but also that they have a meta-language for analyzing those arguments effectively. These skills, essential to citizenship, are missing from many state standards.

The Writing standards address the analysis and production of all writing genres and include rigorous expectations regarding research, as in the following standard from grades 9-10:

> Use clear research questions and suitable research methods (e.g., library, electronic media, personal interview) to elicit and present evidence from primary and secondary sources.
> - Develop the main ideas within the body of the composition through supporting evidence (e.g., scenarios, commonly held beliefs, hypotheses, definitions)
> - Synthesize information from multiple sources and identify complexities and discrepancies in the information and the different perspectives found in each medium (e.g., almanacs, microfiche, news sources, in-depth field studies, speeches, journals, technical documents)
> - Integrate quotations and citations into a written text while maintaining the flow of ideas
> - Use appropriate conventions for documentation in the text, notes, and bibliographies by adhering to those in style manuals (e.g., *Modern Language Association Handbook*, *The Chicago Manual of Style*)
> - Design and publish documents by using advanced publishing software and graphic programs (grades 9-10)

The standards for English language conventions are thorough and demonstrate a reasonable progression through the grades.

Standards for Listening and Speaking are also well addressed, including such specific expectations for oral presentations in various genres as:

> Deliver oral responses to literature:
> - Advance a judgment demonstrating a comprehensive grasp of the significant ideas of works or passages (i.e., make and support warranted assertions about the text)
> - Support important ideas and viewpoints through accurate and detailed references to the text or to other works.
> - Demonstrate awareness of the author's use of stylistic devices and an appreciation of the effects created (grades 9-10)

KSDE002039

Content Weaknesses

Minor weaknesses are apparent in each of the content strands. With the exception of the grade 11-12 standards referenced above, both the early reading and the reading standards lack a focus on American literature.

One troublesome aspect of the standards is their inclusion of laudable but unmeasurable goals, such as the extracurricular annual reading goals (up to two million words per year in grade 12). Coupled with the issue of measurability, the fact that accountability lies outside the classroom makes these guidelines unrealistic.

The other three strands—Writing, Written and Oral Conventions, and Listening and Speaking—merit only minor critiques. The Writing standards, for example, do not include samples of acceptable student writing, which could help delineate the rigor of the expectations. The Listening and Speaking strand could be improved by adding expectations for the evaluation of presentations.

Together, these shortcomings represent no more than 5 percent of absent content. The standards earn seven points out of seven in the category of Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

California's standards are clearer, more thorough, and easier to read than the Common Core standards. The essential content is grouped more logically, so that standards addressing inextricably linked characteristics, such as themes in literary texts, can be found together rather than spread across strands. In addition, the California standards treat both literary and non-literary texts in systematic detail, addressing the specific genres, sub-genres, and characteristics of both text types. California's standards for logic, writing applications, and oral presentations are also more detailed than those of the Common Core.

On the other hand, the Common Core includes samples of student writing to clarify grade- and genre-specific expectations for writing, and explicitly addresses foundational U.S. documents. The Common Core also includes more rigorous and thorough standards addressing group discussions and working as a group to accomplish a task. Such enhancements would benefit California's already-strong standards.

1 California's academic content standards have not changed since Fordham's last evaluation, the *State of State English Standards 2005*. However, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Even through this new lens, California's ELA grade remained an impressive A. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=337&pubsubid=1032%1032.

KSDE002040

California • Mathematics

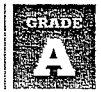
DOCUMENTS REVIEWED[1]

Mathematics Framework for California Public Schools. Revised 2005.
Accessed from: http://www.cde.ca.gov/ci/ma/cf/documents/mathfrwkcomplete.pdf

Mathematics Content Standards for California Public Schools. December 1997.
Accessed from: http://www.cde.ca.gov/be/st/ss/documents/mathstandard.pdf

Overview

California's standards could well serve as a model for internationally competitive national standards. They are explicit, clear, and cover the essential topics for rigorous mathematics instruction. The introduction for the standards is notable for providing excellent and clear guidance on mathematics education. The introduction states simply:



Clarity and Specificity:	3/3
Content and Rigor:	7/7
Total State Score:	**10/10**
(Common Core Grade: A-)	

> An important theme stressed throughout this framework is the need for a balance in emphasis on computational and procedural skills, conceptual understanding, and problem solving. This balance is defined by the standards and is illustrated by problems that focus on these components individually and in combination. All three components are essential.

California has provided a set of standards that achieves these goals admirably.

General Organization

The organization of California's standards is straightforward and clear. The standards are organized by typical content strands such as "Number Sense" and "Measurement and Geometry," and the strands are broken down into grade-level standards. The standards also include "Mathematical Reasoning" as a strand that, rather than serving as a stand-alone strand, is "inherently embedded" in the other strands.

Unlike most states, which organize standards by grade level for K-8, and then by course (rather than by grade) for high school, California provides grade-specific standards for K-7 and organizes standards by course for grades 8-12.

The grade-level standards are notable in that they provide guidance on priorities and focus directly within the document. The most important standards for each grade are clearly marked as "green dot" standards, and are easily distinguished from the other standards.

Clarity and Specificity

California's standards are well presented and organized. They are easy to read and understand, and the mathematics content is illuminated by the use of sample problems. The sample problems immediately address any potential lack of clarity in the statements. For example, in fourth grade, California has the somewhat broadly stated standard:

> Use concepts of negative numbers (e.g., on a number line, in counting, in temperature, in "owing") (grade 4)

This standard includes two examples of the kinds of problems a student is expected to be able to solve, including:

KSDE002041

> Yesterday's temperature was 5 degrees Celsius, but the temperature dropped 9 degrees Celsius overnight. What is today's temperature? (grade 4)

Such clarification illuminates exactly what students are expected to know and be able to do across the grades. The reader is not left in doubt as to what a standard means or what kinds of problems students are expected to solve. California receives the top score of three points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

California's standards are, perhaps, excessive in number; but any potential problem with the volume of standards is mitigated through the prioritization scheme of the "green dot" standards described above. For example, there are thirty-seven standards for sixth grade, and fourteen of them appear in the Statistics, Data Analysis, and Probability (DASP) strand alone. However, the reader can clearly and easily distinguish the most important content, and this reduces any excess in the number of standards. For example, of the thirty-seven standards for sixth grade, only seventeen of them are green dot standards. Priorities are thus set admirably.

Content Strengths

These standards cover nearly all of the essential content. They explicitly prioritize foundational mathematics and outline a clear and coherent path for mathematics education.

The essential content of elementary arithmetic is developed well and emphasized throughout. Examples include the following simply stated standards:

> Memorize to automaticity the multiplication table for numbers between 1 and 10 (grade 3)
>
> Demonstrate an understanding of, and the ability to use, standard algorithms for the addition and subtraction of multi-digit numbers (grade 4)
>
> Identify and represent on a number line decimals, fractions, mixed numbers, and positive and negative integers (grade 5)

The straightforward statements in the following standards are also exemplary.

> Identify and graph ordered pairs in the four quadrants of the coordinate plane (grade 5)
>
> Calculate given percentages of quantities and solve problems involving discounts at sales, interest earned, and tips (grade 6)

Content Weaknesses

There are a few minor issues in the course for eighth grade (Algebra I) and the course content for high school. Lines and linear equations are generally well covered, but students are not required to algebraically move from one form of a linear equation to another. There is also no standard that states that students should be able to find the equation for a line that goes through two points, though the standards state that this should be understood as part of the standard on point-slope form for lines. The complete analysis of quadratic equations, which begins in Algebra I and concludes in Algebra II is missing a few details on standard form and symmetry.

California's standards cover practically all the essential content in a high-quality and rigorous manner. They are easy to read and follow and do not include much extraneous material. At all levels, they prepare students to move on to the next level of mathematics, including rigorous college preparation. They easily satisfy all of the criteria for a score of seven points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With some minor differences, Common Core and California both cover the essential content for a rigorous, K-12 mathematics program. That said, California's standards are exceptionally clear and well presented, and indeed represent a model for mathematically sound writing. They are further supported by excellent peripheral material, including the *Framework* that provides clear and detailed guidance on the standards. Taken together, these enhancements make the standards easier to read and follow than Common Core. In addition, the high school content is organized so that the

standards about various topics, such as quadratic functions, are grouped together in a mathematically coherent way. The organization of the Common Core is more difficult to navigate, in part because standards on related topics sometimes appear separately rather than together.

Common Core includes some minor high school content—including the vertex form of quadratics and max/min problems—that is missing in California.

1 California's academic content standards have not changed since Fordham's last evaluation, the *State of State Mathematics Standards 2005*. However, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Even through this new lens, California's math grade remained an impressive A. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=338&pubsubid=1147#1147.

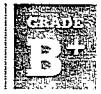
Colorado • English Language Arts

DOCUMENTS REVIEWED

Colorado Academic Standards: Reading, Writing, and Communicating. 2009. Accessed from: http://www.cde.state.co.us/cdeassess/UAS/AdoptedAcademicStandards/Reading_Writing_Comm_Adopted_12.10.09.pdf

Overview

These new Colorado standards are very thoughtful and their core (termed "evidence outcomes") addresses almost all of the *English Language Arts Content-Specific Criteria* in useful ways (see Appendix A). Though most essential content is covered, they are dense and wordy in places.



Clarity and Specificity:	2/3
Content and Rigor:	6/7
Total State Score:	**8/10**
(Common Core Grade: B+)	

General Organization

The Colorado standards are divided into four strands: Oral Expression and Listening, Reading for All Purposes, Writing and Composition, and Research and Reasoning. Each strand is divided into grade-level expectations. These are subdivided into "concepts and skills" and finally into "evidence outcomes." The latter are detailed, grade-specific student expectations, which are the focus herein.

Clarity and Specificity

Colorado's standards are dense and numerous. Although they manage to convey essential content, in quite a few places the objectives become too personal, nonacademic, and unmeasurable, as in:

> Identify stereotypes, prejudices, biases, and distortions in self and thinking of others (grade 6)
>
> Identify personal attitudes and beliefs about events, ideas, and themes in text, and explain how these shape their comprehension of text (grade 8)

In a few places, the language is vague and unmeasurable, for example:

> Reflect on the content and approach to a presentation (grade 10)

Still, most evidence outcomes are clear and specific. One of the biggest problems relative to clarity and specificity is the voluminous amount of extraneous "rationale" (called "Relevance and Application") that is included grade by grade. The information appears designed to illuminate the reasons for having to learn the content, but its effect is that it distracts the reader from the core content. For instance, under the Research and Reasoning strand in grade 12, several standards pertain to gathering, analyzing, and evaluating information. But the Relevance and Application section below it includes various bulleted statements, one of which is "Data organization is a skill used in medical testing."

For these reasons, Colorado receives two points of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

Standards for Oral Expression And Listening address speaking, listening, group discussions, and group work. They are detailed and thorough, if not a little heavy-handed. Oral presentations are consistently addressed. Specific characteristics are enumerated, as in this culminating twelfth-grade standard:

> a. Prepare and deliver a formal presentation for different purposes and audiences (such as expositive, persuasive, entertaining, inspirational, or recognition)
>
> b. Identify a central idea or thesis, organize ideas, and develop a speech for an intended purpose and audience
>
> c. Use examples, illustrations, graphics, quotations, analogies, facts, and statistics to focus and support the content of a presentation
>
> d. Use grammar and vocabulary appropriate for the situation, audience, topic, and purpose
>
> e. Choose specific words and word order for intended effect and meaning
>
> f. Select appropriate technical or specialized language (grade 12)

Standards addressing phonics and phonemic awareness are strong and appropriately rigorous, as demonstrated by this one for first-grade students:

> a. Segment spoken words into onset (initial consonant sounds) and rime (vowel to end of syllable)
>
> b. Use onsets and rimes to create new words that include blends and digraphs
>
> c. Identify the initial, medial, and final phoneme of spoken words
>
> d. Manipulate individual phonemes to create new words through addition, substitution, and deletion (grade 1)

Vocabulary standards are focused on morphology and progress through the grades with rigor.

Colorado admirably de-emphasizes unmeasurable metacognitive strategies.

Colorado's standards for literary and non-literary text are carefully drawn. Each text type is treated separately and thoroughly throughout the grades, as these eighth-grade informational text standards demonstrate:

> a. Identify key words that signal a variety of organizational patterns (such as chronology, compare/contrast, problem/solution, cause/effect); explain how various organizational patterns structure information differently; use organizational patterns to guide interpretation of text
>
> b. Evaluate viewpoints, values, and attitudes (such as detecting bias, word connotations, and incomplete data)
>
> c. Make inferences and draw conclusions about relevance and accuracy of information...(grade 8)

These literary text standards, also from grade 8, are comparably detailed:

> b. ...Explain and compare the different roles and functions that characters play in a narrative (such as antagonist, protagonist, hero)
>
> c. Interpret mood, tone, and literary devices (such as symbolism, flashback, foreshadowing, hyperbole), and provide supporting evidence from text
>
> d. Identify use of third person, omniscient, and third person limited points of view; explain how each narrative point of view provides different insights in plots, characters and themes...(grade 8)

At grade 11, students are also required to "demonstrate knowledge of classical foundational works of American literature," a welcome addition. This standard is presented in the context of other "critical reading approaches," such as analyzing literary devices; explaining the influence of historical context; and interpreting and synthesizing themes across texts, so the standards do not appear out of the blue.

The writing standards address both the characteristics of good writing generally and those that are specific to genres. All genres of writing are developed and, in high school, appropriate emphasis is placed on the development of arguments, as in grade 11:

> Evaluate and revise own text as needed to eliminate logical fallacies and to enhance credibility of ideas and information (grade 11)

English language conventions are also contained within the writing strand; they systematically cover grammar, usage, and mechanics from the earliest grades through the end of high school.

Colorado's research and reasoning strand is a mostly useful addition. These standards maintain a rigorous progression for research processes and products. They also address logic, as in this commendable twelfth-grade standard in which students:

> a. Synthesize information to support a logical argument
> b. Distinguish between evidence and inferences
> c. Identify false premises or assumptions
> d. Analyze rhetorical devices used in own and others' appeals
> e. Summarize ideas that include alternate views, rich detail, well-developed paragraphs, and logical argumentation (grade 12)

As noted below under weaknesses, this strand overreaches in the early grades, but works well in high school.

Content Weaknesses

The standards do not describe the quality and complexity of reading that students should master, nor do they provide samples of desirable student writing.

In a few places, the Research and Reasoning standards set unrealistic goals that could not necessarily be observable or measurable, as in this eleventh-grade standard in which students:

> Determine the extent to which they entered empathetically into competing points of view, exercised confidence in reason, recognized the limits of their knowledge on the topic (intellectual humility), explored alternative approaches to solving or addressing complex problems (intellectual flexibility), were open to constructive critique (intellectual open-mindedness) (grade 11)

Worthy and ambitious as they are, it would be hard to hold students accountable for these tasks.

A number of the expectations in the lower grades are far too abstract for elementary school—or perhaps for anyone. In grade 5, for example, students:

> a. Accurately explain the implications of concepts they use
> b. Identify irrelevant ideas and use concepts and ideas in ways relevant to their purpose
> c. Analyze concepts and draw distinctions between related but different concepts (grade 5)

Students in fifth grade are also expected to "recognize what they know and don't know (intellectual humility)," a skill that certainly eludes many adults. The addition of these unnecessary standards among so many others makes it hard for teachers to set priorities.

One final weakness in the Colorado standards is the lack of student writing samples illustrating the kind of writing expected. Such examples would be a welcome addition.

In sum, these standards represent a very thorough and rigorous set of expectations for the students in Colorado. Some streamlining and editing to exclude nonacademic and unrealistic goals would improve them tremendously, but as written, they earn a solid six points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

Colorado's standards for literary and non-literary text analysis are more thorough and detailed than the Common Core, addressing specific genres, sub-genres, and characteristics of both literary and non-literary texts. In addition, Colorado includes a strand devoted to "research and reasoning" which, despite occasional overreaching, outlines more detailed and rigorous expectations for logic. Colorado's standards for oral presentations are also clearer and more detailed than those presented in the Common Core.

On the other hand, the Common Core standards are more focused and include few of the unnecessary and distracting "rationale" statements that can be found in the Colorado document. Common Core also includes samples of student writing to clarify grade- and genre-specific writing expectations, as well as standards explicitly addressing foundational U.S. documents. Colorado's standards would be improved by eliminating both the unnecessary material and the gaps mentioned above.

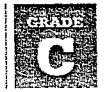
Colorado • Mathematics

DOCUMENTS REVIEWED

Colorado Academic Standards: Mathematics. December 12, 2009.
Accessed from: http://www.cde.state.co.us/cdeassess/UAS/AdoptedAcademicStandards/Math_Standards_Adopted_12.10.09.pdf

Overview

Colorado's standards are presented in an unusual way and include some extra, peripheral material. Arithmetic is given moderate priority, but is not adequately developed. The high school material includes some strong standards, but misses a good deal of essential content.



Clarity and Specificity:	2/3
Content and Rigor:	3/7
Total State Score:	**5/10**
(*Common Core Grade: A-*)	

General Organization

The K-12 standards are organized into four content strands such as "Number Sense, Properties, and Operations," which are further subdivided into grade-level expectations. Oddly, the sequencing of the standards is top to bottom: They begin in high school and work down through the grades. They also include peripheral material such as "Inquiry Questions" and "The Nature of Mathematics." The former, for instance, are "intended to promote deeper thinking, reflection and refine understandings" of the grade-level expectations.

Clarity and Specificity

Standards are often clearly stated:

> Find the value of a collection of coins and choose coins to have a given value (grade 2)
> Name and locate points specified by ordered number pairs on a coordinate grid (grade 4)
> Use a protractor to measure angles to the nearest degree (grade 6)
> Compare and order sets of integers and rational numbers that are expressed as fractions, decimals, or percents (grade 8)

However, other standards are far too broadly stated to allow readers to interpret the intent:

> Apply addition and subtraction concepts to financial decision-making (grade 2)
> Use geometric properties of points and line segments to describe figures (grade 3)
> Analyze various lending sources, services, and financial institutions (high school)

These standards are not specific enough to determine what students are expected to know or what kinds of problems they should be able to solve.

The high school standards in particular are often too general to be clear, and the material is often not coherent. Standards relating to a single topic, such as quadratics, may be strewn across various strands. Many topics are often included in a single standard, which makes such a standard difficult to understand. For example, in the following standard, the specific techniques mentioned do not apply to all of the topics:

> Find solutions to quadratic and cubic equations and linear inequalities by using appropriate algebraic methods such as factoring, completing the square, graphing or using the quadratic formula (high school)

While the K-8 standards are often clear and easy to interpret, the high school standards are not. As a whole, the standards "do not quite provide a complete guide" to users and therefore receive a Clarity and Specificity score of two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Arithmetic is the key content priority in the early-middle grades, but it is barely prioritized in Colorado's standards. In fact, just over one-third of the standards in the appropriate grades address the development of arithmetic. This provides an implicit indication that arithmetic is not much of a priority, which is not sufficient.

Content Strengths

The structure of arithmetic, commutativity, associativity, distributivity, and the inverse nature of addition and subtraction and of multiplication and division are all well covered.

There are some strong standards on the development of area, including:

> Model area using square units (grade 4)
>
> Determine the perimeter of polygons and area of rectangles (grade 5)
>
> Develop and apply formulas and procedures for finding area of triangles, parallelograms, and trapezoids (grade 6)

In high school, the coverage of linear equations is also strong:

> Demonstrate the relationship between all forms of linear functions using point-slope, slope-intercept, and standard form of a line (high school)

Although geometry foundations in high school are weak (see *Mathematics Content-Specific Criteria* in Appendix A for foundations), some standards explicitly mention proof, such as:

> Know and apply properties of angles including corresponding, exterior, interior, vertical, complementary, and supplementary angles to solve problems. Justify the results using two-column proofs, paragraph proofs, flow charts, or illustrations (high school)

Content Weaknesses

The development of whole-number arithmetic is inadequate. Instant recall of number facts is not stated strongly enough, since the relevant standards can be interpreted as requiring computational fluency instead. Instant recall is an important building block for future mathematics; students who are still struggling with basic facts are not prepared to move on to the next level of mathematics.

In the continued development of arithmetic, students are expected to be able to use different methods of computing, but fluency is not required:

> Use flexible methods of computing, including student-generated strategies and standard algorithms (grade 3)
>
> Use flexible methods of computing including standard algorithms to multiply and divide multi-digit numbers by two-digit factors or divisors (grade 5)

For addition and subtraction, the standard algorithms are given equal status with student-generated algorithms, defeating an important goal of arithmetic. For multiplication and division, it also appears that alternative algorithms are acceptable.

In the continued development of arithmetic, common denominators for fractions are not mentioned, though they appear in the peripheral material.

High school content is often weak. The coverage of linear equations is missing some essential details, including equations for parallel and perpendicular lines. The coverage of quadratics is also incomplete. Quadratics is not developed

KSDE002048

coherently, and specific mention of it is infrequent. Much of their coverage is subsumed in a single standard:

> Find solutions to quadratic and cubic equations and linear inequalities by using appropriate algebraic methods such as factoring, completing the square, graphing or using the quadratic formula (high school)

Missing content includes complex roots, vertex form, and max/min problems.

While factoring is mentioned, polynomials are not, and the arithmetic of polynomials and rational functions is not covered.

Much of the STEM-ready content is also missing, including inverse trigonometric functions and polar coordinates.

Though prioritized somewhat, the development of whole-number arithmetic is not adequate. The high school material is not presented coherently and misses much essential content. These "serious problems" result in a Content and Rigor score of three points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Colorado's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Centennial State has in place today.

KSDE002049

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Connecticut • English Language Arts

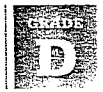
DOCUMENTS REVIEWED

2006 Connecticut English Language Arts Curriculum Framework. 2006.
Accessed from: http://www.sde.ct.gov/sde/cwp/view.asp?a=2618&q=320866

Connecticut PK-8 English Language Arts Curriculum Standards. 2008.
Accessed from: http://www.sde.ct.gov/sde/cwp/view.asp?a=2618&q=320866

Overview

The Connecticut standards are a mix of good and bad. The *Curriculum Framework* outlines broad categories and standards for each grade, Pre-K-12, but is written in terms far too general to provide guidance to teachers. More specific grade-level expectations are developed for grades Pre-K-8 in the 2008 *Curriculum Standards*, but no such document exists for grades 9-12, leaving critically important expectations for high school grades unknown.



Clarity and Specificity:	1/3
Content and Rigor:	2/7
Total State Score:	**3/10**
(Common Core Grade: B+)	

General Organization

The *Connecticut ELA Curriculum Framework* is first divided into four "standards" that are common across grades Pre-K-12: Reading and Responding, Exploring and Responding to Literature, Communicating with Others, and Applying English Language Conventions. Each of these standards includes an "overarching idea" and a "guiding question," and is then divided into two to four "component statements." For example:

> Standard 1: Reading and Responding
> Overarching Idea: Students read, comprehend and respond in individual, literal, critical and evaluative ways to literary, informational and persuasive texts in multimedia formats.
> Guiding Question: How do we understand what we read?
> Component Statements:
> 1.1 Students use appropriate strategies before, during and after reading in order to construct meaning.
> 1.2 Students interpret, analyze and evaluate text in order to extend understanding and appreciation.
> 1.3 Students select and apply strategies to facilitate word recognition and develop vocabulary in order to comprehend text.
> 1.4 Students communicate with others to create interpretations of written, oral and visual texts.

For grades K-8, each component statement is divided into a grade-specific expectation. The high school grade expectations, however, are combined for grades 9-12.

In addition to the *Framework*, Connecticut provides Pre-K-8 *Curriculum Standards*. These follow the same organizational structure as the *Framework* (in fact, they repeat the standards and component statements), but they also provide more detailed grade-level expectations for each component statement. No such document exists for high school.

Clarity and Specificity

For grades Pre-K-8, the Connecticut expectations are well organized and easy to follow. Unfortunately, the clarity and specificity of the expectations themselves are inconsistent at best. They are frequently vague, sometimes unmeasurable, and often repetitive across grades.

KSDE002050

Consider the following vaguely worded vocabulary expectation, repeated verbatim in grades 3 and 4:

> Define words and concepts necessary for understanding math, science, social studies, literature and other content area text (grades 3-4)

Similarly vague and repetitive wording can be found in many of the expectations.

Other expectations, particularly for "Reading Reflection/Behaviors," are unmeasurable, as in:

> Reflect orally on reading behaviors when prompted, i.e., What did I learn today as a reader? (grade 1)
> Evaluate the quality and value of text (grade 5)
> Explain how certain actions cause certain effects, e.g., how the Holocaust changed international politics today or how the internment of Japanese Americans during World War II affected traditional Japanese family structure (grade 8)

These shortcomings leave teachers with very little guidance about what students should actually know and be able to do and therefore earn Connecticut one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The K-8 expectations contain some strong content. The early-reading expectations for phonics, phonemic awareness, and fluency are comprehensive and are broken into the following categories: "Concepts About Print," "Phonological (or, later, "Phonological (or, later, "Phonemic") Awareness," "Phonics," "High-Frequency Words," "Fluency," and "Vocabulary." Specific expectations are outlined for each category, even words-per-minute fluency rates. The Pre-K expectations cover important ground in phonemic awareness and build a stronger foundation for Kindergarten than do most state standards, many of which skip Pre-K entirely. The use of glossaries and dictionaries begins early.

Connecticut's expectations for the typically content-less "writing process" category are better than most, such as this:

> Revise: rework writing several times based on different points of focus, e.g., first reading—add details for elaboration; second reading—delete sentences or phrases to achieve paragraph unity; third reading—reorganize ideas for meaning (grade 5)

This process expectation helpfully offers specific tasks for revising.

The expectations also offer reasonably clear expectations about what writing products (persuasive essay, news article, personal narrative, and so on) students should produce at each grade level.

Specific expectations for spelling, capitalization, punctuation, and usage are sprinkled throughout the grades, such as the following excerpts from grade 6:

> Use parallel construction when listing verbs, particularly in informational and technical writing.
> - Parallel: A scientist observes, hypothesizes, and analyzes
> - Not parallel: A scientist observes, hypothesized, and analyzed (grade 6)

Although its expectations for conventions are presented as a long list covering spelling, capitalization, punctuation, and usage, which can be confusing, Connecticut is to be commended for including them.

Content Weaknesses

The Connecticut expectations contain some unnecessary content, and priorities are difficult to glean. The reading expectations generally place as much emphasis on content-less and often unmeasurable comprehension skills and reading "reflection" and "behaviors" as they do on important content. For example:

KSDE002051

> Make connections to text representing different perspectives [such as] family, friendship, culture and tradition, generating personal and text-based responses [sic] (grade 2)
>
> Explain what good readers do and identify own good reader behaviors [sic] (grade 2)

Many expectations slip inappropriately into unmeasurable instructional strategies that distract attention from critical content and student outcomes. For example:

> Activate prior knowledge before reading, e.g., Direct Reading-Thinking Activity, KWL Chart, Anticipation Guide, Response Notebooks (grade 4)

Other reading expectations mention essential content but only superficially, failing to provide the genre-specific details teachers need to guide instruction. Consider this grade 4 expectation about identifying literary forms:

> Identify and explain the elements of particular literary forms, e.g., poetry, short story, biography, journalistic writing, narrative. (grade 4)

Finally, no requirements exist for the study of American literature, a major flaw in the reading expectations.

In writing, though the Connecticut expectations have some strengths (mentioned above), the state fails to prioritize genres from grade to grade. Specifically, it expects too many genres to be taught at each grade, which is unmanageable.

Listening and speaking expectations could focus more attention on specific expectations for recitation and oral presentations, including scoring rubrics.

Connecticut lacks expectations for research or media, leaving important college- and career-ready standards unaddressed.

Finally, Connecticut's decision to rely on the brief, unelaborated expectations in the framework for the grade span 9-12, also leaves much essential high school content unaddressed. No guidance is tendered about which literary and informational genres should be studied, nor are their characteristics discussed. Writing genres are mentioned in passing, but no expectations for writing products are included. No specific expectations for speaking and listening are offered, nor are research and media addressed in any detail. Conventions are left unremarked upon.

Too much content, especially in high school, is omitted in the Connecticut standards, as much as 70 percent, giving the Constitution State two points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, Connecticut's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Constitution State has in place today.

KSDE002052

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Connecticut • Mathematics

DOCUMENTS REVIEWED

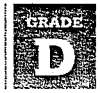
Connecticut PreKindergarten-Grade 8 Mathematics Curriculum Standards. March 2010.
Accessed from: http://www.sde.ct.gov/sde/lib/sde/pdf/curriculum/math/PK8_MathStandards_GLES_Mar10.pdf

Algebra I Course Level Expectations. March 2010.
Accessed from: http://www.sde.ct.gov/sde/lib/sde/pdf/curriculum/math/Algebra1_CLEs.pdf

Mathematics Curriculum Framework Companion. 2005.
Accessed from: http://www.sde.ct.gov/sde/cwp/view.asp?a=2618&q=320872

Overview

For K-8, Connecticut's standards are well presented and easy to read, but their quality is inconsistent. Excellent standards are diminished by some inadequate and unclear coverage. The high school standards are very poorly presented and missing most of the essential content.



Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(*Common Core Grade: A-*)	

General Organization

Connecticut's K-8 standards are organized by content strands such as "Numeric and Proportional Reasoning" and "Geometry and Measurement." Each strand is subdivided into topics, and grade-specific standards are presented for each topic.

The high school standards follow the same organizational structure, except that one set of standards is provided for grades 9-12.

In addition, the state provides a set of course-specific standards for algebra I.

Clarity and Specificity

Connecticut's K-8 standards are well presented. Some standards are succinct and clear, for example:

> Solve problems involving telling time to the nearest quarter hour, five minutes and minute using analog and digital clocks (grade 3)

However, many standards are not clear, such as:

> Develop and test generalizations based on observations of patterns and relationships (grade 1)
>
> Design and conduct surveys of a representative sample of a population and use the data collected to begin to make inferences about the general population (grade 5)
>
> Analyze and evaluate large amounts of numerical information using technological tools such as spreadsheets, probes, algebra systems and graphing utilities to organize (Algebra I and grades 9-12 core)
>
> Select and use appropriate methods for computing to solve problems in a variety of contexts (grades 9-12 core)

As illustrated by the last two examples above, the high school standards are generally so broadly stated as to provide almost no guidance. The Algebra I standards are somewhat clearer, but many of them are written too broadly to understand what kinds of problems students should be able to solve. For example:

KSDE002053

> Make and justify predictions based on patterns (Algebra I)
> Create graphs of functions representing real-world situations with appropriate axes and scales (Algebra I)
> Pose a hypothesis based upon an observed pattern and use mathematics to test predictions (Algebra I)

Topics for high school mathematics, such as quadratic equations, may be scattered about the various documents and strands within the documents. The high school standards supply almost no guidance.

Connecticut's standards for K-8 are uneven; some are clear and specific, but many are not. For high school, the organization of the standards is poor and the statements provide almost no guidance. In sum, the standards "offer limited guidance," and receive a Clarity and Specificity score of one point out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Arithmetic is the area of mathematics most in need of prioritization, and it is effectively prioritized in elementary school since it comprises almost half the standards.

Content Strengths

The properties of arithmetic are well covered and some of the development of fractions is strong, such as:

> Examine the relationships between multiplication by a unit fraction and dividing by the fraction's denominator (grade 6)
> Use the inverse relationship between multiplication and division to make sense of procedures for multiplying and dividing fractions (grade 6)

The standards include developing formulas for areas and perimeters so that students can understand as well as apply the formulas.

Content Weaknesses

The coverage of arithmetic is inadequate. The standards do not adequately specify that students have automaticity, or quick recall, of basic number facts. These are the basic building blocks for future mathematics; students who are still struggling with basic facts are not prepared to move on to the next level of mathematics. Many computational standards specify the use of a "variety of strategies," rather than standard methods and procedures. This undermines the goal of fluency with the standard algorithms. For example:

> Solve problems involving addition and subtraction of two- and three-digit whole numbers and money amounts up to $100.00 with and without regrouping using a variety of strategies, including models (grade 3)
>
> Develop and use strategies involving place value relationships, inverse operations and algebraic properties (commutative, associative and distributive) to simplify addition, subtraction and multiplication problems with three-, four- and five-digit numbers and money amounts and division by one-digit factors (grade 5)

Common denominators are missing in the development of fractions.

The following is the only standard that specifically mentions the trigonometric functions, and it is so vaguely stated that the reader cannot determine what students should learn:

> Describe and compare properties and classes of functions, including exponential, polynomial, rational, logarithmic and trigonometric (grades 9-12 extended)

Similarly, logarithms are mentioned only twice in the standards. In addition to the above standard, there is also:

> Use logarithms, vectors and matrices to solve problems (grades 9-12 extended)

What students are supposed to know about logarithms is unclear.

Linear equations are introduced in eighth grade, and a few standards cover them in high school, but point-slope form is not covered.

The geometry coverage is minimal. There is no specific mention of most major theorems, including theorems about triangles and circles.

Quadratic functions are mentioned specifically only twice:

> Describe and compare properties and classes of linear, quadratic and exponential functions (grades 9-12 core)
> Model and solve problems with linear, quadratic and absolute value equations and linear inequalities (grades 9-12 core)

Missing content includes factoring, the quadratic formula, and completing the square.

Polynomial and rational functions are mentioned only in the broadest possible terms. The arithmetic of these functions is not covered.

Much of the STEM-ready content is also missing, including most of trigonometry.

Connecticut's standards are inconsistent. There is some strong content in K-8. Arithmetic is well prioritized but its development is not adequate. High school is presented incoherently and is missing a great deal of the essential content. These "serious shortcomings" result in a Content and Rigor score of three points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, Connecticut's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Constitution State has in place today.

Delaware • English Language Arts

DOCUMENTS REVIEWED[1]

English Language Arts Content Standards. August 2006.
Accessed from: http://www.doe.k12.de.us/infosuites/staff/ci/content_areas/ela.shtml

Overview

This voluminous and nearly incomprehensible document contains good content in spots, but it is buried beneath a barrage of repetitive and bloated statements that consistently prioritize process and personal proclivities over results and objective learning. Its hopelessly confusing organization and constant repetition of expectations make it impossible to glean effective guidance for students and teachers.

Clarity and Specificity:	0/3
Content and Rigor:	2/7
Total State Score:	**2/10**
(Common Core Grade: B+)	

General Organization

Delaware presents four ELA standards:

- Standard 1—Students will use written and oral English appropriate for various purposes and audiences
- Standard 2—Students will construct, examine, and extend the meaning of literary, informative, and technical texts through listening, reading, and viewing
- Standard 3—Students will access, organize, and evaluate information gained through listening, reading, and viewing
- Standard 4—Students will use literary knowledge accessed through print and visual media to connect self to society and culture

Each standard is divided into unnamed categories, and numerous categories are identified for each standard. Seventy-seven categories, for example, are listed for Standard 2—with comparable numbers of categories assigned to the other standards. Each category then contains dozens of grade-level expectations for K-12.

Clarity and Specificity

The organization of Delaware's ELA standards is almost impossible to follow. At every level—standard, category, and grade-level expectations—they are vague, providing scant guidance about what, precisely, students should know and be able to do. Here is a smattering across the levels:

> Standard 2—Students will construct, examine, and extend the meaning of literary, informative, and technical texts through listening, reading, and viewing (overarching standard)
>
> Students will be able to critically analyze and evaluate information and messages presented through print by (b) formulating and expressing opinions (category for all grade spans)
>
> Compare personal experiences and knowledge of the world (text-to-world connections) to make and support judgments about concepts in:
>
> - Literary text (e.g., character's actions, morals of narratives or poems)
> - Nonfiction (grade 7)

Nowhere among these statements is a clear student outcome described. The grade-level expectations, which we might

KSDE002056

expect to be the most specific, are often vague and repetitive. A typical expectation is:

> Create meaning from a variety of media (grades 4-12)

Worse, it is repeated verbatim every year from fourth to twelfth grade.

Other times, the expectations are simply incomprehensible, as in this one repeated verbatim, grades 5-12:

> Listen to and critique opposing interpretations of the same reading and consider how these opinions were formed through classroom dialogue and independent writing (grades 5-12)

The Delaware standards need a serious revision to identify and streamline any good content and reformulate it into a comprehensible framework that teachers could actually follow—and know when students have met them. It fails to do this, and thus earns zero points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

Some good vocabulary content can be found within the reading and written and oral English strands. In particular, despite their heavy emphasis on context clues and other strategies in the early grades, the standards address word analysis and etymology in the upper grades.

The reading standards beyond the earliest grades outline some specific content, though it is very difficult to find. The following standard, for example, calls out specific text structures:

> Identify text structures in informative/technical texts (e.g., sequence/chronological order, classification, simple definition, simple process, description, comparison, problem/solution, simple cause/effect) (grades 3-4)

Expectations for persuasive, informative, and expressive writing are generally thorough, as in this multi-part grade 5 standard:

> - Present reasons in a logical order (e.g., weakest to strongest argument, strongest to weakest argument)
> - Organize writing by selecting text structures that strengthen the argument
> - Develop an introduction, which is separate from the body, that presents a simple thesis and
>   - takes a clear position
>   - clarifies the issue
>   - provides necessary background
> - Use transition words/phrases that show order (e.g., in conclusion) or relationships (e.g., on the other hand)
> - Develop a conclusion that begins to move beyond summary (e.g., "call to action" or "next step") (grade 5)

Standards for group discussions are addressed, as are those for active listening. Conventions are adequately addressed as well, in standards both for oral and written language. Research standards are included, and, despite heavy repetition, are thorough.

Content Weaknesses

Delaware's coverage of essential phonics, phonemic awareness, and fluency content and skills is inadequate. In addition, the Delaware standards require that students read a variety of genres from many cultures, but contain no requirement that American literature be studied.

Text complexity is defined in a graphic that illustrates the range of lexiles at which students should be reading. The graphic further notes that certain characteristics of text, such as setting, can make the text more difficult. If, for example, the setting is "distant" or "unfamiliar," the text will be more difficult than if the setting were familiar. On its face, that may make sense, but in reality, a text with a familiar setting could still be quite difficult if the syntax, vocabulary, and themes were complex.

KSDE002057

In addition, the reading standards focus almost exclusively on students' personal reflections and "personal connections" to texts, as demonstrated in these standards, which are repeated verbatim across grades 3-12:

> Find and explain personal connections to the topics, events, characters, actions, ideas or information in the text (grades 3-12)
>
> Sympathize with the experiences and feelings of fictional characters based on age, gender, nationalities, races, cultures, and/or disabilities (grades 3-7)
>
> Read stories and relate characters' experiences to shape own decisions by asking questions:
>
> - I felt like that character when I...
> - If that happened to me, I would...
> - I can relate to that character because one time...(grades 2-12)

Delaware also fails to prioritize which genres should be emphasized at which grades. Too many genres and writing products are expected at every grade level, and the state provides little guidance (rubrics, sample writing, etc.) to clarify expectations for products across grades.

Standards for oral presentation do not include specific targets for analysis, and no rubrics are provided for their evaluation. Finally, media standards are given short shrift, as in the following standard, which also repeats with little variation across many grades:

> Use various forms of technology
> - word processing
> - presentation programs
> - digital cameras
> - scanners
> - multimedia
>
> [...]to formulate writing and/or communicate knowledge of products (grades 5-12)

What appears here is unmeasurable and doesn't hold students accountable for anything specific.

A few areas of strength save the Delaware standards from being utterly unhelpful, but at least 65 percent of important content remains missing, giving Delaware two points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of F, Delaware's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Diamond State has in place today.

1 For this analysis, the August 2006 documents were reviewed. In January 2010, Delaware began a round of organizational revisions, the goal of which is to categorize and prioritize each standard. At time of publication, only the draft 2010 standards were available on the Delaware Department of Education website, so the link provided directs readers to this slightly modified version. Note, however, that while we did not consider these draft priority revisions in our analysis, the substance of these standards has not changed since 2006.

Delaware • Mathematics

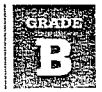
DOCUMENTS REVIEWED

Math Grade Level Expectations, Kindergarten through 8th Grade. April 2010.
Accessed from: http://www.doe.k12.de.us/infosuites/staff/ci/content_areas/math.shtml

Math Grade Level Expectations, 9th through 12th Grade. April 2010.
Accessed from: http://www.doe.k12.de.us/infosuites/staff/ci/content_areas/math.shtml

Overview

Delaware's K-8 standards are well organized and easy to read. They offer explicit guidance on priorities, and arithmetic in elementary school is both prioritized and developed reasonably well, but with some problems. High school material is not as well organized or clear, and some essential content is missing or lacking detail.



Clarity and Specificity:	2/3
Content and Rigor:	5/7
Total State Score:	**7/10**
(Common Core Grade: A-)	

General Organization

The K-12 standards are organized into four content strands, including "Numeric Reasoning" and "Algebraic Reasoning." Grade-level standards are organized by topics within the strands. In addition, process standards are presented separately from content standards. All standards are explicitly prioritized by a code: E, I, or C, standing for Essential, Important, and Compact, respectively.

Clarity and Specificity

The K-8 standards are well presented and organized. Statements are concise and quite clear:

> Connect skip counting to multiplication (grade 3)
>
> Compare integers on the number line (grade 7)

However, many of the standards lack adequate detail, making it difficult to interpret a standard's intent, as in the following:

> Record mathematical thinking (i.e., invented notation) (grade 1)
>
> Model problem situations with objects and use representations such as graphs, tables or equations to draw conclusion (grade 5)

Without further explication, it is not clear what students are expected to know or what types of problems they should be able to solve.

The high school standards often lack detail and are unclear. Worse, some make no mathematical sense:

> Perform addition, subtraction, and multiplication on irrational expressions (grade 11)
>
> Analyze linear, quadratic, exponential, periodic, trigonometric, or inverse relationships in graphs using best-fit lines and curves (regression lines and curve fitting) (grade 11)

In addition to their vagueness, standards on specific topics—such as exponential or quadratic functions—are not presented together, but are scattered throughout the four content strands.

In K-8, the standards are generally clear. In high school, however, the standards are poorly sequenced, and many standards are unclear and vague. They "do not quite provide a complete guide to users" and receive a Clarity and Specificity score of two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Delaware systematically prioritizes its standards by specifying which standards are essential in each grade. Each standard is explicitly coded as E, I, or C, standing for Essential, Important, and Compact, respectively. In elementary school, arithmetic is appropriately emphasized: Half of all Essential standards across appropriate elementary grades are devoted to arithmetic.

Content Strengths

Whole-number arithmetic is started off well with:

> Master addition and subtraction facts up to 20 (grade 3)
> Master multiplication facts and the related division facts up to the 10s tables (grade 4)

The continued development of arithmetic has some strengths. For example, there are explicit expectations that are not always found in state standards:

> Multiply fractions by whole numbers and explain the result (grade 6)
> Explain the role of place value in adding and subtracting decimals (grade 6)
> Justify the placement of the decimal point in the solution to a multiplication or division problem (grade 7)

In high school, there are some rigorous standards, such as:

> Determine symbolically the equation of a line given combinations of point, slope, and intercept information (grade 9)
> Convert between equivalent forms of linear functions (grade 9)
> Use algebraic techniques to identify the vertex and intercepts for quadratic functions (grade 11)

It is problematic, however, that of the eight standards quoted in this section, four of them are not labeled as Essential.

Content Weaknesses

Whole-number arithmetic has some good development and expectations, but fails to specify fluency and the use of standard methods. For example, for addition and subtraction:

> Add and subtract numbers up to 100 efficiently and explain the strategies used (grade 3)
> Add and subtract larger numbers (e.g., three digits + two digits) and explain how the operation works (grade 4)

The development of fractions is also problematic. Fraction multiplication standards incorporate multiple strategies and models rather than a single, standard procedure:

> Multiply fractions by other fractions using physical models, ratio/rate tables, and arrays (grade 6)
> Use a variety of strategies to add, subtract, multiply, and divide fractions (grade 6)

Worse, the only standard for multiplying fractions that is labeled Essential is this first, which focuses on using models rather than computation.

Calculators are introduced prematurely in grade 3.

There are also weaknesses in the development of decimals. Addition and subtraction of decimals is not explicated directly, but covered as in the following standards:

KSDE002060

> Add and subtract decimals using models (grade 5)
> Explain the role of place value in adding and subtracting decimals (grade 6)

High school geometry neglects many key elements. Proof is addressed in the process standards, but without mention of the axioms or postulates required for proof. Standard theorems—such as the Pythagorean Theorem—are not proven, and compass and straight edge constructions are absent.

The development of linear equations is missing some details such as finding the equation of a line between two points.

As stated above, the standards set appropriate expectations for students learning quadratic equations. However, the development of quadratic equation standards is not particularly coherent, and expectations are often far too broad. For example, max/min problems are not addressed alongside quadratics in the standards, and although imaginary numbers are introduced, complex roots of quadratic equations are not covered.

In addition, much of the STEM content is not covered. Trigonometry is introduced but not developed—for example, the standards are silent on inverse trigonometric functions and polar coordinates.

Delaware's K-8 standards are sometimes strong. Arithmetic is prioritized and developed reasonably well, but with some problems. The high school material is not as clear and is missing some of the essential content. These "critical shortcomings" result in a Content and Rigor score of five points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of B, Delaware's mathematics standards are decent, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are superior to what the Diamond State has in place today.

KSDE002061

District of Columbia • English Language Arts

DOCUMENTS REVIEWED

Learning Standards for Grades Pre-K-8, Reading/English Language Arts. 2005.
Accessed from: http://dcps.dc.gov/DCPS/In+the+Classroom/What+Students+Are+Learning/Learning+Standards+for+Grades+Pre-K-8

Learning Standards for High School Subjects, Reading/English Language Arts. 2005.
Accessed from: http://dcps.dc.gov/DCPS/In+the+Classroom/What+Students+Are+Learning/Learning+Standards+for+High+School+Subjects

Overview

The District of Columbia ELA standards are thoughtful, detailed, and rigorous. They delineate concrete and specific objectives in every strand prioritized in the *ELA Content-Specific Criteria* (see Appendix A), including those for the study of American literature. The District appends a thorough and strong reading list that was adapted from the list included with the Massachusetts standards; D.C. added Caldecott, King, and Newberry literary award winners. Standards for English language conventions, research, and media are all included in addition to strong standards for reading, writing, and listening and speaking.

Clarity and Specificity:	3/3
Content and Rigor:	7/7
Total State Score:	**10/10**
(Common Core Grade: B+)	

General Organization

Washington, D.C.'s standards are organized by grade level into the following strands:

- Language Development
- Beginning Reading
- Informational Text
- Literary text
- Research
- Writing
- Media
- English Language Conventions

Strands are divided into concepts, then into more detailed expectations. For example, the strand Language Development is divided in grade 3 into four concepts: Discussion; Questioning, Listening, and Contributing; Oral Presentation; and Vocabulary and Concept Development. Following the latter are six detailed expectations, one of which is "Identify the meaning of common prefixes and suffixes (e.g., un-, re-, in-, dis-, -ful, -ly, -less), and know how they change the meaning of roots."

Clarity and Specificity

The D.C. standards are more specific than most, and this specificity adds to the document's rigor. Most state standards, for example, do not distinguish types of literary nonfiction. But the D.C. standards offer a detailed expectation relating to that content, as early as the sixth grade:

> Describe the structural differences among essays, speeches, autobiographies, and biographies (grade 6)

KSDE002062

Similarly, while many states note literary elements such as plot, D.C. usually provides even more detail, for example:

> Analyze plot development (e.g., conflict, rising action, falling action, resolution, subplots, flashbacks, parallel episodes) to determine whether and how conflicts are resolved (grade 7)

Occasional instances of repetition or lapses of clarity are evident, such as the following grade 12 "Discussion" standard:

> Evaluate how well participants engage in discussions, and participate in a formal and an informal meeting or on a television news discussion program (grade 12)

This twelfth-grade standard is vague:

> Analyze and compare style and language among significant cross-cultural literary works (grade 12)

These lapses are extremely rare, however, and the standards overall are very clear and quite specific, thus earning the District three points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The District's standards for early reading are quite good. They cover all areas identified by the *ELA Content-Specific Criteria* (see Appendix A) and do not place undue emphasis on metacognitive reading strategies that are devoid of content. The vocabulary standards are particularly good, including a focus on morphology and etymology, as in the following:

> Use knowledge of morphology or the analysis of word roots and affixes to determine the meaning of unfamiliar words (e.g., meaning of Greek root "graph" to understand the meaning of the words telegraph, photograph, and autograph) (grade 4)

As early as first grade, the vocabulary standards acknowledge the importance of dictionary use:

> Determine meanings of words by using a beginning dictionary (grade 1)

This straightforward expectation is typical of many of the vocabulary standards. In upper grades, the vocabulary standards address figurative language and literary allusions—and their relationship to vocabulary development:

> Identify the meanings of metaphors (e.g., Scrooge, Madame LaFarge, "house of glass") based on common literary allusions and conceits (grade 11)

Such an emphasis is an unusual but welcome expectation.

D.C.'s standards for both literary and non-literary text are thorough and detailed. An exhaustive set of literary text genres is specifically addressed, including literary nonfiction. The standards even include a category called "Traditional Narrative and Classical Literature," which directs students to focus on works that reflect enduring literary heritages, including American literature, as in this grade 11 expectation:

> Demonstrate knowledge of 18th- and 19th-century foundational works of American literature, including works by authors such as Emily Dickinson, Frederick Douglass, Ralph Waldo Emerson, Benjamin Franklin, Nathaniel Hawthorne, Herman Melville, Edgar Allan Poe, Henry David Thoreau, and Mark Twain (grade 11)

Other standards specifically address American literature, as well, such as the following eleventh-grade standard:

> Analyze foundational U.S. documents for their historical and literary significance (e.g., the Declaration of Independence, the Federalist Papers, the Preamble to the U.S. Constitution, Abraham Lincoln's *Gettysburg Address*, Martin Luther King's *Letter from Birmingham Jail*) (grade 11)

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D.C. is one of just a handful of states that prioritizes the study of important American literature and that cites specific authors and works. In addition, it appends several excellent lists of suggested authors and texts that provide helpful guidance about the quality and complexity of reading that D.C. expects of its students.

Standards for expository text are equally rigorous, with a focus on structure, as in this grade 9 standard:

> Explain how one excerpt relates and contributes to the reading selection (e.g., how a sentence relates to a paragraph, how a paragraph relates to a selection) (grade 9)

As early as grade 6, the characteristics of important types of expository text, such as persuasive text, are specifically described:

> Identify the effect of persuasive strategies and rhetorical techniques (e.g., peer pressure, emotional appeal, exaggeration, repetition) that the author uses to influence readers' thinking or behavior (grade 6)

In the areas of listening and speaking, the standards are also rigorous and include active listening skills, group discussion skills, recitation, and oral presentations. The standards even cite specific listening skills that simultaneously address important logic content that is often left out in state standards. For example, consider these grade 12 standards:

> Distinguish between inductive and deductive reasoning in an argument (grade 12)
>
> Identify logical fallacies present in oral addresses (e.g., attack ad hominem, false causality, red herring, overgeneralization, bandwagoning) (grade 12)

These standards help ensure that students will identify different kinds of reasoning and the component parts of arguments, thereby honing their ability to discern which arguments are valid and effective—and which are not.

The District includes detailed standards for English language conventions, including specific standards for certain spelling patterns at almost all grade levels.

For example, in the grade 3 "Beginning Reading" strand, students are expected to:

> Apply knowledge of the following common spelling patterns to read words in decodable text that
> - drop the final "e" and add endings such as -ing, -ed, or -able (e.g., use, using, used, usable);
> - have final consonants that need to be doubled when adding an ending (e.g., hop to hopping);
> - require changing the final "y" to "i" (e.g., baby to babies);
> - end in -tion, -sion (e.g., election, vision); and
> - include common prefixes, suffixes, and roots (grade 3)

Research and media are also thoroughly covered; each is given its own strand. Students in upper grades are required to write research papers, culminating in a significant "extended essay" at twelfth grade. Also, in high school, students are required to analyze and produce multimedia presentations.

Content Weaknesses

D.C.'s writing standards exhibit the same flaw that many other state writing standards reveal: Too many types of writing products are expected at every grade level, including, for example, short stories, scripts, poems, and dramas. Such voluminous expectations do not help teachers prioritize types of writing by grade level (or span) and make for unrealistic expectations.

More information about how oral presentations and writing will be evaluated, such as the inclusion of sample acceptable student writing, would be very helpful.

The District's standards are mostly top-notch in content coverage. The level of rigor is also appropriate for the targeted grade levels and flaws are minor. They receive seven points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

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The Bottom Line

The District of Columbia's standards are clearer, more thorough, and easier to read than the Common Core standards. The essential content is grouped more logically, so that standards addressing inextricably linked characteristics, such as themes in literary texts, can be found together rather than spread across strands. In addition, the D.C. standards treat both literary and non-literary texts in systematic detail, addressing the specific genres, sub-genres, and characteristics of both text types. Both D.C. and the Common Core include reading lists with exemplar texts, but D.C.'s is much more comprehensive. In addition, while the Common Core addresses American literature only in high school, the D.C. standards include this important content in elementary and middle school, too.

On the other hand, Common Core includes samples of student writing to clarify grade- and genre-specific writing expectations. It also includes standards explicitly addressing foundational U.S. documents. Such enhancements would benefit D.C.'s already-strong standards.

KSDE002065

District of Columbia • Mathematics

DOCUMENTS REVIEWED

Learning Standards for Grades Pre-K-8, Mathematics. August 2005.
Accessed from: http://dcps.dc.gov/DCPS/In+the+Classroom/What+Students+Are+Learning/Learning+Standards+for+Grades+Pre-K-8

Learning Standards for High School Subjects, Mathematics. August 2005.
Accessed from: http://dcps.dc.gov/DCPS/In+the+Classroom/What+Students+Are+Learning/Learning+Standards+for+High+School+Subjects

Overview

The District of Columbia standards are well organized and extremely easy to read. They cover most of the essential content with both depth and rigor. Arithmetic is prioritized and well developed in the early grades. High school material is generally well covered, including STEM-ready material.

Clarity and Specificity:	3/3
Content and Rigor:	7/7
Total State Score:	**10/10**
(Common Core Grade: A-)	

General Organization

The K-8 grade-level standards are organized by five content strands such as "Geometry" and "Measurement." The content strands are sometimes further subdivided into topics. Many of the standards are accompanied by example problems.

The high school standards are organized by course, including a Pre-Calculus and a Trigonometry course. The courses, except Geometry, which is not broken into topics, are organized by content strands.

Clarity and Specificity

The standards are well presented and easy to read and understand. Generally, the standards are straightforward and clear, for example:

> Determine the unit cost when given the total cost and number of units (grade 4)
>
> Show that two fractions are or are not equivalent by reducing to simpler forms or by finding a common denominator (grade 5)

The use of examples to clarify intent is exemplary. For example, in the following broadly stated standard, the example serves to specify what students are supposed to know and be able to do:

> Use concepts of negative numbers
>
> - Example: The temperature this morning was -6° and now it is 3°. How much has the temperature risen? Explain your answer (grade 4)

While the examples generally serve to clarify, a few are not illuminating. For example, in high school, a standard about maximum and minimum values of functions is accompanied by an example which is a straightforward area computation:

KSDE002066

> Identify maximum and minimum values of functions. Apply to the solution of problems
>
> - [Example:] A right circular cylindrical can is 6 inches high and the area of its top is 36 π square inches. What is the minimum number of square inches of construction paper that it would take to cover the lateral surface of the can? (Pre-Calculus and Trigonometry)

This is a perfectly good area problem, but there is no substantial max/min aspect to it.

The standards are generally well presented, clear, and specific. The use of examples is exemplary, and the District of Columbia receives a Clarity and Specificity score of three points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

The District of Columbia does not provide explicit guidance as to priorities. However, in the elementary grades, arithmetic is implicitly prioritized because the "Number Sense and Operations" strand, which includes the arithmetic standards, is by far the biggest content strand.

Content Strengths

The standards cover almost all of the essential content. The development of arithmetic is strong. Knowing the addition and subtraction number facts is specified:

> Know addition and subtraction facts (addends to 10), commit to memory, and use them to solve problems (grade 1)

The properties of arithmetic are well developed, and fluency and standard procedures are required throughout. The following standards illustrate this:

> Demonstrate the ability to use conventional algorithms for addition and subtraction (two two-digit whole numbers) (grade 1)
>
> Demonstrate an understanding of and the ability to use conventional algorithms for the addition and subtraction of multi-digit whole numbers (grade 4)
>
> Demonstrate understanding of and ability to use the conventional algorithms for multiplication of up to a three-digit whole number by a two-digit whole number. Multiply three-digit whole numbers by two-digit whole numbers accurately and efficiently (grade 4)

Continued coverage of arithmetic is also quite rigorous. The number line is used throughout, as in:

> Compare and order positive and negative fractions, decimals, and mixed numbers and place them on a number line (grade 6)

Examples of other excellent standards are:

> Accurately and efficiently add, subtract, multiply, and divide positive fractions (including mixed numbers) with like and unlike denominators. Simplify fractions (grade 6)
>
> Represent rational numbers as repeating or terminating decimals when possible, and translate between these representations (grade 6)
>
> Calculate the percentage increase and decrease of a quantity (grade 7)
>
> Solve problems involving ratio units such as miles per hour, dollars per pound, or persons per square mile (grade 8)

High school content is generally rigorous. For example, solid manipulation skills with rational functions and completing the square are both covered:

> Perform basic arithmetic operations with rational expressions and functions (Algebra I)
>
> Find solutions to quadratic equations (with real roots) by factoring, completing the square, or using the quadratic formula. Demonstrate an understanding of the equivalence of the methods (Algebra I)

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STEM content is also well covered, with standards such as:

> Plot complex numbers using both rectangular and polar coordinates systems. Represent complex numbers using polar coordinates, i.e., a + bi = r (cos q + i sin q) (Pre-Calculus and Trigonometry)

Content Weaknesses

Though the development of arithmetic is strong, instant recall of the basic facts for multiplication and division is not completely specified.

The standards are admirably succinct, but there are some extraneous geometry and data analysis, statistics, and probability (DASP) standards. For example, there are standards about surveys in grades 1, 2, 3, 4, 7, and 8.

The high school Geometry course is missing explicit coverage of proofs of the major theorems of geometry. Simple proofs are required, but the major theorems are to be used and applied rather than proven.

The study of quadratic equations is missing some details. The vertex form is not covered and symmetry and max/min problems are missing.

The District of Columbia's standards cover much of the essential content with both depth and rigor. In the elementary grades, the standards do an excellent job of both prioritizing and developing arithmetic. The high school coverage is generally rigorous, though it is missing a few details in geometry and in the coverage of quadratics. The Content and Rigor score is seven points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With some minor differences, Common Core and the District of Columbia both cover the essential content for a rigorous, K-12 mathematics program. D.C.'s standards are exceptionally clear and well presented. Standards are briefly stated and further clarified with the use of examples, so that D.C.'s standards are considerably easier to read and follow than Common Core. In addition, the high school content is organized so that the standards dealing with various topics, such as quadratic functions, are grouped together in a mathematically coherent way. The organization of the Common Core is more difficult to navigate, in part because standards on related topics sometimes appear separately rather than together.

On the other hand, Common Core excels in the coverage of fractions, and includes some essential high school content, mentioned above, that is missing in District of Columbia.

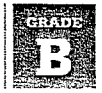
Florida • English Language Arts

DOCUMENTS REVIEWED

The Sunshine State (Florida) Reading and Language Arts Standards. 2006.
Accessed from: http://etc.usf.edu/flstandards/la/index.html

Overview

Florida's standards are generally comprehensive and clearly written, though on occasion, murky and repetitive. Save for the state's major failure to address American literature, the standards exhibit attention to most of the areas prioritized in our *ELA Content-Specific Criteria* (see Appendix A).



Clarity and Specificity:	2/3
Content and Rigor:	5/7
Total State Score:	**7/10**

(*Common Core Grade: B+*)

General Organization

The document is organized into the following logical strands:

1. Reading Process
2. Literary Analysis
3. Writing Process
4. Writing Applications
5. Communications
6. Information and Media Literacy

The standards are then organized into easy to comprehend sub-categories and also by grade-level benchmarks. For example, under Reading Process, a sub-category is "Concepts About Print," which includes expectations such as this grade 1 benchmark:

> The student will locate the title, table of contents, names of author and illustrator, glossary, and index (grade 1)

In addition, the Florida standards contain "access points," which are foundational skills related to the standards. Their purpose is to "...provide access to the general curriculum for students with significant cognitive disabilities." This review, however, examines the standards and benchmarks only.

Clarity and Specificity

The Florida standards are generally clear and specific. They are easy to follow and are mostly free of the jargon, vacuous language, and senseless repetition that characterize many state standards.

Sometimes, however, the standards lapse into the wordy and unmeasurable, as in the following grade 5 standard for Literary Analysis:

> The student will use interest and recommendations of others to select a balance of age- and ability-appropriate fiction materials to read (e.g., novels, historical fiction, mythology, poetry) to expand the core foundation of knowledge necessary to function as a fully literate member of a shared culture (grade 5)

In a few other places, the standards become unwieldy and difficult to comprehend, much less evaluate, as in this Literary Analysis standard, repeated across grades 9-12:

> The student will create a complex, multi-genre response to the reading of two or more literary works, describing and analyzing an author's use of literary elements (e.g., theme, point of view, characterization, setting, plot), figurative language (e.g., simile, metaphor, personification, hyperbole, symbolism, allusion, imagery), and analyzing an author's development of time and sequence through the use of complex literary devices such as foreshadowing and flashback (grades 9-12)

Fortunately, such standards are the exception. Some repetition exists in other places, but for the most part Florida does a good job of modifying expectations across grade levels.

Since some standards are not measurable and others have jargon and some vague language, their Clarity and Specificity score is two points out of three (see *Common Grading Metric*, Appendix A).

Content and Rigor

Content Strengths

Florida's early reading standards are clear and comprehensive. They address phonemic awareness, phonics, comprehension, and fluency and do not emphasize unmeasurable reading strategies. The following phonemic awareness standard is typical:

> The student will:
> - identify individual phonemes (sounds) in words (e.g., CCVC, CVCC, CCCVC);
> - blend three to five phonemes to form words;
> - segment single-syllable words into individual phonemes; and
> - manipulate individual phonemes to create new words through addition, deletion, and substitution (grade 1)

Vocabulary is addressed at every grade level, starting with Kindergarten. Unlike many state standards, Florida emphasizes word analysis, etymology, and even dictionary use, as in the following eighth-grade standard:

> The student will determine meanings of words, pronunciation, parts of speech, etymologies, and alternate word choices by using a dictionary, thesaurus, and digital tools (grade 8)

Florida treats the analysis of literary and non-literary texts separately, which helps give each category proper attention. The standards for Literary Analysis include an expectation for written analyses, as in this fourth-grade standard:

> The student will write a book report, review, or critique that identifies the main idea, character(s), setting, sequence of events, conflict, crisis, and resolution (grade 4)

Similarly detailed standards are included for informational texts.

Florida's writing standards exhibit a number of virtues. This is one of very few states to include standards for penmanship, introducing printing in Kindergarten and cursive in grade 3. English language conventions are included within writing, and the standards for spelling, mechanics, and usage begin in Kindergarten and are fairly rigorous at all grade levels.

Standards for the Writing Process contain fairly specific directives, more so than in many other states, as in the following sixth-grade standard:

> The student will revise by...
> creating precision and interest by elaborating ideas through supporting details (e.g., facts, statistics, expert opinions, anecdotes), a variety of sentence structures, creative language devices, and modifying word choices using resources and reference materials (e.g., dictionary, thesaurus)...(grade 6)

Three writing genres—persuasive, narrative, and expository—are addressed at all grades, and although they may contain too many expectations for writing products at every grade level, the categories are clear and sensible.

Standards for listening and speaking are pithy and contain reasonable content at each grade level, including expectations for participating in discussions, reciting poetry and other text, giving speeches, and making oral presentations.

Florida combines its research and media standards into a strand called Information and Media Literacy. Starting in the primary grades, students are expected to learn the research process, evaluate sources, and present findings. The standards address the analysis of media techniques and require students to use technology when presenting information.

Content Weaknesses

One disappointing aspect of the Florida standards is that they do not require students to study American literature. This standard from grades 11-12 is about as close as they get to such a requirement:

> The student will analyze and compare a variety of traditional, classical, and contemporary literary works, and identify the literary elements of each (e.g., setting, plot, characterization, conflict) (grades 11-12)

Such a broad and general statement is ultimately meaningless. American literature is never mentioned specifically. Further, the standards do not specify the quality and complexity of reading required at each grade level through the use of a reading list or sample passages—either of which would strengthen the document's rigor.

Another important omission is the analysis of persuasive text. No standards exist for the study of types of arguments and rhetorical techniques, although the writing standards do address these characteristics.

In the Writing Applications strand, every type of writing receives equal emphasis. For instance, the following middle and high school expectations—the first a technical writing standard and the second, a persuasive writing standard—are given equal billing:

> The student will write detailed travel directions and design an accompanying graphic using the cardinal and ordinal directions, landmarks, streets and highways, and distances (grades 9-10)
>
> The student will write essays that state a position or claim, present detailed evidence, examples, and reasoning to support effective arguments and emotional appeals, and acknowledge and refute opposing arguments (grades 9-12)

Writing arguments and persuasive pieces is more important than writing directions, manuals, or procedures. It would be a shame if teachers—in an effort to cover what's in the standards—spent too much time on the former and not enough on the latter. Setting clear priorities would help, as would including samples of model student writing, to illuminate expected levels of rigor.

Similarly, stronger guidelines for formal oral presentations, including evaluation criteria, would be helpful.

Florida's ELA standards are missing some crucial content and "do not fully distinguish between more and less important content and skills" (see *Common Grading Metric*, Appendix A). Therefore, they receive five points out of seven for Content and Rigor.

The Bottom Line

Florida's standards are generally strong and, with one exception (noted below), address literary and non-literary texts more distinctly than the Common Core. In addition, Florida carefully distinguishes between persuasive writing and expository writing, a distinction that is blurry in the Common Core standards. Both sets of standards could do more to prioritize writing by genres at various grade levels.

On the other hand, Common Core standards addressing the analysis of persuasive text are more thorough and detailed than those found in the Florida standards. In addition, Common Core addresses the study of American literature in eleventh grade, whereas the Florida standards do not mention it at all. Common Core also includes a list specifying the quality and complexity of student reading as well as sample student writing. Such enhancements would significantly improve Florida's standards.

Florida • Mathematics

DOCUMENTS REVIEWED

Sunshine State Standards: Mathematics, Standards Report Without Access Points (with Remarks). 2008. Accessed from: http://www.floridastandards.org/Downloads.aspx

Overview

Florida's standards are generally excellent. They are well organized and well written, and cover nearly all the essential content with both depth and rigor. The high school standards are particularly strong, extending coverage to include STEM-ready material.

Clarity and Specificity:	3/3
Content and Rigor:	7/7
Total State Score:	**10/10**
(Common Core Grade: A-)	

General Organization

The standards are broadly organized into content strands called "Bodies of Knowledge." The K-8 standards have four strands: "Algebra" (which includes arithmetic), "Geometry/Measurement," "Number and Operations," and "Data Analysis." The bulk of the standards are derived from the first two strands.

The strands are broken into topics labeled as "Big Ideas" and additional topics are labeled as "Supporting Ideas." These broad strands and topics further break down into "benchmark descriptions" which are the grade-level standards. There are about twenty standards per grade.

The high school standards are organized similarly except there are no "big" or "supporting" ideas—just content strands broken into topics and then grade-level standards. Algebra, for example, is comprised of ten topics (including polynomials and quadratic equations) and includes a total of eighty-four standards.

Each of the standards (K-12) is followed by a "remark/example" which typically elaborates on the standard and/or provides an example problem.

Clarity and Specificity

The standards are generally succinct and clear, for example:

> Extend number patterns to build a foundation for understanding multiples and factors—for example, skip counting by 2's, 5's, 10's (grade 2)
>
> Justify the formula for the area of the rectangle "area = base x height" (grade 4)

The remarks/examples that are provided with the standards are an excellent feature that serves to ensure that the intent of each standard is clear, for example:

> Select and use appropriate units, both customary and metric, strategies, and measuring tools to estimate and solve real-world area problems
>
> Remarks/Examples:
>
> Students should recognize that the area of a piece of paper might be measured in square inches, the area of a room might be measured in square feet, and the area of a large piece of land might be measured in square miles. Alternately, these measurements might be in square centimeters, square meters, and square kilometers, respectively.
>
> • Example: Students find the area of a composite shape. An L-shaped region may be decomposed into rectangular regions (grade 4)

The remarks/examples make it clear exactly what students are expected to be able to do.

Florida's standards are well presented and very detailed, and the use of examples is exemplary. They receive a perfect three points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Florida does an excellent job in offering explicit guidance as to what material is most important in each grade. Their content is prioritized through the use of the three Big Ideas for each grade. Through grade 6, two out of three of the Big Ideas in each grade appropriately emphasize the development of arithmetic. For example, the Big Ideas for the fourth grade are:

> Develop quick recall of multiplication facts and related division facts and fluency with whole-number multiplication (grade 4)
>
> Develop an understanding of decimals, including the connection between fractions and decimals (grade 4)
>
> Develop an understanding of area and determine the area of two-dimensional shapes (grade 4)

Content Strengths

Florida's standards cover content with both depth and rigor. The number line is introduced early and appears frequently. Arithmetic properties such as associativity are well covered. The following thread develops the important topic of whole-number multiplication:

> Solve multiplication and division fact problems by using strategies that result from applying number properties (grade 3)
>
> Use and describe various models for multiplication in problem-solving situations, and demonstrate recall of basic multiplication and related division facts with ease (grade 4)
>
> Multiply multi-digit whole numbers through four digits fluently, demonstrating understanding of the standard algorithm, and checking for reasonableness of results, including solving real-world problems (grade 4)

High school content is well covered, including STEM-ready material such as polar coordinates, inverse trigonometry functions, series, and logarithms.

The high school organization is particularly strong. The sequence of ten standards under the topic quadratic equations in algebra contains the following:

> Graph quadratic equations with and without graphing technology (grades 9-12)
>
> Solve quadratic equations over the real numbers by factoring and by using the quadratic formula (grades 9-12)
>
> Solve quadratic equations over the real numbers by completing the square (grades 9-12)
>
> Use the discriminant to determine the nature of the roots of a quadratic equation (grades 9-12)
>
> Solve quadratic equations over the complex number system (grades 9-12)
>
> Identify the axis of symmetry, vertex, domain, range and intercept(s) for a given parabola (grades 9-12)
>
> Use quadratic equations to solve real-world problems (grades 9-12)

This approach is exemplary—it outlines rigorous coverage of a complete analysis of quadratic equations. Other high school coverage is also excellent.

Content Weaknesses

There are a few problems in the standards with the development of arithmetic. As seen above, the development of whole-number multiplication is excellent, but the development of whole-number addition and subtraction is not as strong. Big Idea 2 in grade 2 is about developing "quick recall of addition facts," but the standards themselves do not highlight a need for automaticity. Students must have quick recall of the facts to move on.

The capstone standard for addition and subtraction reveals a much more substantive issue:

> Add and subtract multi-digit whole numbers through three digits with fluency by using a variety of strategies, including invented and standard algorithms and explanations of those procedures (grade 2)

This standard leaves invented algorithms with the same status as the standard algorithms. This does not adequately ensure fluency with addition and subtraction.

In high school, axioms are mentioned in Geometry, but they are not integrated into the otherwise excellent geometry standards.

Florida's standards are outstanding. They cover nearly all the essential topics with both depth and rigor and easily merit a score of seven points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With some minor differences, Common Core and Florida both cover the essential content for a rigorous, K-12 mathematics program. Florida's standards are exceptionally clear and well presented and they are easier to read and follow than Common Core. Standards are briefly stated and further clarified with the use of additional remarks/examples that explicate the content expectations so the reader knows exactly what is expected. In addition, the high school content is organized so that the standards dealing with specific topics, such as quadratic functions, are grouped together in a mathematically coherent way. The organization of the Common Core is more difficult to navigate, in part because standards on related topics sometimes appear separately rather than together.

On the other hand, Common Core excels in the coverage of arithmetic, and includes some details—particularly those that address the development of fractions—that are missing in Florida.

KSDE002074

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Georgia • English Language Arts

DOCUMENTS REVIEWED

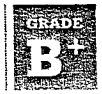
Georgia Performance Standards for English Language Arts and Reading: Grades K-5. June 12, 2008.
Accessed from: https://www.georgiastandards.org/Standards/pages/BrowseStandards/ELAStandardsK-5.aspx

Georgia Performance Standards for English Language Arts and Reading: Grades 6-8. June 12, 2008.
Accessed from: https://www.georgiastandards.org/Standards/pages/BrowseStandards/ELAStandards6-8.aspx

Georgia Performance Standards for English Language Arts and Reading: Grades K-5. June 12, 2008.
Accessed from: https://www.georgiastandards.org/Standards/pages/BrowseStandards/ELAStandards9-12.aspx

Overview

The Georgia ELA standards are generally well presented and include most of the content necessary for a rigorous, K-12 curriculum.



Clarity and Specificity:	2/3
Content and Rigor:	6/7
Total State Score:	**8/10**
(*Common Core Grade: B+*)	

General Organization

The Georgia state ELA standards are organized into broad content strands. Three strands are common to all grade levels: Reading; Writing; and Speaking, Listening, and Viewing. A "conventions" strand is included for grades 3-12 and a "reading across the curriculum" strand for middle and high school.

Each strand is broken down into sub-strands, and then into grade-specific standards.

Clarity and Specificity

The Georgia K-12 ELA standards are reasonably well organized and clear, with little vague language or jargon. In addition, the state provides helpful criteria for writing expectations across genres, as well as clear expectations about the number of books that should be read in each grade.

Clarity, however, is a mixed bag. Some standards are very clear and specific, such as the following third-grade vocabulary standard:

> Identifies and infers meaning from common root words, common prefixes (e.g., un-, re-, dis-, in-), and common suffixes (e.g., -tion, -ous, -ly) (grade 3)

But others need greater detail or examples to clarify expectations, such as:

> Uses general dictionaries, specialized dictionaries, thesauruses, or related references as needed to increase learning (grade 9)

In a few areas, Georgia's standards could be organized more clearly. For example, the genre-specific writing standards are grouped together, rather than by genre, making it difficult to differentiate between standards that are common to all genres and those that are specific to a particular genre. In addition, rather than being grouped together as part of one specific strand, the research standards are dispersed across separate strands, which makes it hard to track the progression of content within and across grades.

Labels are a problem, too. For example, in fourth grade, two standards are labeled ELA4R1 but presented separately. One is focused on literary texts and includes nine expectations (labeled "a-i"). Another is focused on informational texts and

KSDE002075

includes eight expectations (labeled "a-h"). This makes tracking student mastery of essential standards difficult.

Taken together, the inclusion of vaguely worded standards and the minor flaws in organization noted above earn Georgia two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The early reading standards are detailed and outline clear expectations for phonics, phonemic awareness, and fluency. For example:

> The student demonstrates the relationship between letters and letter combinations of written words and the sounds of spoken words. The student
>
> a. Demonstrates an understanding that there are systematic and predictable relationships between print and spoken sounds.
>
> b. Recognizes and names all uppercase and lowercase letters of the alphabet...
>
> e. Applies learned phonics skills when reading words and sentences in stories (Kindergarten)
>
> The student demonstrates the ability to read orally with speed, accuracy, and expression. The student
>
> a. Reads previously taught high-frequency words at the rate of 30 words correct per minute
>
> b. Reads previously taught grade-level text with appropriate expression (Kindergarten)

The high school standards include a course devoted to "Reading and American Literature" which provides detailed expectations that reflect the importance of reading American literature that reflects our common literary heritage. For example:

> The student identifies, analyzes, and applies knowledge of theme in a work of American literature and provides evidence from the work to support understanding. The student...
>
> d. Analyzes and compares texts that express universal themes characteristic of American literature across time and genre (i.e., American individualism, the American dream, cultural diversity, and tolerance) and provides support from the texts for the identified themes (high school American literature)

The expectations for the study of literary and non-literary texts are generally strong and delineate an appropriate progression of content and rigor across grade levels.

The elementary writing standards describe specific criteria for narrative, informational, and persuasive writing as well as for response to literature, such as:

> The student produces informational writing (e.g., report, procedures, correspondence) that:
>
> a. Engages the reader by establishing a context, creating a speaker's voice, and otherwise developing reader interest
>
> b. Frames a central question about an issue or situation
>
> c. Creates an organizing structure appropriate to a specific purpose, audience, and context
>
> d. Includes appropriate facts and details
>
> e. Excludes extraneous details and inappropriate information
>
> f. Uses a range of appropriate strategies, such as providing facts and details, describing or analyzing the subject, and narrating a relevant anecdote
>
> g. Draws from more than one source of information such as speakers, books, newspapers, and online materials
>
> h. Provides a sense of closure to the writing (grade 4)

These criteria demonstrate increasing rigor from grade to grade.

While students are expected to study all writing genres each year, at the high school level the state indicates a clear focus area for each year. For example, the ninth-grade writing standards are introduced with a note indicating that:

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> All modes or genres are practiced at each grade level; however, in order to achieve mastery, each grade level has a particular writing focus. Technical writing is the focus for 9th grade; by the end of 9th grade, the student will demonstrate competency in technical writing...(grade 9)

Detailed performance expectations follow this introductory paragraph, and the state prioritizes persuasive writing in tenth grade and expository in eleventh and twelfth.

Research is also emphasized appropriately throughout the grades. The standards for conventions and vocabulary are detailed, specific, and rigorous, and the state provides clear expectations for listening and speaking.

Content Weaknesses

While the standards provide very specific guidance about the *number* of texts students should be reading each year in grades 4-12—"a minimum of 25 grade-level appropriate books or book equivalents (approximately 1,000,000 words) per year from a variety of subject disciplines"—it supplies scant guidance about what constitutes "grade-appropriate" books. For instance, while titles and authors are referenced sporadically in the "sample tasks" that accompany the standards, the state provides no lists of exemplar texts or authors, or indication of the complexity of texts appropriate to specific grade levels.

Apart from the inclusion of a high school course devoted to American literature, the standards do not outline expectations for reading outstanding works of American literature or foundational documents that reflect our common heritage.

Finally, the standards addressing how to use multimedia techniques to present information are inadequate, particularly for grades K-8.

Although some content is missing, Georgia's ELA standards are reasonably strong and set forth most of the essential content necessary to guide rigorous, college preparatory curricula and instruction. Accordingly, they earn six points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

The Georgia K-12 ELA standards are better organized and easier to read than the Common Core. Essential content is grouped more logically, so that standards addressing inextricably linked characteristics, such as themes in literary texts, can be found together rather than spread across strands. The high school standards include a course devoted to "Reading and American Literature," which provides a greater number of more detailed and rigorous expectations that address the importance of reading American literature. Georgia also more clearly specifies genre-specific writing expectations, and better prioritizes writing genres at each grade level.

On the other hand, while Georgia only specifies the number of books that should be read in each grade, Common Core appends a list that specifies the quality and complexity of the reading students should do. In addition, Common Core includes samples of student writing to help clarify writing expectations across grades. Georgia would do well to incorporate such guidance into its standards.

KSDE002077

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Georgia • Mathematics

DOCUMENTS REVIEWED

Georgia Performance Standards K-5. September 11, 2008.
Accessed from: https://www.georgiastandards.org/Standards/Pages/BrowseStandards/MathStandardsK-5.aspx

Georgia Performance Standards 6-8. September 11, 2008.
Accessed from: https://www.georgiastandards.org/Standards/Pages/BrowseStandards/MathStandards6-8.aspx

Georgia Performance Standards 9-12. September 11, 2008.
Accessed from: https://www.georgiastandards.org/Standards/Pages/BrowseStandards/MathStandards9-12.aspx

Overview

Georgia's standards are well organized and easy to read. They place arithmetic as a high priority, and some of the development is excellent, but the development of whole-number arithmetic is not quite complete. High school mathematics is detailed and covers most of the essential content with both depth and rigor.

Clarity and Specificity:	3/3
Content and Rigor:	6/7
Total State Score:	**9/10**
(Common Core Grade: A-)	

General Organization

The standards are organized by strands such as "Number and Operations" and "Algebra." The grade level Performance Standards are listed within these strands, and are often subdivided into lists of more specific standards. There is also a set of content-free process standards in each strand that developers say is "essential to mastering each of the mathematics content standards." One of the process standards in geometry, for instance, is "Students will solve problems (using appropriate technology)." For each grade there is a short introduction about the mathematics to be covered.

The high school organization is similar, only the material is presented by course. The courses include Algebra I and II, Geometry, Statistics, Advanced Algebra, and Pre-Calculus, among others. Each of the courses is grouped into broad categories called Mathematics 1 through Mathematics 4 and then, Accelerated Mathematics I and II (Mathematics I, for instance, includes Algebra, Geometry, and Statistics while Accelerated Mathematics II includes Pre-Calculus, Trigonometry, and Statistics).

Clarity and Specificity

The standards are well presented and easy to read. Most statements are concise and detailed, such as:

> Students will tell time to the nearest five minutes and know relationships of time such as the number of seconds in a minute, minutes in an hour and hours in a day (grade 2)
> Identify the center, diameter, and radius of a circle (grade 3)
> Round a decimal to the nearest whole number or tenth (grade 4)

There are occasional lapses in clarity, as in the following standard, which is too broadly stated to be useful:

> Investigate and explain the characteristics of a function: domain, range, zeros, intercepts, intervals of increase and decrease, maximum and minimum values, and end behavior (Mathematics 1)

KSDE002078

Though not all standards are clear, Georgia's standards are generally well organized and easy to read and interpret and easily merit three points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

The proportion of the standards devoted to arithmetic is high. In fact, about half of them in the appropriate grades are about the development of arithmetic. Since arithmetic is the mathematical foundation in the early-middle grades, this appropriately prioritizes it.

Content Strengths

There is some strong material on the properties of arithmetic, such as:

> Understand and use the inverse relation between addition and subtraction to solve problems and check solutions (grade 2)

Some of the material on more advanced arithmetic, such as fractions, is strong, including the following standards:

> Know that when all fractional parts are included, such as three thirds, the result is equal to the whole (grade 2)
> Understand the fraction a/b represents an equal-sized part of a whole that is divided into b equal sized parts (grade 3)
> Find equivalent fractions and simplify fractions (grade 5)
> Understand division of whole numbers can be represented as a fraction (a/b = a ÷ b) (grade 5)

The standards explicitly develop common denominators, despite the unnecessary insertion of pedagogy (i.e., "concrete [and] pictorial"):

> Explore finding common denominators using concrete, pictorial, and computational models (grade 5)

Also, the development of the concept of area is strong as is illustrated by the following sequence:

> Understand the meaning of the square unit and measurement in area (grade 3)

> Determine the area of squares and rectangles by counting, addition, and multiplication with models (grade 3)
> Derive the formula for the area of a parallelogram (grade 5)
> Derive the formula for the area of a triangle (grade 5)
> Find the areas of triangles and parallelograms using formulae (grade 5)

High school content is rigorous. Important algebraic skills are explicit:

> Add, subtract, multiply, and divide polynomials (Mathematics 1)
> Add, subtract, multiply, and divide rational expressions (Mathematics 1)

The analysis of quadratics is both thorough and detailed, as in:

> Investigate and explain characteristics of quadratic functions, including domain, range, vertex, axis of symmetry, zeros, intercepts, extrema, intervals of increase and decrease, and rates of change (Accelerated Mathematics 1)
> Convert between standard and vertex form (Accelerated Mathematics 1)

Geometry is also well covered. Foundations are included and standard theorems are covered, for example:

> Understand and use congruence postulates and theorems for triangles (SSS, SAS, ASA, AAS, HL) (Mathematics 1)

In addition, STEM-ready content is well covered including most necessary trigonometry.

KSDE002079

Content Weaknesses

There are some weaknesses in the development of arithmetic. Instant recall of basic facts is not explicit.

In the continued development of arithmetic, standard algorithms are not mentioned, and fluency is only sometimes required:

> Students will build fluency with multi-digit addition and subtraction.
> a. Correctly add and subtract two whole numbers up to three digits each with regrouping (grade 2)
>
> Students will solve problems involving multiplication of 2-3 digit numbers by 1- or 2-digit numbers (grade 4)
>
> Solve problems involving division by 1- or 2-digit numbers (including those that generate a remainder) (grade 4)

In addition to the problems above, the standards are weak on including the number line and they do not explicitly include many references to word problems—there should be more.

In high school, the coverage of linear equations is missing a few basics, such as explicit mention of point-slope form and obtaining a linear equation from two points.

The high school content is generally both thorough and rigorous, though there are a few gaps with linear equations. Arithmetic in the early grades is well prioritized, but the development has a few weaknesses. These few "shortcomings" result in a Content and Rigor score of six points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With some minor differences, Common Core and Georgia both cover the essential content for a rigorous K-12 mathematics program. Georgia's standards are briefly stated and usually clear, making them easier to read and follow than Common Core. In addition, the high school content is organized so that standards addressing specific topics, such as quadratic functions, are grouped together in a mathematically coherent way. The organization of the Common Core is more difficult to navigate, in part because standards dealing with related topics sometimes appear separately rather than together.

The chief weakness in Georgia's standards stems from their lack of specific content expectations in the development of arithmetic. Common Core provides admirable focus and explicitly requires standard methods and procedures, and the inclusion of those essential details would enhance Georgia's standards.

KSDE002080

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Hawaii • English Language Arts

DOCUMENTS REVIEWED

Hawaii Content and Performance Standards III: Interactive Database. December 17, 2007. Accessed from: http://165.248.30.40/hcpsv3/

Overview

Despite the inclusion of some very strong standards for grammar and conventions—the skills that are most often cited by college professors and employers as deficiencies of today's high school graduates—Hawaii's standards are often vague and lack the essential ELA content needed to guide rigorous, K-12 instruction.

Clarity and Specificity:	1/3
Content and Rigor:	4/7
Total State Score:	**5/10**
(Common Core Grade: B+)	

General Organization

The Hawaii ELA standards are divided into three strands across grades K-8: Reading, Writing, and Oral Communication. Each strand is then broken down into standards, topics, and grade-band benchmarks. Finally, for each benchmark, the state provides a sample performance assessment question and a rubric that articulates the skills a student would need to master to be considered advanced, proficient, partially proficient, or novice. (However, it is neither clear what role this somewhat repetitive rubric is supposed to play in instructional or assessment planning, nor to which level students are held accountable at each grade.)

The high school standards follow the same organizational structure, but include standards for American Literature, British Literature, Expository Writing (I and II), World Literature, Reading Workshop, and Creative Writing.

Clarity and Specificity

Hawaii's ELA standards contain a few bright spots but mostly lack the clarity and specificity that teachers need to help drive rigorous curriculum, daily instruction, and assessments.

Among the standards that do provide admirable detail are those that specifically delineate the grammatical knowledge that students must master to be college-ready. Take, for example, the following:

> Edit writing to correct use of the following punctuation:
> - commas in letters, dates, addresses, and items in a simple series
> - apostrophes in contractions and singular possessives
> - quotation marks and commas or end marks in direct quotations and dialogue
>
> The student: Inserts commas correctly in letters, dates, addresses, and items in a simple series; replaces a deleted letter(s) with an apostrophe in a contraction; forms singular possessives by adding an apostrophe and sets off quotations with quotation marks and ends them appropriately with a comma or end mark (grade 3)

In addition, the standards that address expectations for oral presentations are generally clear and provide specific guidance about what students should know and be able to do.

Unfortunately, many more standards lack this critical detail, and the inclusion of sample performance assessments and benchmark-specific rubrics does little more than restate (with minor elaboration) the expectations of the oft-vague benchmarks themselves. Take, for example, the following third-grade reading standard and subsequent rubric:

KSDE002081

> Use new grade-appropriate vocabulary, including homophones and homographs, introduced in stories, informational texts, word study, and reading (grade 3)

Advanced	Proficient	Partially Proficient	Novice
Use new grade-appropriate vocabulary, including homophones and homographs, with precision, fluency, and accuracy	Use new grade-appropriate vocabulary, including homophones and homographs, with no significant errors	Use new grade-appropriate vocabulary, including homophones and homographs, with difficulty and a few significant and/or many minor errors	Use new grade-appropriate vocabulary, including homophones and homographs, with great difficulty and/or many significant errors

This rubric adds little to clarify an already vague standard, and similar problems plague standards across grade levels and strands. Therefore, despite their few bright spots, Hawaii's standards can earn no higher than a one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

In some areas, we find strong evidence of increasing rigor and complexity from grade to grade. This is especially true for grammar standards, which make it clear exactly what content students should master each year, and how that content builds from grade to grade. Consider these sixth- and ninth-grade standards:

> Form and use the following grammatical constructions correctly when editing writing:
> - consistent verb tense across paragraphs
> - comparative and superlative forms of adjectives
> - coordinating and subordinating conjunctions
> - prepositional phrases
> - compound sentence joined by semicolon rather than conjunction and comma
> - subject-verb agreement with intervening phrase (grade 6)

> Form and use the following grammatical constructions correctly when editing writing:
> parallel structures in various contexts (e.g., items in a series, complements, items juxtaposed for emphasis)
> - subordination and coordination to indicate relationship between ideas
> - restrictive clauses with appropriate use of that
> - abbreviations used in research citation (grade 9)

Other standards emphasize different expectations for reading literary and non-literary texts, especially in the American Literature and World Literature sections. For example:

> Analyze, based on clear and precise textual evidence, the effects of diction, tone, mood, syntax, sound, form, figurative language, meter, rhyme, and structure on the meaning of poems from different cultures (American Literature and World Literature, "Advanced" level of rubric)

In Writing, the high school standards for expository writing clearly outline the essential components of research that students must master, while other standards define student expectations for analyzing information in multimedia formats and creating multimedia presentations.

Finally, while they lack some specificity, the standards do address expectations for speaking and active listening as well as for making effective oral presentations.

Content Weaknesses

Unfortunately, these bright spots pale alongside the critical flaws in Hawaii's ELA standards.

For starters, in some areas—writing chief among them—Hawaii falls victim to "everything-but-the-kitchen-sink" syndrome. It fails to make the kinds of tough prioritization decisions that differentiate between standards that are precise, rigorous (and teachable) and those that are too vague or numerous to guide effective instruction and assessment.

For example, while the Writing standards require students to study various important genres, including fiction, literary analysis, poetry, and persuasive writing, they do not effectively prioritize this content from grade to grade. Instead, the standards merely layer additional genres as the grade level increases so that, by twelfth grade, students are expected to study narrative writing, poetry, literary analysis, persuasive writing, personal essays, research, "functional" writing, and "reflections that draw comparisons between specific incidents and broader themes."

Most rigorous college-prep curricula spend far more time developing writing skills in the early grades via narrative and creative writing, and then prioritize essential persuasive and expository writing at the high school level. Hawaii would do well to clarify which of these genres deserves more time and attention at each grade level and outline content-specific expectations within each genre.

Further, while specific authors or books are mentioned occasionally in the Reading standards, the standards documents supply neither lists of exemplar texts nor guidance on text complexity to help define what students should be reading at various stages of their education. Even the standards for American, British, and World Literature make little or no mention of specific works, imparting in the reader scant confidence that students across the Aloha state will be held to rigorous content-based standards.[1]

Taken together, more than a third of the critical ELA content is missing. As such, Hawaii's state standards can earn no more than four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Hawaii's ELA standards are mediocre. Those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Aloha State has in place today.

1 Separate from the standards and in a different part of the website (the "Document Library"), there are reading lists for the high school grades and book lists for the American, World, and British Literature courses. These are presented as suggestions and are rife with misspellings (e.g., Dickenson, Hemmingway). There are no book lists for K-8.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Hawaii • Mathematics

DOCUMENTS REVIEWED

Hawaii Content and Performance Standards for Mathematics K-12. December 17, 2007.
Accessed from: http://standardstoolkit.k12.hi.us/index.html

Overview

Hawaii's standards are well written and organized. However, the coverage is uneven. While high school is covered with some rigor, arithmetic is not prioritized or developed appropriately.

Clarity and Specificity:	3/3
Content and Rigor:	3/7
Total State Score:	**6/10**
(Common Core Grade: A-)	

General Organization

Hawaii's math standards have multiple layers. The K-8 standards are divided into five content strands such as "Measurement" and "Number and Operations." Each strand is subdivided into broad statements called "Standards," which are further subdivided into "Topics." The strands, standards, and topics are all common across all grades.

Finally, the state provides grade-specific benchmarks for each topic. (Note, though, that not all topics or standards have benchmarks in each grade. For example, under the standard "Probability," no grade-level benchmarks appear until the third grade.) In addition, a Sample Performance Assessment question, designed to help clarify expectations, is provided for each benchmark.

The high school standards follow the same organization, but are divided by course.

It is the grade-level benchmarks that will be referred to below as standards.

Clarity and Specificity

Despite the complex hierarchical nature of the standards, they are fairly easy to read and understand. Each standard is clearly and succinctly stated and there are generally fewer than thirty-five standards per year, making it easy to grasp the entirety. A nice feature is that not all topics appear in each grade or course. For example, there are appropriately no data analysis standards in first grade, or in the high school Geometry course.

The statements of the standards themselves are usually clear, and parenthetical examples are sometimes included to clarify the intent. The Sample Performance Assessment (or SPA) that accompanies each standard also serves to clarify the intent.

Examples of standards with their SPAs from grades 1 and 5 are:

> Identify measurement tools that could be used to measure length, capacity, and weight.
>
> The student: Identifies the appropriate tool to measure an object (e.g., chooses the picture of a scale when asked what he or she could use to weigh a watermelon) (grade 1)
>
> Apply the inverse relationship between addition and subtraction, and multiplication and division, to solve problems.
>
> The student: Solves a multiplication problem involving a missing factor (e.g., 8 x __ = 89) by using division; solves an addition problem involving a missing addend (e.g., 45 + __ = 67) by using subtraction (grade 5)

While not every standard is clear, the standards are generally easy to read and understand. The SPAs are an excellent feature that serves to clarify intent. The Clarity and Specificity score is three points out of three. (See *Common Grading Metric*, Appendix A.)

KSDE002084

Content and Rigor

Content Priorities

Hawaii does not provide explicit guidance as to which content is the most important. The number of standards in each grade is generally reasonable, but only about 30 percent of the standards are devoted to arithmetic and this does not sufficiently prioritize fundamental arithmetic skills.

Content Strengths

In elementary school, memorization of addition facts is explicit. There are many strong standards on rates and ratios in middle school, including the following excellent eighth-grade standard and SPA:

> Express rates of change as a ratio of two different measures, where units are included in the ratio, and use the derived rate to solve problems.
>
> The student: Measures two quantities that are related (e.g., the capacity of water that comes out of a water fountain in 10 seconds), expresses the quantities as a ratio (rate), and uses it to solve a problem (e.g., "How long would it take to fill a gallon of water from a water fountain?") (grade 8)

There are explicit standards for high school courses in Algebra I and II, Geometry, Trigonometry, and Analytical Geometry. Most STEM-ready material is well covered, including series, completing the square, conic sections, trigonometric identities, inverse trig functions, polar coordinates, complex numbers, exponential functions, and logarithmic functions.

Content Weaknesses

The development of whole-number arithmetic is weak. As stated above, the standards do call for memorization of addition facts. Unfortunately, they do not specify similar automaticity for multiplication facts.

The continued development of whole-number arithmetic is inadequate. Fluency is not required and methods and procedures are not specified. For example, the following standards and sample performance assessments from third and fourth grades track the expectation for addition and subtraction:

> Use a variety of strategies to solve problems involving addition and subtraction of two- and three-digit numbers.
>
> The student: Shows how to add (or subtract) using one strategy, then shows how to add (or subtract) a different set of numbers using a different strategy (e.g., adds multiples of ten mentally [20 + 70 = 90] then adds the ones mentally [6 + 2 = 8] to arrive at the sum of 98 when adding 26 + 72) (grade 3)
>
> Select and use appropriate strategies and/or tools (e.g., mental math, calculators, paper/pencil, standard algorithms) for computing whole numbers.
>
> The student: Chooses the method he or she wants to use to compute whole numbers and explains whether the chosen method was the most appropriate method, or if another method would have been more appropriate to use (grade 4)

The sample performance assessment for the third-grade standard specifies that students should be able to do the same problem two different ways, but fails to specify the use of the standard algorithms. The fourth-grade standard culminates the development of addition and subtraction. And while standard algorithms are mentioned, their use is not specified. Worse, the SPA that accompanies the fourth-grade standard allows students to forego standard procedures altogether and instead use a calculator to perform computations. The standard algorithms, then, are given the same status in computing whole numbers as any other method, including using alternative algorithms or even a calculator.

Whole-number multiplication and division has a similar thread with the same culminating fourth-grade standard. Thus, students may be completely reliant on a calculator to perform whole-number arithmetic. This failure to demand fluency in using standard algorithms leaves students at a severe disadvantage as they move on to more difficult topics.

Such problems persist in the further development of arithmetic. Fluency and standard procedures are not required, and a "variety of strategies" is included. Common denominators and standard procedures are never mentioned for fractions, as in this fifth-grade standard and SPA:

KSDE002085

> Use a variety of strategies to multiply and divide fractions.
>
> The student: Shows how to multiply (or divide) fractions using one strategy, then shows how to multiply (or divide) using a different strategy (grade 5)

There are some weaknesses in high school also. The geometry course mentions proof, but there is no mention of axioms or postulates. The Pythagorean Theorem, and other standard theorems of Geometry, are used, but not proven.

Hawaii's standards are strong in places, but the development of arithmetic is weak. Arithmetic is not prioritized, and foundational whole-number arithmetic is covered inadequately. Students are not required to be fluent with standard algorithms, and calculators are specified as a method that students may choose to use to solve problems. These serious problems result in a Content and Rigor score of three points out of seven (see *Common Grading Metric*, Appendix A).

The Bottom Line

With their grade of C, Hawaii's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Aloha State has in place today.

KSDE002086

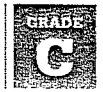
Idaho • English Language Arts

DOCUMENTS REVIEWED

Idaho Language Arts Standards. 2006.
Accessed from: http://www.sde.idaho.gov/site/content_standards/language_standards.htm

Overview

The Idaho standards exhibit strengths in reading, vocabulary, listening and speaking, and media, but they also suffer from superficial treatment of text quality and complexity, student writing criteria, oral and written language conventions, and research. In a number of places, the standards are either unclear or repetitive in ways that make the progression of rigor hard to detect.



Clarity and Specificity:	1/3
Content and Rigor:	4/7
Total State Score:	**5/10**
(*Common Core Grade: B+*)	

General Organization

The Idaho standards are grouped into six strands:

- Reading Process
- Comprehension/Interpretation
- Writing Process
- Writing Applications
- Writing Components
- Communication

For each strand, the state presents "goals," which are common across grade levels, and finally grade-specific objectives—except in the case of "Speech," where standards are provided only for the high school grade span, 9-12.

In addition, for many objectives, the state includes the oddly phrased "content limit" that explains how, if at all, the objective will be assessed by the state.

Clarity and Specificity

Idaho's standards are clearly organized and well presented, and some are clear and specific, such as:

> Write left to right, top to bottom, with appropriate spaces between words (Kindergarten)
>
> Use capital letter in first name (Kindergarten)

Unfortunately, a greater number of standards are vaguely written and repetitive. For example, the following generic standard appears under a literary text heading at both seventh and eighth grades:

> Analyze the themes of various genres (grades 7-8)

Such a standard is exceptionally vague and its verbatim repetition fails to delineate progression across grades.

KSDE002087

Other standards, while not repeated verbatim, make few (or no) meaningful distinctions from grade to grade. For example:

> Identify defining characteristics of literature genres, including poetry (grade 4)
> Identify various genres of fiction and kinds of poetry based on their characteristics (grade 5)
> Describe different genres of fiction and kinds of poetry, and the major characteristics of each form (grade 6)

The "content limits" occasionally provide additional detail to clarify expectations. For example:

> Identify plots in literary text
> Content Limit: Item may require identification of elements of plot (e.g., main problem, conflict, key details, sequencing, and resolution) (grade 3)

Unfortunately, for standards not assessed on the state test, no additional guidance is provided. The content limit simply reads, "Assessed in the classroom, not on the ISAT" (Idaho's state test).

Finally, at the high school level, the Speech standards are presented only for the grade band 9-12, rather than grade by grade.

Taken together, these shortcomings leave teachers without the clear guidance they need to drive rigorous curriculum, instruction, and classroom assessment. The standards therefore earn one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

Idaho generally covers early reading well and appropriately emphasizes standards addressing essential word-analysis skills and comprehension strategies. Specific targets for reading fluency are provided.

Vocabulary standards are generally rigorous, as in:

> Clarify pronunciations, meanings, alternate word choices, parts of speech, and etymology of words using the dictionary, thesaurus, glossary and technology sources (grade 7)

Literary and non-literary texts are treated separately, giving each category its proper attention. Additionally, an attempt is made to address American literature specifically, though only in eleventh grade:

> Analyze recognized works of literature representing a variety of genres and traditions that:
> - Trace the development of the major periods of American literature
> - Contrast the major themes, styles, and trends in different periods
> - Evaluate the influences (i.e., philosophical, political, religious, ethical, and social) of the historical period that shaped the characters, plot, and setting (grade 11)

The eleventh-grade standards also include a vague vocabulary standard that mentions American literature, though its purpose is difficult to discern:

> Use context analysis to determine the meanings of unfamiliar and multiple-meaning words from American literature (grade 11)

Standards for writing delineate expectations for specific genres and products. Listening and speaking standards are generally rigorous. And in high school, although the standards are written for the entire grade span, they contain some good content:

> Analyze the types of arguments used by a speaker (e.g., argument by causation, analogy, authority, emotion, and logic) (grades 9-12)

This listening skill requires an understanding of types of arguments, a rigorous and welcome high school expectation, but it would be much better if these were scaffolded across four years. It is also commendable that standards ask students to "analyze historically significant speeches to find the rhetorical devices and features that make them memorable."

Oral presentations are also required, as in this objective from high school:

> Deliver oral responses to literature that advance a judgment and/or demonstrate a comprehensive understanding of the significant ideas of a work or passage. Support important ideas and viewpoints through accurate and detailed references to the text and to other works (grades 9-12)

More detail could certainly be provided about the type of work or passage, especially at various grades in high school, but at least formal oral presentations are required.

Although only covered in high school, some good media analysis is also included, as in:

> Compare and contrast the ways in which media genres (e.g., televised news, news magazines and documentaries, and online information) cover the same event (grades 9-12)

Students in high school are also required to produce multimedia presentations.

Content Weaknesses

The Idaho standards provide no guidance about the quality and complexity of text that students should read across grade levels. Nor do they provide detailed expectations regarding the characteristics and quality of writing products expected in each genre. The following persuasive writing standard, for example, leaves too much to the imagination:

> Write persuasive compositions that take into consideration the validity and reliability of sources (grades 9-12)

Also missing are student writing samples and sample rubrics to help clarify expectations across grades.

Similarly, listening and speaking standards lack evaluation criteria, and the standards fail to include explicit standards for group discussions.

The expectations for English language conventions, housed in the writing strand, could also be more carefully crafted. Much content is left unaddressed by these general standards that gloss over specific grammar and usage, as in these idiosyncratic standards that are repeated from grades 4-8:

> Use correctly:
> - future verb tenses
> - adjectives
> - personal pronouns
> - conjunctions
> - adverbs (grades 4-8)

What happened to grammatical elements such as verb tenses other than the future tense, phrases, clauses, and pronouns other than personal pronouns? The research standards, embedded in expository writing, suffer from a similarly superficial treatment.

Taken together, these shortcomings leave as much as 35 percent of the essential K-12 content missing, thus earning the standards four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Idaho's ELA standards are mediocre, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Gem State has in place today.

Idaho • Mathematics

DOCUMENTS REVIEWED

Idaho Content Standards: Mathematics: K-2. Revised 2006.
Accessed from: http://www.sde.idaho.gov/site/content_standards/math_standards.htm

Idaho Content Standards: Mathematics: Grades 3-8. Revised 2007.
Accessed from: http://www.sde.idaho.gov/site/content_standards/math_standards.htm

Idaho Content Standards: Mathematics: Grades 9-12. Revised 2008.
Accessed from: http://www.sde.idaho.gov/site/content_standards/math_standards.htm

Overview

Idaho's standards are well organized, but they are sometimes difficult to read. In K-8, arithmetic is reasonably prioritized and though its development is straightforward, it is not quite rigorous enough. The high school standards include advanced courses and cover much of the essential content, though the development is not always coherent.

Clarity and Specificity:	2/3
Content and Rigor:	5/7
Total State Score:	**7/10**

(Common Core Grade: A-)

General Organization

The K-8 standards are organized into five content strands such as Number and Operation, and Concepts and Language of Algebra and Functions. The strands are divided into topics, which vary from grade to grade, and finally into grade-specific standards.

For grades 3-12, the state provides three additional clarifications for many standards. First, they indicate whether students are allowed to use calculators. Second, they specifically indicate the "cognitive level"—for example, memorize, perform procedures, solve non-routine problems or make connections—at which students should perform. Finally, they often provide a "content limit," which is essentially a description of how the standard will be assessed on the state test.

High school standards are presented in two ways. First, grade-specific standards are presented for grades 9-10. These standards follow the organizational structure described above. Second, the state provides course-specific standards for courses such as Geometry, Pre-Calculus, and Advanced Placement Statistics. The course-specific standards are similarly organized with one important difference: Instead of specifying content limits and cognitive levels, skill statements, which are designed to clarify the intent of the standards, are provided.

Clarity and Specificity

The standards are generally well presented and easy to read. Many are clear and concise:

> Use ordered pairs to identify the position of a point in the first quadrant on a coordinate grid (grade 4)
> Solve quadratic equations by factoring (Algebra I)

However, a close reading reveals many problems with the clarity of the standards. There is a great deal of repetition, hurting the standards' specificity. A simple example: Out of forty-two third-grade standards, the following is used seven times for different goals:

> Use appropriate vocabulary (grade 3)

KSDE002090

This statement, which clearly has different expectations for different topics, is too vaguely worded and appears too frequently throughout the standards to provide adequate guidance.

In addition, many standards are stated so broadly that they are subject to much interpretation on the part of the reader:

> Discuss sliding and flipping of two-dimensional shapes (grade 3)
> Use a variety of strategies to solve real-life problems (grade 5)
> Formulate conjectures and justify (short of formal proof) why they must be or seem to be true (grade 8)

The last standard is particularly poorly stated since it asks students to justify statements that may not be true.

The high school courses include some clear statements, but many are too broad, and their organization is generally poor. Standards on related topics, such as quadratic equations, are often scattered across various strands. This is exemplified by the following Algebra II standard, where the standard statement is about complex numbers, but which includes unrelated skill statements:

> Perform computations on expressions within the complex number system (Algebra II)

The corresponding skill statements, which are supposed to clarify the standard itself, actually include unrelated additional content that students are expected to master, as demonstrated below:

> a. Perform operations with matrices to include scalar multiplication, addition, subtraction, and matrix multiplication (2 by 2)
> b. Add, subtract, and multiply radical expressions and expressions containing rational exponents
> c. Use long division or synthetic division to divide a polynomial by a lower-degree polynomial
> d. Add, subtract, multiply, and divide rational expressions (Algebra II)

By scattering content haphazardly across standards and skill statements, coherence within topics is lost.

Idaho's standards are reasonable in number, and often easy to read and understand. However, they are frequently too broadly stated and repetitive. The high school courses incorporate some good standards but many are poorly presented and lack coherence. The standards "do not quite provide a complete guide to users" and receive a Clarity and Specificity score of two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Implicitly, arithmetic is given moderate priority: Arithmetic standards in the appropriate grades comprise about 40 percent of the standards.

Content Strengths

The standards cover the basic properties of arithmetic well, including commutativity, associativity, and distributivity. In addition, though some standards on arithmetic expectations are well stated, they are not appropriately supported, as discussed below.

Though the high school material lacks coherence, much essential content is covered. There are some rigorous standards, including:

> Write linear equations and inequalities in various forms given the graph of a line, a contextual situation, two or more collinear points, a point and the slope of a line, or a set of data (Algebra I)
> Use the quadratic formula, factoring, and completing the square to solve any quadratic equations (Algebra II)
> Identify a logarithmic function as the inverse of an exponential function (Algebra II)

The standards also include much of the essential content for geometry, including explicit mention of proof and postulates.

KSDE002091

Content Weaknesses

The development of arithmetic is not adequately rigorous, in part because instant recall of basic facts is not explicitly required.

In the continued development of whole-number arithmetic, neither fluency nor standard methods are specified:

> Add and subtract whole numbers (grade 4)
> Multiply and divide whole numbers (grade 5)

Fraction arithmetic is expected in the standards, but there is little development of fractions, and standard procedures are not mentioned. Further, fractions are neither introduced early as parts of a whole, nor explicitly introduced as numbers. Common denominators are not mentioned.

Use of calculators pervades the standards, beginning with third grade:

> Select and use an appropriate method of computation from mental math, paper and pencil, calculator, or a combination of the three (grades 3-6)

In high school, some content is missing, such as vertex form and max/min problems for quadratics, and inverse trigonometric functions.

Idaho's standards, though sometimes difficult to interpret, cover much of the essential content. In K-8, arithmetic is moderately prioritized and developed in a straightforward way, but the coverage is not quite thorough enough. In addition, calculators are mentioned too frequently. In high school, most essential content is covered, but a few details are missing. These "shortcomings" result in a Content and Rigor score of five points out of seven. (See *Common Grading Metric*,Appendix A.)

The Bottom Line

With their grade of B, Idaho's mathematics standards are decent, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are superior to what the Gem State has in place today.

KSDE002092

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

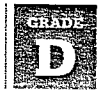
Illinois • English Language Arts

DOCUMENTS REVIEWED[1]

Illinois Learning Standards for English Language Arts. 1997.
Accessed from: http://www.isbe.net/ils/ela/standards.htm

Overview

Illinois has not updated its ELA standards since their initial adoption in 1997. While other state standards have undergone rigorous revision processes—including the articulation in most states of grade-specific expectations across core content areas—Illinois has lagged behind and, as a result, fails to provide clear and rigorous K-12 ELA expectations.



Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**

(Common Core Grade: B+)

General Organization

The *Illinois Learning Standards for English Language Arts* are organized around five goals:

- State Goal 1–Reading ("Read with understanding and fluency.")
- State Goal 2–Literature ("Read and understand literature representative of various societies, eras and ideas.")
- State Goal 3–Writing ("Write to communicate for a variety of purposes.")
- State Goal 4–Listening and Speaking ("Listen and speak effectively in a variety of situations.")
- State Goal 5–Research ("Use the language arts to acquire, assess and communicate information.")

Each goal is divided into strands that are common across all grades. For example, the Reading goal is broken into the following three strands:

a. Apply word analysis and vocabulary skills to comprehend selections.
b. Apply reading strategies to improve understanding and fluency.
c. Comprehend a broad range of reading materials.

Each strand is then divided into five grade-band standards: early elementary, late elementary, middle/junior high, early high school, and late high school. (Note that the state does not specify to which grades these levels correspond.)

Clarity and Specificity

The *Illinois Learning Standards for English Language Arts* generally employ clear language and are jargon-free. Unfortunately, they lack the specificity to be actionable in curricula and classrooms. Their organization—by broad levels, rather than by grades—cannot provide the clarity and specificity to guide consistent grade-level instruction in Illinois classrooms, schools, and districts.

Just as troubling, the standards are so vague as to be almost entirely useless. For example, the only standard that addresses phonics and phonemic awareness in the early elementary grades states:

> Apply word analysis skills (e.g., phonics, word patterns) to recognize new words (early elementary)

KSDE002093

The vast majority of standards are similarly vague, failing to clarify what, precisely, students should know and be able to do. Because the standards sorely lack detail and provide very little guidance to teachers, they earn one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

One of the framework's five goals articulates that students will "read and understand literature representative of various societies, eras and ideas." The standards across this goal are relatively strong. They specify much of the essential content that students must master across grade levels, and provide clear progression from one grade hand to the next. For example,

> Identify and analyze a variety of literary techniques (e.g., figurative language, allusion, dialogue, description, word choice, dialect) within classical and contemporary works representing a variety of genres (middle/junior high school)
>
> Analyze and evaluate the effective use of literary techniques (e.g., figurative language, allusion, dialogue, description, symbolism, word choice, dialect) in classic and contemporary literature representing a variety of forms and media (early high school)
>
> Compare and evaluate oral, written or viewed works from various eras and traditions and analyze complex literary devices (e.g., structures, images, forms, foreshadowing, flashbacks, stream of consciousness) (late high school)

The standards presented under goal 5—"Use language arts to acquire, assess, and communicate information"—are appropriate and rigorous; they convey the entire scope of the research process, from formulating a research question, and identifying and evaluating sources, to synthesizing and integrating information, and reporting findings and citing sources.

Finally, the state provides detailed listening standards, particularly for middle/junior high school.

Content Weaknesses

Along with these few strengths, the Illinois ELA standards present significant shortcomings and content gaps.

While the literary standards mentioned above are adequate, the standards focus almost exclusively on literary texts, with few standards focused on reading and analyzing non-literary texts.

As noted above, only one vaguely worded standard addresses phonics and phonemic awareness.

The standards do not provide any guidance regarding the quantity, complexity, or types of texts that students should read, nor do they mention or provide examples of foundational works of American literature.

Standards across each of the five goals place far too great an emphasis on *strategies* for learning rather than on learning *outcomes*. For example:

> Continuously check and clarify for understanding (e.g., reread, read ahead, use visual and context clues, ask questions, retell, use meaningful substitutions) (early elementary)
>
> Continuously check and clarify for understanding (e.g., in addition to previous skills, clarify terminology, seek additional information) (late elementary)
>
> Continuously check and clarify for understanding (e.g., in addition to previous skills, draw comparisons to other readings) (middle/junior high school)

Such standards equate to mere process guidance, which fails to provide teachers with concrete student-performance expectations. Moreover, the validity of these strategies as effective learning tools is much debated.

The writing standards also focus primarily on strategies. They provide no genre-specific expectations, rubrics, or criteria to define how writing skills should progress across grade levels and genres. The standards seem to place greater emphasis on managing anxiety in public speaking (see below) than on specifying criteria for effective writing by genre and grade level.

> Identify methods to manage or overcome communication anxiety and apprehension (e.g., topic outlines, repetitive practice) (late elementary)
>
> Develop strategies to manage or overcome communication anxiety and apprehension (e.g., sentence outlining, note cards) (middle/junior high school)
>
> Use strategies to manage or overcome communication anxiety and apprehension (e.g., developed outlines, note cards, practice) (early high school)
>
> Implement learned strategies to self-monitor communication anxiety and apprehension (e.g., relaxation and transference techniques, scripting, extemporaneous out-lining, repetitive practice) (late high school)

Finally, the state fails to delineate essential grammar and conventions content.

Because the state fails to detail grade-specific expectations, and because a majority of standards are either vague or focus on strategies more than on content, between 50 and 65 percent of critical content is absent from the Illinois standards. The state earns three points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, Illinois's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Prairie State has in place today.

1 Illinois has not updated their ELA standards since 1997; thus, they have not changed since our last evaluation, the *State of State English Standards 2005*. In 2005, however, we reviewed all available assessment frameworks for the standards, something we did not do for this review. (See Appendix C for document selection methods.) In addition, the evaluation criteria that we used to judge standards in 2010 have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) These changes contributed to a change in Illinois's final ELA grade: from a B to a D. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=337&pubsubid=1041#1041.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Illinois • Mathematics

DOCUMENTS REVIEWED

Illinois Mathematics Assessment Framework, Grades 3-8, State Assessments. Spring 2006. Accessed from: http://www.isbe.state.il.us/assessment/pdfs/iaf_math.pdf

Illinois Mathematics Assessment Framework, PSAE Grade 11, State Assessments. Spring 2006. Accessed from: http://www.isbe.state.il.us/assessment/pdfs/iaf_math_PSAEFINAL.pdf

Overview

Illinois's standards are easy to read and sometimes clear, but they often lack specificity. There are significant weaknesses in both K-8 and in high school. The development of arithmetic is weak and students are apparently permitted to rely on calculators for performing arithmetic computation. The high school content is missing many of the essential topics.

Clarity and Specificity:	2/3
Content and Rigor:	1/7
Total State Score:	**3/10**
(Common Core Grade: A-)	

General Organization

There are ten state goals. The first five are paragraphs about process or pedagogy with titles such as "Solving Problems" and "Working on Teams." Goals 6-10 are content strands, each with an explanation of "Why this goal is important." The goals are further broken down into eighteen topics and finally into individual grade-level expectations for grades 3-8.

High school follows the same structure, though expectations are only provided for grade 11.

Clarity and Specificity

The standards are sometimes easy to read and understand. The statements are generally short and some standards are clear such as:

> Identify and locate whole numbers and halves on a number line (grade 3)

Others are not so clear. This is particularly true at the high school level. For example:

> Determine the most cost-effective option using single- and multi-step calculations and then comparing results (grade 11)
>
> Analyze functions by investigating domain, range, rates of change, intercepts, and zeros (grade 11)

These standards do not make clear what students are supposed to know or what types of problems they should be able to solve. The last standard includes topics that are generally covered in calculus, so its meaning is particularly confusing.

An additional problem with the standards is that many of them are repeated in consecutive grades. For example:

> Identify and sketch acute, right, and obtuse angles (grades 5-7)

It is not clear why this standard appears identically in three successive grades, or what comprises the intended sequence for learning about such angles.

KSDE002096

While the expectations highlighted in the above example are not subject to interpretation, other repeated standards should clearly have different interpretations in different grades. For example, the following standard appears in grades 3-8:

> Solve word problems involving unknown quantities (grades 3-8)

The complexity of the problems should increase as students master more advanced mathematics, yet this repetitive standard gives no such guidance.

Although the standards are easy to read, they often lack specificity, and the sequencing of the material is not clear. Thus, they receive a Clarity and Specificity score of two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

The importance given to the content areas is made explicit in the document by a chart which shows the percentage of the state assessment devoted to each state goal. For grades 3-5, about 33 percent of the assessments are devoted to the goal of Number Sense. This explicit setting of priorities is a good thing in and of itself, yet it does not prioritize arithmetic as it should in the early grades.

Content Strengths

The structure of the operations (commutativity, associativity, distributivity, and the inverse nature of addition and subtraction and of multiplication and division) of arithmetic are well covered. The number line is introduced in grade 3 and appears frequently thereafter.

Content Weaknesses

The development of whole-number arithmetic is weak. While the standards do specify that students be able to "solve problems" involving arithmetic, neither fluency nor standard procedures are developed. The explanation of why number sense is important includes the following, which does mention algorithms:

> All people must develop this sense of numbers and operations and be able to use it to solve problems using mental computation, paper-and-pencil algorithms, calculators and computers (state goal 6)

However, there is little support for the development of algorithms.

The following standards, for example, basically represent the complete development of whole-number multiplication and division:

> Model and apply basic multiplication and division facts (up to 12×12), and apply them to related multiples of 10 (e.g., 3×9=27, 30×9=270, 6÷3=2, 600÷3=200) (grade 4)
>
> Solve problems and number sentences involving addition and subtraction with regrouping and multiplication (up to three-digit by one-digit) (grade 4)
>
> Solve problems and number sentences involving addition, subtraction, multiplication, and division using whole numbers (grades 5-6)

Instant recall of number facts and fluency with standard procedures are not specified.

Compounding the problem, the standards explicitly allow the use of a calculator after grade 3. Presumably, this means that students can use calculators for whole-number computation rather than standard methods and procedures in the grade 5-6 capstone standard.

There are some good geometry standards in the K-8 standards, but there are also many that are vague and extraneous. One example:

> Identify congruent and similar figures by visual inspection (grades 3-6)

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Visual inspection is not a mathematical method for determining congruence or similarity.

The high school standards have numerous issues with coverage. Neither linear nor quadratic functions appear as coherent topics, and there are very few standards about quadratics. Completing the square and the quadratic formula are not covered.

Polynomials are mentioned explicitly only once in the following overly broad standard:

> Simplify or identify equivalent algebraic expressions (e.g., exponential, rational, logarithmic, factored, polynomial) (grade 11)

The arithmetic of polynomials and rational expressions is not adequately covered by this standard.

Other essential content is also covered inadequately or completely missing, including constructions in geometry and inverse trigonometric functions.

Illinois's standards are weak in both elementary and high school. Arithmetic is neither prioritized nor developed properly, in part because calculators are explicitly used beginning in third grade. High school mathematics is incomplete and is missing much of the essential content. These "numerous problems, shortcomings, or errors" (see *Common Grading Metric*, Appendix A) result in a Content and Rigor score of one point out of seven.

The Bottom Line

With their grade of D, Illinois's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Prairie State has in place today.

Indiana • English Language Arts

DOCUMENTS REVIEWED

Indiana Core Standards. Summer 2008.
Accessed from: http://dc.doe.in.gov/Standards/AcademicStandards/PrintLibrary/english.shtml

Indiana Academic Standards. June 2006.
Accessed from: http://dc.doe.in.gov/Standards/AcademicStandards/PrintLibrary/english.shtml

Overview

Indiana's ELA standards are clear, specific, and rigorous, and include nearly all of the critical content expected in a demanding, college-prep curriculum.

Clarity and Specificity:	3/3
Content and Rigor:	7/7
Total State Score:	**10/10**

(*Common Core Grade: B+*)

General Organization

The standards are grouped into seven "academic standards," which are common to all grade levels. They are:

1. Reading: Word Recognition, Fluency, and Vocabulary Development
2. Reading: Comprehension
3. Reading: Literary Response and Analysis
4. Writing: Process
5. Writing: Applications
6. Writing: English Language Conventions
7. Listening and Speaking: Skills, Strategies, and Applications

Each of these standards is divided into topics that vary by grade level and finally into grade-specific performance indicators.

In addition to the academic standards, Indiana provides eight "core standards," which are also common across all grade levels and which describe, in broad terms, what students should know and be able to do at each grade level. The purpose of these core standards is to highlight and prioritize "the most important concepts presented [in the academic standards] in each grade level."

Clarity and Specificity

Indiana's standards are exceptionally clear and detailed. Many grade-specific standards include helpful examples that clarify purpose and intent. Take, for example, the following Kindergarten phonics standard:

> Listen to two or three phonemes (sounds) when they are read aloud, and tell the number of sounds heard, whether they are the same or different, and the order.
>
> Example: Listen to the sounds /f/, /m/, /s/ or /l/, /n/, /v/. Tell how many sounds were heard and whether any sounds were the same (Kindergarten)

Across almost all content areas and grade levels, progressions from one grade to the next are clear: Each successive grade expects the student to possess background knowledge delineated in the previous grade's standards.

Still, Indiana could further clarify the writing standards by providing additional grade-specific writing rubrics and sample student work.

Despite that minor caveat, teachers, curriculum developers, and assessment writers will find the standards accessible and easy to understand. Consequently, Indiana's standards easily merit three points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The Indiana standards are outstanding with respect to content and rigor. The expectations for grammar, spelling, mechanics, and usage are clear and rigorous. Take, for example, the following grammar standards for seventh and twelfth grade, respectively:

> Properly place modifiers (words or phrases that describe, limit, or qualify another word) and use the active voice (sentences in which the subject is doing the action) when wishing to convey a livelier effect.
> - Clear: She left the book, which she bought at the bookstore, on the table
> - Unclear: She left the book on the table, which she bought at the bookstore
> - Active voice: The man called the dog
> - Passive voice: The dog was called by the man (grade 7)
>
> Identify and correctly use clauses, both main and subordinate; phrases, including gerund, infinitive, and participial; and the mechanics of punctuation, such as semicolons, colons, ellipses, and hyphens (grade 12)

These standards also present a clear progression of skills from grade to grade.

The vocabulary standards are equally detailed and attend to etymology and morphology across grade levels, as in the following middle school standards:

> Know less common roots (graph = writing, logos = the study of) and word parts (auto = self, bio = life) from Greek and Latin and use this knowledge to analyze the meaning of complex words (autograph, autobiography, biography, biology) (grade 5)
>
> Use knowledge of Greek, Latin, and Anglo-Saxon roots and word parts to understand subject-area vocabulary (science, social studies, and mathematics)
>
> Example: Analyze the roots, prefixes, and suffixes to understand words, such as microscope, microphone, and microbe (grade 7)

In addition to providing helpful lists of exemplar texts, the standards make numerous references to outstanding works of literature. What's more, these are almost always related to a particular grade-specific expectation, and often in the context of an interesting question or idea. Take the following twelfth-grade literature standard:

> Analyze recognized works of world literature from a variety of authors that:
> - Contrast the major literary forms, techniques, and characteristics from different major literary periods, such as Homeric Greece, Medieval, Romantic, Neoclassic, or the Modern Period
> - Relate literary works and authors to the major themes and issues of their literary period
> - Evaluate the influences (philosophical, political, religious, ethical, and social) of the historical period for a given novel that shaped the characters, plot, and setting
>
> Example: Read and evaluate works of world literature, such as *The Inferno* of Dante by Dante Alighieri (translated by Robert Pinsky), *Candide* by Voltaire, *I Have Visited Again* by Alexander Pushkin, *Question and Answer Among the Mountains* by Li Po, *Anna Karenina* or *War and Peace* by Leo Tolstoy, *Night* by Elie Wiesel, and *The Ring* by Isak Dinesen (grade 12)

Similar examples provided throughout are not only vivid but inspiring. They set high expectations and outline rigorous works of literature to be read across grade levels.

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The writing standards are equally clear and rigorous. They do not provide rubrics or student work, but the standards include exceptional detail, especially pertaining to specific genres.

Content Weaknesses

Indiana's ELA standards rarely fall short of exceptional, but two minor weaknesses persist. First, students are not expected to present in multimedia until high school. (This absence is somewhat offset by elementary standards that require students to evaluate electronic media and include electronic sources in research.) Second, no standards outline what is expected of students in group discussions.

These very minor failings could easily be remedied. Overall, Indiana's strong standards merit seven points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

Indiana's standards are clearer, more thorough, and easier to read than the Common Core standards. Essential content is grouped more logically, so that standards addressing inextricably linked characteristics, such as themes in literary texts, can be found together rather than spread across strands. Indiana also frequently uses standard-specific examples to clarify expectations. Furthermore, Indiana's standards treat both literary and non-literary texts in systematic detail throughout the document, addressing the specific genres, sub-genres, and characteristics of both text types. Both Indiana and Common Core include reading lists with exemplar texts, but Indiana's is much more comprehensive.

On the other hand, Common Core includes samples of student writing to clarify grade- and genre-specific writing expectations. In addition, it includes standards explicitly addressing foundational U.S. documents. Such enhancements would benefit Indiana's already-strong standards.

KSDE002101

Indiana • Mathematics

DOCUMENTS REVIEWED

Indiana's Academic Standards: Mathematics. 2005.
Accessed from: http://dc.doe.in.gov/Standards/AcademicStandards/PrintLibrary/math.shtml

Indiana's Core Standards: Mathematics. 2005.
Accessed from: http://dc.doe.in.gov/Standards/AcademicStandards/PrintLibrary/math.shtml

Overview

Indiana's standards are well organized and easy to read. They cover nearly all of the essential content in both elementary and high school with depth and rigor. They include examples throughout and offer excellent guidance to learning mathematics.

Clarity and Specificity:	3/3
Content and Rigor:	7/7
Total State Score:	**10/10**
(*Common Core Grade: A-*)	

General Organization

The K-8 standards are organized by five content strands such as Number Sense and Measurement, and one process strand that is focused on problem-solving. In addition, a sixth content strand on "data analysis and probability" is added in grade 4.

Finally, at each grade level, the state introduces each strand with a paragraph that broadly describes what students should know and be able to do.

High school is organized by courses such as Algebra I and Integrated Mathematics III. Each course is organized by topics.

In addition, the *Core Standards* document provides explicit guidance as to which content is the most important for each grade and course.

Clarity and Specificity

The standards are well organized and easy to read and interpret. Statements are generally clear and concise and many include examples, such as:

> Plot and label whole numbers on a number line up to 10 (grade 3)
> Rename and rewrite whole numbers as fractions
> Example: 3 = 6/2 = 9/3 = ?/4 = ?/5 (grade 4)

The examples are excellent and serve to clarify the intent of many of the standards, as in:

> Understand and use the commutative and associative properties of multiplication
> Example: Multiply the numbers 7, 2, and 5 in this order. Now multiply them in the order 2, 5, and 7. Which was easier? Why? (grade 3)
> Summarize and display the results of probability experiments in a clear and organized way
> Example: Roll a number cube 36 times and keep a tally of the number of times that 1, 2, 3, 4, 5, and 6 appear. Draw a bar graph to show your results (grade 4)

Indiana's standards are well presented and easy to read and understand. The statements are generally clear and concise and examples are often provided. Indiana easily earns three points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Indiana's *Core Standards* document specifies which content is most important at each grade level. Importantly, the state explicitly prioritizes mastery of arithmetic in the crucial elementary grades.

Content Strengths

Indiana covers fundamental arithmetic well. Memorization of the multiplication tables is explicit:

> Demonstrate mastery of the multiplication tables for numbers between 1 and 10 and of the corresponding division facts
> Example: Know the answers to 9 × 4 and 35 ÷ 7 (grade 4)

The standard algorithms for addition and subtraction are also explicit:

> Understand and use standard algorithms for addition and subtraction (grade 4)

This is carried through to decimals as well:

> Use a standard algorithm to add and subtract decimals (to hundredths) (grade 4)

The structure of arithmetic is well covered.

The high school content is generally beautifully presented and quite rigorous. For example, the following sequence of standards on quadratics from Algebra I outlines a coherent and rigorous approach:

> Graph quadratic, cubic, and radical equations
> Solve quadratic equations by factoring
> Solve quadratic equations in which a perfect square equals a constant
> Complete the square to solve quadratic equations
> Derive the quadratic formula by completing the square
> Solve quadratic equations using the quadratic formula
> Use quadratic equations to solve word problems (Algebra I)

High school geometry covers many of the standard theorems and includes the expectation of proofs:

> Prove that triangles are congruent or similar and use the concept of corresponding parts of congruent triangles (Geometry)

In addition, STEM-ready material is nicely covered, including a thorough coverage of trigonometry.

Content Weaknesses

The development of arithmetic shows a few weaknesses. For example, standards addressing addition and subtraction never explicitly require students to memorize the basic addition and subtraction facts.

Also, the standard algorithms for multiplication and division are only specified for numbers up to 100. When computing numbers larger than 100, the standard algorithms are dropped:

> Solve problems involving multiplication and division of any whole numbers (grade 5)

The basic development of quadratic equations is excellent, but the vertex form of a quadratic function is not mentioned. This is important for solving max/min problems. A max/min problem is given as an example in the following Algebra II standard, but it does not adequately specify that students be able to solve max/min problems in general:

> Solve word problems using quadratic equations
>
> Example: You have 100 feet of fencing to make three sides of a rectangular area using an existing straight fence as the fourth side. Construct a formula in a spreadsheet to determine the area you can enclose and use the spreadsheet to make a conjecture about the maximum area possible. Prove (or disprove) your conjecture by solving an appropriate quadratic equation (Algebra II)

Although high school geometry has good coverage and requires proofs, the foundation for geometry is not made explicit enough, as axioms are mentioned only in the process standards making their role in the required proofs unclear.

Indiana's standards cover nearly all the essential content with both depth and rigor. Arithmetic is prioritized and generally well developed. The high school content is excellent, including STEM-ready material. The standards receive a Content and Rigor score of seven points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With some minor differences, Common Core and Indiana both cover the essential content for a rigorous, K-12 mathematics program. That said, Indiana's standards are exceptionally clear and well presented. Standards are briefly stated and often further clarified with the use of examples, so they are considerably easier to read and follow than Common Core. In addition, the high school content is organized so that the standards addressing specific topics, such as quadratic functions, are grouped together in a mathematically coherent way. By contrast, the organization of the Common Core is more difficult to navigate, in part because standards on related topics sometimes appear separately rather than together.

On the other hand, Common Core excels in the coverage of arithmetic, and includes some details, particularly those that address the development of fractions, that are missing in Indiana.

KSDE002104

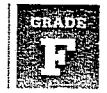
Iowa • English Language Arts

DOCUMENTS REVIEWED

Iowa Core Curriculum for Literacy. 2007.
Accessed from: http://www.corecurriculum.iowa.gov/ContentArea.aspx?C=Literacy

Overview

Iowa's standards are nearly impossible to evaluate because they are extremely broad in language and scope. The standards are presented by grade span (rather than grade by grade) and include only general statements that are repeated almost verbatim across spans. This combination of vaguely worded and repetitive standards makes it impossible to determine at what point students are expected to be held accountable for mastery of any specific knowledge or skills.



Clarity and Specificity:	0/3
Content and Rigor:	1/7
Total State Score:	**1/10**

(*Common Core Grade: B+*)

General Organization

Presented by grade spans (Primary/K-2, Intermediate/3-5, Middle/6-8, and High School/9-12), the Iowa standards are organized into five strands: Reading, Writing, Speaking, Listening, and Viewing.

Each strand contains several Essential Concepts/Skills that vary across grade spans, such as "Use multiple decoding strategies to read words in text" under Reading. These are followed by several student expectations.

Clarity and Specificity

The Iowa standards are persistently unclear and rarely specific. Take, for example, the following Writing and Reading standards:

> Write using different formats:
> - Letter
> - Journal
> - Narrative
> - Expository paragraph
> - Research report
> - Poetry
> - News article/editorial
> - Script
> - Radio announcement
> - Blog (grades 3-5)
>
> Read for a variety of purposes and across content areas.
> - Read for purposes relating to fiction and nonfiction:
>   - For information
>   - For enjoyment
>
> Practice reading rate and strategies according to purpose:
> - Read to study (grades K-2)

These vague, unmeasurable standards are typical of those found in virtually every strand and grade band.

Standards are also repeated verbatim, or nearly verbatim, across grade bands, making it nearly impossible to discern a progression of rigor from elementary through high school.

Taken together, these critical shortcomings make it almost impossible to identify the scope and sequence of the material.

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Consequently, the standards earn zero points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The Iowa standards for media literacy, under Viewing, contain some commendable content, as in this grade 6-8 standard:

> Analyze and evaluate the use of media to portray information:
> - Analyze the way the author selects information and uses visual language to influence readers/viewers
> - Explain the role of advertising as part of an informational media presentation
> - Evaluate the effectiveness of visual media in presenting information and viewpoints (grades 6-8)

Within the writing strand is an unusual and welcome category of expectations for writing "on demand." For example:

> Write on demand:
> - Consider the purpose and audience
> - Focus on the topic with ample supporting details and little or no extraneous information
> - Identify organizational format
> - Identify medium for communication
> - Draw upon experiences and observations
> - Use correct spelling of high-frequency and grade-level words; make few errors in punctuation and capitalization
> - Use language effectively by varying vocabulary and sentences
> - Synthesize information from multiple resources into a brief and focused response
> - Reflect writer's personal style and viewpoints to suit the purpose of writing (grades 9-12)

Employers and college faculty alike consistently prioritize this skill, so its inclusion here is a bright spot.

Content Weaknesses

In every strand, the standards are uneven in their level of detail, but mostly they overlook important content, as in the following K-2 "decoding" standard:

> Use multiple decoding strategies to read words in text:
> - Apply knowledge of letter/sound correspondence.
> - Recognize sight words
> - Look for parts within words
> - Skip the unknown word(s) and continue reading
> - Reread sentences/paragraphs
> - Look for graphic cues
> - Use the context of phrases, sentences, paragraphs, and text
> - Ask if the word(s) makes sense (grades K-2)

This is one of the more specific standards in the lot, yet still reveals unmeasurable expectations that also omit critical early reading content and skills such as phoneme-grapheme correspondence. The objectives read as incomplete statements. "Apply knowledge of letter/sound correspondence" *to (do) what?* Why should students look for parts within words? What kind of parts? What's more, the standards emphasize these sorts of comprehension strategies at the expense of phonemic awareness and phonics.

When it comes to vocabulary development, we find a few standards devoted to word analysis and etymology, but mostly they set meaningless expectations, such as:

> Demonstrate flexibility in extending the meaning of words (grades 9-12)

Another meaningless vocabulary standard repeated at every level is "Read frequently and widely."

The Iowa standards do differentiate between literary and non-literary text, yet they're woefully deficient in rigorous content, focusing instead on reading strategies, as in the following lengthy standard for reading nonfiction:

> Use a variety of skills and strategies to comprehend nonfiction and informational text.
>
> **Recognize text structure cues:**
> - Description
> - Sequence or time order
> - Compare and contrast
> - Cause and effect
> - Problem-solution
>
> **Study graphic cues:**
> - Titles
> - Headings
> - Photos
> - Illustrations
> - Charts
> - Tables
> - Graphs
>
> **Use comprehension strategies:**
> - Identify purpose
> - Activate prior knowledge
> - Predict and verify
> - Ask and answer questions
> - Create visual images
> - Draw inferences
> - Monitor for comprehension
> - Employ fix-ups
> - Reread
> - Read ahead
> - Identify main ideas
> - Summarize
> - Draw conclusions
> - Evaluate
> - Synthesize
> - Engage in discussion
> - Write to learn (grades 3-5)

This lengthy example illustrates Iowa's emphasis on strategies without acknowledging content at all. No text types or characteristics of text types are identified here, nor does this voluminous standard identify student outcomes.

The standards could be improved by including measurable or verifiable tasks that hold students accountable for mastery (For example, "Identify headings and use them to predict main ideas in informational text.")

Standards for the study of literary text reveal similar problems. American literature is never mentioned, nor do the standards specify the quality or complexity of texts to be read; there are no reading lists or other guidance.

The Writing standards focus heavily on process and, while they attempt to address oral and written English language conventions, they remain sparse, overlooking key characteristics of writing genres and essential grammar, usage, and mechanics content (such as defining and using phrases and clauses correctly).

Iowa's standards for Listening and Speaking are also skeletal, as in the following standard:

> Participate in a variety of communication situations.
> - Participate in oral presentations for defined purposes.
> - Deliver multimedia presentations.
> - Present dramatic reading, recitations, and performances both in and out of the classroom (grades 9-12)

It is commendable that oral presentations and recitations are included, but the standard could be strengthened by also identifying specific components of oral presentations and methods by which they could be evaluated.

The standards contain almost none of the content specified in the *English Language Arts Content-Specific Criteria* (see Appendix A). High school is presented as one thin set of expectations for all four grades, omitting the majority of essential content. The Iowa standards therefore earn one point out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of F, Iowa's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Hawkeye State has in place today.

KSDE002108

Iowa • Mathematics

DOCUMENTS REVIEWED

Iowa Core Curriculum: K-12 Mathematics, 2007.
Accessed from: http://www.corecurriculum.iowa.gov/ContentArea.aspx?C=Mathematics

Overview

In K-8, Iowa's standards are well presented and cover some topics with both depth and rigor. There are some weaknesses in the development and prioritization of arithmetic. High school mathematics is unusually presented (see "General Organization") and is missing much of the essential content.

Clarity and Specificity:	2/3
Content and Rigor:	3/7
Total State Score:	**5/10**
(Common Core Grade: A-)	

General Organization

Iowa's K-8 standards are organized into four "Essential Strands," including: Number and Operations, Algebra, Geometry and Measurement, and Data Analysis and Probability. For each strand, the state defines grade-specific "Essential Concepts," which are then divided into "Essential Skills." (In this review, we refer to the "Essential Skills" as "standards.") The Essential Concepts and Essential Skills are provided for the following grade bands: K-2, 3-5, and 6-8.

The organization of the high school standards is odd. Similar to the K-8 standards, they are divided into four strands: Algebra, Geometry, Statistics and Probability, and Quantitative Literacy. Each strand is divided into several "Essential Topics." Rather than provide traditional standards for each Essential Topic, however, the state merely provides a several-paragraph description of what students should know and be able to do.

Finally, the state provides an appendix with sample lessons and illustrative problems that address some of the material covered in the standards.

Clarity and Specificity

The K-8 standards are nicely written with generally clear statements such as:

> Relate multiplication and division as inverse operations and learn division facts by relating them to the appropriate multiplication facts (grades 3-5)
>
> Develop fluency with standard procedures for adding and subtracting fractions and decimals (grades 3-5)

The unusual presentation of the high school standards has resulted in a document which reads more like a planning guide than mathematical standards. The standards do not provide a sufficient level of detail to judge what is to be taught or how it is to be measured. For example:

> Students' experiences with functions should include analysis of families of functions (linear, quadratic, other polynomial, exponential, trigonometric, rational, and logarithmic). Students should also study absolute value, square root, cube root, and piecewise functions. Analysis of functions should include: zeros, maximum and minimum, domain and range, global and local behavior, intercepts, rate of change, and inverse functions (grades 9-12)

This reads like a laundry list of key words just strung together, and the reader has very little idea of what a student is expected to be able to do. Further, finding zeros, maximum, minimum, intercepts, and rates of change for polynomial and rational functions are generally topics for calculus classes.

KSDE002109

While the K-8 standards are generally both clear and specific, the high school standards often lack specificity. Therefore, Iowa receives two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

The standards do not explicitly prioritize the content and only about one-third of the elementary school standards are devoted to arithmetic. This does not sufficiently prioritize arithmetic.

Content Strengths

There are many high-quality standards. The standards cited above in "Clarity and Specificity" are examples of rigorous arithmetic standards. In addition, quick recall of basic facts is stated clearly:

> Develop and demonstrate quick recall of basic addition facts to 20 and related subtraction facts (grades K-2)
>
> Extend their work with multiplication and division strategies to develop fluency and recall of multiplication and division facts (grades 3-5)

The middle school development of geometry is also strong. It includes the excellent standard:

> Understand that the slope of a line is constant, for example by using similar triangles (e.g., as shown in the rise and run of "slope triangles"), and compute the slope of a line using any two points on the line (grades 6-8)

This standard is crucial in showing that the slope of a line is well defined.

Content Weaknesses

The standards do not adequately support fluency with whole-number arithmetic. Consider this addition and subtraction thread in the K-2 grade band:

> Add and subtract two-digit numbers efficiently and accurately using a procedure that can be generalized, including the standard algorithm, and describe why the procedure works (grades K-2)
>
> Use mental strategies, invented algorithms, and traditional algorithms based on knowledge of place value to add and subtract two-digit numbers (grades K-2)

These two standards, taken together, do not support true fluency with addition and subtraction. The efficiency and accuracy called for in the first standard is entirely appropriate, but a rigorous treatment of it requires standard algorithms. While use of the standard algorithms is specified, invented algorithms are given equal status.

Whole-number multiplication and division are also inadequately covered. Fluency is required, but the standard algorithms are not specified. Worse, multiple methods, which may undermine students' mastery, are included, as in the following standard:

> [Students will] [a]pply their understanding of models for multiplication (i.e., equal-sized groups, arrays, area models), place value, and properties of operations (in particular, the distributive property) as they develop, discuss, and use efficient, accurate, and generalizable methods to multiply multidigit whole numbers (grades 3-5)

As discussed above, the high school standards are almost completely lacking the specificity required to assess the content. One example is for quadratics—solving quadratic equations is mentioned explicitly only in the sentence:

> A particular emphasis is on solving linear and quadratic equations (grades 9-12)

There is no mention of solving quadratics by factoring, completing the square, or by using the quadratic formula. For geometry, axioms and specific theorems are not mentioned. Proof is required, and there is a sample problem involving proof, but the role of proof in geometry is unclear.

The arithmetic of polynomials is also not included. The introduction mentions that the standards are not sufficient for students planning to continue in college with majors requiring mathematics; nonetheless, the state should supply guidance for these students.

Iowa's standards contain some rich mathematics. The main failures are in the lack of detail provided for high school, and in the prioritization and development of whole-number arithmetic. The unusual presentation of the high school standards makes them read more like a planning guide than a set of measurable benchmarks. As they stand, much of the essential content is missing. These "serious problems, shortcomings, or errors" (see *Common Grading Metric*, Appendix A) result in a Content and Rigor score of three points out of seven.

The Bottom Line

With their grade of C, Iowa's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Hawkeye State has in place today.

Kansas • English Language Arts

DOCUMENTS REVIEWED[1]

Kansas Curricular Standard for Reading Education. July 2003.
Accessed from: http://www.ksde.org/Default.aspx?tabid=142

Kansas Curricular Standards for Writing. November 2004.
Accessed from: http://www.ksde.org/Default.aspx?tabid=1726

Kansas Curricular Standards for Listening, Viewing, Speaking and Related Areas. October 2006.
Accessed from: http://www.ksde.org/Default.aspx?tabid=3511

Overview

The Kansas ELA standards cover much of the essential content of a college-preparatory curriculum. Unfortunately, they contain some critical flaws of organization, notably the lack of grade-specific standards for high school as well as for the speaking, listening, media, and viewing standards. What's more, even when grade-specific standards are provided, many are repetitive or too vague to provide adequate guidance to teachers, curriculum developers, or assessment writers about what critical content students need to master each year to be prepared for what lies ahead.

Clarity and Specificity:	1/3
Content and Rigor:	4/7
Total State Score:	**5/10**
(Common Core Grade: B+)	

General Organization

Kansas has two standards for reading (reading and literature) and two for writing (writing and research). Each of the four is broken into benchmarks that are also common across all grade levels, K-12.

For grades K-8, the benchmarks are then broken down into grade-specific "knowledge-base indicators." These are supplemented with instructional examples that, according to the state, describe "student activities that would fulfill the benchmark and indicator requirements."

In grades 9-12, the benchmarks are also broken down into knowledge-base indicators, but these provide no grade-specific guidance.

Besides the reading and writing standards, which are assessed by the Kansas state assessment system, the state provides seven curricular standards for listening, viewing, speaking, and "other related areas." Standards 1-5 are listed as standards for grades K-5 and standards 6-7 are designated for grades 6-12.

Similar to reading and writing, these seven standards are broken into benchmarks and "knowledge-specific indicators." These indicators, however, are broken into proficiency levels (basic, intermediate, proficient, and advanced) rather than grade levels. (No guidance is provided regarding when students should progress from one proficiency level to the next.)

Clarity and Specificity

The clarity and specificity of the Kansas ELA standards is inconsistent at best. Some indicators are very clearly written and provide excellent guidance about the progression of rigor expected from grade to grade. For example, benchmark 1 ("The student uses literary concepts to respond to a text") provides very clear scaffolding, as shown with the examples from grades 3, 6, and 8 below:

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> Identifies and describes characters' physical traits, basic personality traits, and actions (grade 3)
>
> Describes different aspects of major and minor characters (e.g., their physical traits, personality traits, feelings, actions, motives) and explains how those aspects influence characters' interactions with other characters and elements of the plot, including resolution of the major conflict (grade 6)
>
> Describes different aspects of characters (e.g., their physical traits, personality traits, feelings, actions, motives) and analyzes how major characters are developed (e.g., through their thoughts, words, speech patterns, actions) and how they change over time (grade 8)

Unfortunately, the indicators for grades K-2 and 9-12 of the same benchmark are too nebulous to be useful. Take, for example, the following indicator for grades K-2:

> Identifies and discusses character(s) in literature (K-2)

The difference in clarity and specificity even within this one benchmark is striking, but similar problems can be found throughout the document.

The inconsistency in the grade-specific indicators, coupled with the fact that *no* grade-specific guidance is available for grades 9-12 in reading and writing or for any grade in listening, speaking, and viewing, leave the overall clarity and specificity of the Kansas ELA standards lacking—and Kansas teachers without the clear guidance they need to plan a rigorous and thorough K-12 ELA curriculum. Consequently, Kansas earns one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The Kansas ELA standards delineate most of the appropriate content and, in some cases, a strong progression of increasing rigor is developed across grade levels. For example, the state has done a thorough job of detailing the content of both early reading and vocabulary.

Kansas also supplies a very detailed and focused progression of vocabulary content and skills, with a clear development from grade to grade. Students at grade 4, for example, are expected to use word structure—compound words, roots, prefixes, and suffixes—to determine word meanings, while students at grade 8 use structural analysis—knowledge of Greek, Latin, and Anglo-Saxon roots, prefixes, and suffixes—to understand complex words and content-area vocabulary.

In addition, the vocabulary standards commendably require students to use appropriate context clues, as shown by the standard below, and to employ dictionaries to understand connotation and denotation of unfamiliar words.

> Determines the meaning of unknown words or phrases using context clues (e.g., definitions, restatements, examples, descriptions) from sentences or paragraphs (grade 3)

Despite the lack of grade-specific indicators in high school, the speaking, listening, viewing, and media production expectations are more detailed than in many state standards.

Content Weaknesses

The Kansas ELA standards are undermined by several critical failings. First, apart from a passing reference in the "instructional examples" of American literature that should be read in social studies classes, the standards fail to reference foundational American literature.

Second, the standards fail to provide any guidance about what grade-appropriate reading looks like across grade levels. In order to ensure that students across the state are exposed to equally rigorous literature and a diversity of both literary and non-literary texts, Kansas should provide either a list of suggested texts that are appropriate for each grade level, or at least examples within the indicators of texts that would be appropriate to use when teaching particular standards.

The writing standards also suffer from two critical deficiencies. First, while they do specify the genres that students should study across grade levels, the indicators fall far short of outlining the content that students must master to

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become proficient writers. For example, the genre-specific indicators for persuasive writing in high school include the following:

> Writes a cohesive piece that includes
>
> 1. an introduction that engages the reader
> 2. an appropriate body that reinforces the writer's position through the logical placement of evidence
> 3. a conclusion that reinforces the thesis statement and original position (grades 9-12)
>
> Selects vocabulary and figurative language that conveys a particular tone and personality (e.g., humor, suspense, cynicism, sarcasm, originality, liveliness) (grades 9-12)
>
> Incorporates words that are precise, suitable for persuasive writing, and create imagery (e.g., specific nouns, powerful verbs, vivid modifiers) (grades 9-12)

Some of the content of these standards is inappropriate for persuasive writing, and other content can be broadly applied across genres. Standards for persuasive writing in high school should more clearly delineate the explicit characteristics of this essential genre.

There is also scant focus on evaluation and revision of writing. Much value would be added by including writing rubrics and exemplars that more clearly outline the level of rigor expected across grade levels.

Research writing exists as a standard only in grades 9-12. This standard should be scaffolded down into grades K-8.

Finally, across all grade levels and standards, the state-supplied instructional examples represent a missed opportunity to embed more examples of student work, rubrics, sample texts, text excerpts, and/or names of authors or works. Instead, these examples merely provide sample activities that teachers could use to teach particular standards in the classroom. Given that the state has failed to clearly articulate student outcomes, particularly in the area of writing, this diversion into pedagogy is unhelpful.

Take together, more than 20 percent of the critical content is missing from the standards, and so they can earn no higher than four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Kansas's ELA standards are mediocre. Those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Sunflower State has in place today.

1 Since our last evaluation, the *State of State English Standards 2005*, Kansas's standards have changed minimally. The reading standards have not changed. The writing standards, which were in draft form when we conducted our review in 2005, are now final. In 2010, we also did not review supplemental material (like their "writing trainers database"). Even with these minor changes in material reviewed, Kansas's grade did not change: The state earned a C in 2005 and a C in 2010. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=337&pubsubid=1043#1043.

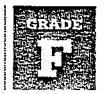
Kansas • Mathematics

DOCUMENTS REVIEWED*

Kansas: Curricular Standards for Mathematics, July 2003.
Accessed from: http://www.ksde.org/LinkClick.aspx?fileticket=9Of%2f53hRla8%3d&tabid=141&mid=5783

Overview

Kansas's standards are poorly organized and completely overwhelming. (The K-12 standards document is 348 pages long.) There are serious problems with both elementary and high school.



Clarity and Specificity:	1/3
Content and Rigor:	1/7
Total State Score:	**2/10**
(*Common Core Grade: A-*)	

General Organization

Kansas's standards are organized by grade level into four content strands, each of which is divided into topics called "Benchmarks." The Benchmarks are presented with parallel sets of "Knowledge Base" and "Application" indicators, both of which will be referred to here as standards. There are also frequent "Teacher Notes" and other additional material.

The high school material follows the same organization, but only one set of standards is provided for grades 9-10 (and nothing for grades 11-12).

Clarity and Specificity

The sheer volume of the standards makes them difficult to navigate. The parallel structure of the Knowledge and Application indicators is not clear or explained, and they are often similar enough that the standards are unnecessarily repetitive. An example of this is provided in the following standards:

> The student finds perimeter and area of two-dimensional composite figures of circles, squares, rectangles, and triangles (grade 7)
>
> The student solves real-world problems by finding perimeter and area of two-dimensional composite figures of squares, rectangles, and triangles (grade 7)

The standards sometimes include examples and sample problems, which is an excellent feature. In addition, there are some strong, clearly stated standards such as in the following standard:

> The student determines if a given point lies on the graph of a given line or parabola without graphing and justifies the answer (grades 9-10)

However, many standards are not clear. For example, the following are too broadly stated to be clear or measurable:

> The student selects a mathematical model that is more useful than other mathematical models in a given situation (grade 2)
>
> The student uses one or more mathematical models to show the relationship between two or more things (grade 6)

Other examples of poorly stated standards arise with the use of the word "identify," which appears often. It is unclear what students are actually expected to be able to do, such as with these fourth- and fifth-grade standards:

> The student identifies multiplication and division fact families (grade 4)
>
> The student identifies integers and gives real-world problems where integers are used (2.4.K12), e.g., making a T-table of the temperature each hour over a twelve-hour period in which the temperature at the beginning is 10 degrees and then decreases 2 degrees per hour (grade 5)

Despite some strengths, such as the use of sample problems, Kansas's standards are overwhelming and repetitive. They offer "limited guidance to users," and receive one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

There are no explicit priorities, and given both the excessive number of standards and the repetitiveness of the parallel structure, this is unfortunate. In elementary grades, only about 30 percent of the standards are devoted to arithmetic, which does not sufficiently prioritize it.

Content Strengths

As mentioned above, there are many individual standards that are clear, specific, and detail important content. In addition, the example problems that are provided alongside many of the standards are an excellent addition. Linear equations are also developed nicely from grade 5 through high school.

Content Weaknesses

The development of arithmetic is weak and instant recall of number facts is not explicitly required.

The coverage of whole-number addition and subtraction is also inadequate. Fluency with standard algorithms is not specified. One second-grade standard mentions that problems may be solved "by using the traditional algorithm." The Teacher Notes clarify the role of standard algorithms as follows:

> This is not to suggest...that children should be discouraged from using a standard algorithm if that is their choice (grade 2)

It appears that Kansas officially leaves the decision about whether to use important content up to the students. Worse, since teaching the standard algorithms is not specified, students may not even learn them, so choosing to use them is not an option. This leaves students entirely dependent on their own ad-hoc—and unreliable—computation methods.

The development of multiplication and division is similarly inadequate. In the continued development of arithmetic, common denominators are never mentioned.

Technology is unnecessarily introduced into the standards starting in first grade and continuing through tenth:

> The student computes with efficiency and accuracy using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology (grades 1-10)

Technology, presumably calculators for computing, is not appropriate for the early grades and computing with concrete objects is not appropriate for high school.

The high school standards are missing much essential content. For geometry, the only mention of proof is:

> The student understands the concepts of and develops a formal or informal proof through understanding of the difference between a statement verified by proof (theorem) and a statement supported by examples (high school)

There is no indication that students should see proofs of specific theorems. Quadratic equations are solved by factoring or by using the quadratic formula, but there is no mention of completing the square or deriving the quadratic formula. The only thorough analysis of the graph of a quadratic equation is restricted to equations of the form ax^2+c.

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Most of the STEM-ready content is not mentioned, including logarithms, trigonometry, and complex numbers.

Kansas's standards are weak in both elementary school and high school. Arithmetic is neither prioritized nor developed properly. High school mathematics is incomplete and is missing much of the essential content. These numerous problems result in a Content and Rigor score of one point out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of F, Kansas's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Sunflower State has in place today.

1 Kansas's academic standards have not changed since Fordham's last evaluation, the *State of State Math Standards 2005*. However, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Even through this new lens, Kansas's math grade remained an F. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=338&pubsubid=1158#1158.

KSDE002117

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Kentucky • English Language Arts

DOCUMENTS REVIEWED

Combined Curriculum Document: Reading, Listening, Writing, by Grade-Level. 2006.
Accessed from: http://www.education.ky.gov/kde/instructional+resources/curriculum+documents+and+resources/teaching+tools/combined+curriculum+documents

Overview

The Kentucky ELA standards are confusingly organized and laced with vague or overly general expectations that fail to show a clear progression of rigor from one grade to the next. The standards for high school resemble those for middle school. At times the standards seem to represent a perpetual remedial course.

Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(Common Core Grade: B+)	

General Organization

Kentucky's standards are organized into three broad categories: state learning goals, academic expectations, and programs of study. How these three elements work together is complicated.

First, there are six learning goals that are said to describe the state's "vision of what students should know and be able to do as a result of their school experience." These six statements transcend grade levels and subject areas—for example, "[s]tudents shall develop their abilities to think and solve problems in school situations and in a variety of situations they will encounter in life"—but are intended to serve as the foundation upon which the grade- and subject-specific standards and assessments are built.

The learning goals are then broken into approximately sixty "academic expectations," some of which are particular to math or ELA, others written broadly enough to apply to several subjects. These academic expectations are designed to "characterize student achievement of the goals." For example, "students make sense of the variety of materials they read."

Finally, the academic expectations are broken down into grade-specific "programs of study," which outline the "understandings" and "content and skills" that students should master.

For ELA, there are three programs of study: reading; writing; and speaking, listening, and observing. Across all three programs of study, standards are provided for the "primary" level, where expectations for what students should know and be able to do at the end of third grade are provided, and then for each grade, 4-8.

In high school, the state provides grade-specific expectations in writing only. In reading, standards are provided for grades 9, 10, and 11-12. For speaking, listening, and observing, high school standards are provided at two grade spans: 9-10 and 11-12.

Clarity and Specificity

While Kentucky presents reasonably clear standards in a few areas—e.g., when outlining expectations for oral presentations—the vast majority of the state's ELA standards are written in vague language that describes what students should know and be able to do only in generic terms laced with convoluted language and jargon.

In one sixth-grade standard, for example, students are asked to "communicate through authentic transactive purposes for writing," which it parenthetically described as "informing, describing, persuading and analyzing." A related

KSDE002118

standard requires students to generate ideas by using "reading, journaling, mapping, webbing, note-taking, interviewing, researching, other writing-to-learn activities." Unfortunately, these two examples, like so many of the standards in the Kentucky framework, provide no further detail to clarify expectations about what, precisely, students should master through such activities or in each writing genre.

In reading, the standards provide only general expectations for reading and analyzing literary texts, and the language is often vague and plagued by an overwhelming emphasis on "strategies." Here's an example:

> Students will use comprehension strategies while reading, listening to, or viewing literary and informational texts (e.g., using prior knowledge, previewing text selections, making predictions, generating questions, constructing sensory images, using text features, making connections, determining importance of information) (grades K-3)

While the expectations for reading and analyzing informational texts are marginally more complete, they do not go far enough to make up for the overwhelming number of vague, general, or otherwise unclear standards in the Kentucky framework. Consequently, Kentucky's ELA standards can earn no higher than a one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The Kentucky ELA standards include specific criteria for evaluation of oral presentations and reasonably clear expectations for speaking, listening, and observing skills (though the latter could be improved by demonstrating a clearer progression of skills from grade to grade).

In addition, the standards delineate grammatical knowledge students should master in grades 4-8. For example:

> - Students will apply knowledge of subject/verb agreement with both singular and plural subjects
> - Students will apply knowledge of present, past and future verb tenses
> - Students will apply knowledge of comparative and superlative forms of adjectives and adverbs
> - Students will apply knowledge of special problems in usage (e.g., a/an, to/two/too, their/there/they're) and pronoun references and double negatives
> - Students will correct run-on or awkward sentences
> - Students will correct sentence fragments (grade 5)

The high school grammar standards are similarly detailed, although some of them are repetitive and there is no clear progression from one grade to the next.

As noted above, Kentucky also specifies the important genres of writing students should study. These standards could be strengthened, however, by providing additional detail about the genre-specific content students must master and by more clearly demonstrating how student writing is expected to increase in sophistication from grade to grade.

Content Weaknesses

Despite the few bright spots mentioned above, the Kentucky standards have much room for improvement.

For starters, the standards make no reference to works of literature and nonfiction reading. In fact, across grades K-8, there is no mention of *any* literature whatsoever. At the high school level, there is passing mention of foundational U.S. documents, as shown in this grade 9 example:

> Students will understand that different purposes to read include reading to acquire new information and reading for personal fulfillment. Among these texts are plays, fiction and non-fiction, classic and contemporary works, and foundational U.S. documents (grade 9)

While the standards list numerous important reading skills, they provide little elaboration and no examples that would help teachers understand the essential content that students must master across each grade level.

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Across grades 5-12, research is mentioned only in passing and there is no indication that students will write serious research papers. (In fact, at the middle school level, research is described only as a "writing-to-learn" activity.)

The standards do not describe expectations for phonemic awareness, phonics, fluency, or comprehension skills, except in the most general terms, as shown in the K-3 example below:

> Students will understand that knowing how letters are linked to sounds to form letter-sound correspondence and spelling patterns can help determine unfamiliar words while reading (grades K-3)

At the elementary level, the standards mention synonyms, antonyms, prefixes, suffixes, etc., but they mix them in with standards "reading strategies" rather than providing a clear focus on essential vocabulary development. At the middle and high school level, vocabulary development is given scant attention and only in the context of learning "word recognition strategies."

Taken together, these serious shortcomings leave more than 50 percent of the essential ELA content missing. As such, Kentucky's standards can earn no higher than a three points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, Kentucky's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Bluegrass State has in place today.

KSDE002120

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

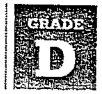
Kentucky • Mathematics

DOCUMENTS REVIEWED

Combined Curriculum Document, Mathematics. 2006.
Accessed from: http://www.education.ky.gov/KDE/Instructional+Resources/Curriculum+Documents+and+Resources/Teaching+Tools/Combined+Curriculum+Documents/default.htm

Overview

The organization of Kentucky's standards is difficult to understand and often incoherent. In addition, the standards are often vaguely stated. Arithmetic is not identified as an elementary school priority and is developed poorly. The coverage of high school content is variable.



Clarity and Specificity:	1/3
Content and Rigor:	2/7
Total State Score:	**3/10**

(*Common Core Grade: A-*)

General Organization

The K-12 standards are organized by five content strands (called "Big Ideas"), such as Geometry and Algebraic Thinking. These content strands include introductions that change every few grade levels to reflect developmental changes as grades progress. The strands include at least two "academic expectations," and underneath these expectations are three additional categories: "Understandings," "Skills and Concepts," and "Related Core Content for Assessment." It is not clear how these categories relate to the academic expectations.

For example, in fifth grade, one Big Idea is Algebraic Thinking; it is followed by three academic expectations—one of which is, "[s]tudents understand various mathematical procedures and use them appropriately and accurately." Underneath this expectation is this Understanding: "Students will understand that patterns, relations and functions are tools that help explain or predict real-world phenomena." Beside that is a Skill and Concept which reads: "Students will create, recognize, extend, find and write rules for patterns." Finally, the accompanying Related Core Content for Assessment reads: "Students will extend patterns, find the missing term(s) in a pattern or describe rules for patterns (numbers, pictures, tables, words) from real-world and mathematical problems."

Standards for grades K-3 are combined and presented as the "Primary" level. High school is organized the same way except that there is only one grade level: high school. Grades 4-8 are presented individually.

Clarity and Specificity

The organization of the document is confusing. Though the standards are often short and easy to read, there are an excessive number of them and their placement and naming is not always clear. Some standards are repeated since they correspond to more than one Understanding. The Skills and Concepts standards and the Related Core Content for assessment are sometimes the same, sometimes differ minimally, and sometimes are quite different. For example, in the following list of standards, the first two are included as Skills and Concepts and these appear right before an assessment standard.

> Students will identify and graph ordered pairs on a positive coordinate system (grade 4)
>
> Students will locate points on a grid (grade 4)
>
> Students will identify and graph ordered pairs on a positive coordinate system scaled by ones or locate points on a grid (grade 4)

Despite the confusing organization, many of the standards are clear and specific.

KSDE002121

However, many others are not clear *or* specific. One phrase that pervades the standards is "real-world." There are many "real-world" quantities, problems, phenomena, and situations in Kentucky's standards. These are considered distinct from mathematical quantities and problems, as illustrated by the following standard:

> Students will read, write and rename whole numbers, fractions and decimals, and apply to real-world and mathematical problems (grade 4)

Presumably the kinds of real-world problems that students are expected to solve change as they progress through the grades, but the standards are not specific about this progression. The "real world," then, appears to take on a vague and nebulous form in the Bluegrass State.

Another issue with the clarity of the standards is with the use of the word "explore." Many standards begin with the phrase "students will explore," as in the following:

> Students will explore the use of simple ratios to describe problem situations (grade 4)
> Students will explore the role of probability in decision making (grade 6)

It is not clear what students are supposed to know or what kinds of problems they are expected to solve when "explore" is the action verb.

Although there are many clear and easy-to-understand standards, many are unclear and the overall organization of Kentucky's standards is unnecessarily complex. The standards provide "limited guidance to users" (see *Common Grading Metric*, Appendix A) and therefore receive one point out of three for Clarity and Specificity.

Content and Rigor

Content Priorities

Kentucky does not provide explicit guidance as to what content is the most important. The number of standards in each grade is excessive, so some guidance as to what standards are essential is crucial. Priorities are set implicitly in that fewer than 30 percent of the elementary school standards are devoted to arithmetic, which does not sufficiently prioritize it.

Content Strengths

The structure of arithmetic is covered well, including commutativity, associativity, and distributivity.

In high school, the coverage of geometry is sometimes rigorous. Proof of basic theorems is included, and the axiomatic development of geometry is mentioned:

> Students will explore geometries other than Euclidean geometry, in which the parallel postulate is not true (high school)

A crucial STEM-ready standard is also stated clearly:

> Students will add, subtract, multiply, divide and simplify rational expressions (high school)

Content Weaknesses

The development of whole-number arithmetic is weak. Instant recall of basic facts is not specified. No mention at all is made of single-digit addition (and corresponding subtraction) facts. For multiplication and division, there is the insufficient:

> Students will multiply whole numbers through 10 × 10 (primary)

The continued development of whole-number arithmetic is weak. Neither fluency nor standard algorithms are required by the standards. The capstone standard for whole-number arithmetic is:

> Students will develop and apply computational procedures to add, subtract, multiply and divide whole numbers using basic facts and technology as appropriate (grade 5)

KSDE002122

Requiring students to develop their own procedures and rely on technology "as appropriate" does not ensure that they'll have the requisite fluency with arithmetic.

The continued development of arithmetic is equally weak. Common denominators are not mentioned. Standard methods and procedures are not specified, and the use of calculators—which can undermine competency in arithmetic if not used appropriately—is made even more explicit, as in:

> Students will develop addition, subtraction, multiplication and division of common fractions and decimals with manipulatives and symbols (e.g., mental computation, paper and pencil, calculators) (grade 6)

High school, though strong in places, is missing much of the essential content. For quadratic equations, there is no mention of completing the square or the use of the quadratic formula. There is also little trigonometry in the standards.

Kentucky does have many good standards, and some of the coverage is rigorous. However, the standards do not set arithmetic as a priority and they do not cover basic arithmetic well. High school content, while sometimes strong, is missing much of the essential material. These "serious problems, shortcomings, or errors" (see *Common Grading Metric*, Appendix A) result in a Content and Rigor score of two points out of seven.

The Bottom Line

With their grade of D, Kentucky's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Bluegrass State has in place today.

KSDE002123

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

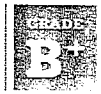
Louisiana • English Language Arts

DOCUMENTS REVIEWED

Louisiana English Language Arts Grade Level Expectations. Approved 2004.
Accessed from: http://www.doe.state.la.us/lde/saa/1915.html

Overview

While they suffer from wordiness and vague language in places, the Louisiana standards are strong in both content and rigor, exhibiting a clear progression from grade to grade.



Clarity and Specificity:	2/3
Content and Rigor:	6/7
Total State Score:	**8/10**
(Common Core Grade: B+)	

General Organization

Louisiana's seven overarching ELA standards are rather wordy:

1. Students read, comprehend, and respond to a range of materials, using a variety of strategies for different purposes.
2. Students write competently for a variety of purposes and audiences.
3. Students communicate using standard English grammar, usage, sentence structure, punctuation, capitalization, spelling, and handwriting.
4. Students demonstrate competence in speaking and listening as tools for learning and communicating.
5. Students locate, select, and synthesize information from a variety of texts, media, references, and technological sources to acquire and communicate knowledge.
6. Students read, analyze, and respond to literature as a record of life experiences.
7. Students apply reasoning and problem solving skills to reading, writing, speaking, listening, viewing, and visually representing.

Under each of these standards, we find lists of grade-level expectations (for all grades except 11 and 12, which are combined).

Clarity and Specificity

Louisiana's grade-level expectations are a mix of clear and unclear, specific and non-specific, as illustrated in the following two standards for fifth grade. In the first of these, the "reading" expectation is very straightforward:

> Identify and explain literary devices in grade-appropriate texts, including:
> - how word choice and images appeal to the senses and suggest mood, tone, and style
> - foreshadowing
> - flashback (grade 5)

In the next expectation, however (for standard 7, "reasoning and problem solving"), it is not clear what measurable task students should be accomplishing, or even what the standard is meant to communicate:

> Examine and explain the relationship between life experiences and texts to generate solutions to problems (grade 5)

Which problems are meant to be solved—personal problems? Foreign policy problems? Problems presented in the texts? What kind of texts, literary or informational? What is the relevance of life experience, and what kind of life experiences?

KSDE002124

The organization of the document appears to exacerbate these problems of clarity and specificity, since some content, such as the analysis of literary and informational text, migrates among categories, making it difficult to track. Standards 1 (general "reading"), 6 (literature), and the aforementioned 7 ("reasoning and problem solving") are presented together at each grade, but with different text types treated within standards 1 and 7. Standard 7 is often where various text types and the vaguest language appear, as in the example above.

In other places, the language is just vague, as in the following:

> Identify the connections between ideas and information in a variety of texts (e.g., cartoons, poetry, fiction, instructional manuals) and real-life situations and other texts (grade 4, standard 1)

In still others, the syntax is also somewhat tortuous, making meaning difficult to comprehend:

> Compare and/or contrast cultural elements including a group's history, perspectives, and language found in multicultural texts in oral and written responses (grade 6, standard 6)

The standards could be greatly improved by streamlining their content into tidier categories, perhaps by text type, and tightening the language within each. The prose is generally comprehensible, but some vague or unclear language taints the otherwise useful document. As such, the standards receive a score of two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The standards thoroughly address early reading, as in the following:

> Demonstrate understanding of phonics by:
> - decoding simple words using word-attack strategies including letter-sound correspondence for consonants spelled with one letter and with digraphs, short and long vowels spelled with one letter, diphthongs, consonant blends, r-controlled vowels, and long vowels spelled with more than one letter, including silent e
> - reading one- and two-syllable words with short- and long-vowel sounds spelled with common spelling patterns
> - identifying and reading words from common word families
> - recognizing base words and their inflectional forms (e.g., suffixes, -s, -es, -ed, -ing, -est, -er)
> - reading high-frequency, gradeappropriate non-phonetic words with automaticity (grade 1)

Literary text is also handled comprehensively and rigorously across the grades, with such welcome concrete additions as this:

> Identify and explain connections between historical contexts and works of various authors, including Homer, Sophocles, and Shakespeare (grade 9)

The Louisiana standards also attempt to include American literature, as in these standard 6 expectations for grades 11-12:

> Analyze and critique the impact of historical periods, diverse ethnic groups, and major influences (e.g., philosophical, political, religious, ethical, social) on American, British, or world literature in oral and written responses (grades 11-12)
>
> Analyze and explain the significance of literary forms, techniques, characteristics, and recurrent themes of major literary periods in ancient, American, British, or world literature (grades 11-12)
>
> Analyze in oral and written responses the ways in which works of ancient, American, British, or world literature represent views or comments on life, for example:
> - an autobiography/diary gives insight into a particular time and place
> - the pastoral idealizes life in the country
> - the parody mocks people and institutions
> - an allegory uses fictional figures to express truths about human experiences (grades 11-12)

KSDE002125

It would be better if American literature were addressed in earlier grades as well, but so few states address American literature at all that Louisiana is to be praised for including it in the later grades.

Louisiana's writing standards contain many expectations that apply to the writing process, and they clearly delineate the desired characteristics of specific writing products. The expectations emphasize appropriate genres of writing at each grade level, such as exposition and narration in the earlier grades and persuasion in upper grades.

The expectations for listening and speaking are rigorous. They include specific expectations for active listening, effective speaking, group discussions, recitations, and formal presentations. The expectations acknowledge the importance of using Standard English.

Finally, Louisiana's expectations for oral and written English language conventions are thoroughly addressed, primarily in the writing, but also in the speaking sections, as noted.

Content Weaknesses

Louisiana's standards for reading could be improved in two ways. First, the state should clarify its priorities. The present standards include both rigorous expectations for early reading and vocabulary but also a number of often unmeasurable "reasoning" skills, making it hard to discern the state's priorities for reading.

Second, Louisiana should append a reading list or a set of sample texts to illustrate the quality and complexity of reading that should be required of students at each grade level.

Minor improvements could also be made to the writing expectations, where complete paragraphs with topic sentences are not required until fourth grade. It would also be helpful to teachers to provide samples of acceptable student writing to illustrate expected levels of rigor. The standards could be improved and slightly more than 5 percent of crucial content is missing, and Louisiana's standards receive a Content and Rigor score of six points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

Louisiana's standards treat both literary and non-literary texts in more systematic detail than the Common Core, addressing the specific genres, sub-genres, and characteristics of both text types. Louisiana also more clearly prioritizes grade-appropriate genres in its writing standards and provides more detailed expectations for oral presentations.

On the other hand, Common Core includes samples of student writing to clarify grade- and genre-specific writing expectations, as well as a reading list to provide guidance about the quality and complexity of texts that students should be reading each year. In addition, the Common Core includes standards explicitly addressing foundational U.S. documents. Such enhancements would benefit Louisiana's already-strong standards.

1 Louisiana's academic content standards have not changed since Fordham's last evaluation, the *State of State English Standards* 2005. However, in 2005, we also reviewed supplementary material, including tutoring lessons and assessment guides that were not reviewed in 2010. Moreover, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Through this new lens, Louisiana's grade dropped from an A to a B-plus. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=337&pubsubid=1032#1032.

KSDE002126

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

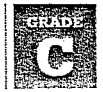
Louisiana • Mathematics

DOCUMENTS REVIEWED[1]

Mathematics Grade Level Expectations. 2004.
Accessed from: http://www.doe.state.la.us/lde/uploads/3920.pdf

Overview

Louisiana's standards are well presented and easy to read. The K-8 standards are often strong, though there are a few weaknesses in the development and prioritization of arithmetic. High school, while strong in places, is missing much of the essential content.



Clarity and Specificity:	2/3
Content and Rigor:	3/7
Total State Score:	**5/10**
(*Common Core Grade: A-*)	

General Organization

The K-12 grade-level standards are organized by six content strands such as Numbers and Number Relation, and Geometry. Individual grade-level standards are included for grades 1-10, and the standards for grades 11-12 are combined.

Clarity and Specificity

For the most part, standards are well organized and easy to read. Statements are generally concise and clear, such as:

> Use the symbols <, >, and ≠ to express inequalities (grade 3)
> Measure length to the nearest quarter-inch and [millimeter] (grade 4)
> Factor whole numbers into primes (grade 6)

However, not all of the standards are clear. In particular, the term "real-life" is used frequently and detracts from the specificity of the standards, as in:

> Apply concepts of congruence, similarity, and symmetry in real-life situations (grade 3)

This focus on real-life eventually culminates in expectations that are not stated clearly and that require college-level mathematics to be covered rigorously:

> Use discrete math to model real-life situations (e.g., fair games, elections) (grade 10)
> Determine the family or families of functions that can be used to represent a given set of real-life data, with and without technology (grades 11-12)

In high school, the organization of the standards by strand is not helpful. Standards on specific topics, such as linear equations or quadratics, may not appear together but are scattered throughout the strands. Moreover, some standards do not make it clear what students are expected to know or what kinds of problems they should be able to solve. They are overly broad and subject to much interpretation on the part of the reader:

> Generalize and represent patterns symbolically, with and without technology (grade 10)
> Model and solve problems involving quadratic, polynomial, exponential, logarithmic, step function, rational, and absolute value equations using technology (grades 11-12)

KSDE002127

In K-8, most of the standards are clear and specific. However, not all of them are, and many of the standards at the high school level are overly broad. Since the standards "do not quite provide a complete guide to users" (see *Common Grading Metric*, Appendix A), they receive a Clarity and Specificity score of two points out of three.

Content and Rigor

Content Priorities

Louisiana does not provide any guidance as to priorities. When arithmetic should be the focus, standards addressing arithmetic comprise less than one-third the total number of expectations. This means that arithmetic is not adequately set as a priority.

Content Strengths

The standards cover the structure of arithmetic such as commutativity, associativity, and distributivity as well as the inverse nature of addition and subtraction and of multiplication and division. Expectations for arithmetic are stated clearly, though as discussed below, they do not specify fluency or standard methods. The number line is introduced early and used throughout. Word problems and related material are supported with standards such as:

> Compare U.S. and metric measurements using approximate reference points without using conversions (e.g., a meter is longer than a yard) (grade 3)
>
> Count money, determine change, and solve simple word problems involving money amounts using decimal notation (grade 4)
>
> Calculate, interpret, and compare rates such as [dollars per pound], [miles per gallon], and [miles per hour] (grade 6)

While the high school content is not complete, there are some rigorous standards. For example:

> Write the equation of a line parallel or perpendicular to a given line through a specific point (grade 10)
>
> Solve quadratic equations by factoring, completing the square, using the quadratic formula, and graphing (grades 11-12)

Content Weaknesses

The development of whole-number arithmetic is straightforward, but not quite sufficient. For example, "know" appears in many of the state standards, but its meaning varies from "commit to memory" to "be able to compute." Thus, the standards containing "know," as in the example below, do not adequately specify that students have automaticity, or quick recall, of basic number facts. These are the basic building blocks for future mathematics; students who are still struggling with basic facts are not prepared to move on to the next level of mathematics.

Arithmetic expectations are stated, but fluency and standard algorithms are not specified, as in:

> Add and subtract numbers of 3 digits or less [sic] (grade 3)
>
> Multiply 3-digit by 1-digit numbers, 2-digit by 2-digit numbers, and divide 3-digit numbers by 1-digit numbers, with and without remainders (grade 4)

In addition, the use of calculators in grade 3 could undermine students' mastery of arithmetic:

> Determine when and how to estimate, and when and how to use mental math, calculators, or paper/pencil strategies to solve addition and subtraction problems (grade 3)

Moreover, the standard seems to leave the decision to use a calculator to replace standard computational methods in the hands of the students. Also, in the continual development of arithmetic, common denominators for fractions are not mentioned.

High school geometry is not adequate. Foundations are missing, as are proofs for most of the standard theorems. There are no constructions, and congruence is covered only sparsely by this standard:

KSDE002128

> Determine angle measures and side lengths of right and similar triangles using trigonometric ratios and properties of similarity, including congruence (grade 10)

The development of quadratic equations is missing some details. There are very few standards specifically about quadratics. The vertex form of a quadratic equation is not developed and max/min problems involving quadratics are not specified.

Finally, polynomial arithmetic is not covered and some of the STEM-ready content is missing, including inverse trigonometric functions and polar coordinates.

Arithmetic is not a priority in elementary school and its development, although straightforward, is not adequate. High school has some rigorous standards but is missing much of the essential content. These serious problems result in a Content and Rigor score of three points out of seven (see the *Common Grading Metric*, Appendix A).

The Bottom Line

With their grade of C, Louisiana's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Pelican State has in place today.

1 Louisiana's mathematics grade-level expectations have not changed since Fordham's last evaluation, the *State of State Math Standards 2005*, though, the 2005 review also reviewed the Content Standards Foundations Skills (1997). Even with these changes, as well as potential differences between our previous and current grading metric (see Appendix C for a complete explanation of changes in criteria), Louisiana's grade did not change. Find the 2005 Fordham report here: http://www.edexcellence.net/detail/news.cfm?news_id=338&pubsubid=1160#1160.

KSDE002129

Maine • English Language Arts

DOCUMENTS REVIEWED

Learning Results: Parameters for Essential Instruction (2007): English Language Arts. 2007.
Accessed from: http://www.maine.gov/education/lres/pei/ela102207.pdf

Overview

Maine's ELA standards are well organized and easy to read. Unfortunately, like many states, Maine falls into the trap of providing grade-specific detail only for assessed grades (3-8) rather than for all grades, K-12. This leads to serious gaps in both content and clarity that prevent the standards from providing the roadmap that teachers need to guarantee rigorous instruction for all students.

Clarity and Specificity:	2/3
Content and Rigor:	4/7
Total State Score:	**6/10**

(Common Core Grade: B+)

General Organization

The Maine ELA standards are divided first into six "standards," covering reading, writing, research, language, listening and speaking, and media. Each standard is subdivided into one to five "performance indicator labels." (Both the standards and the performance indicator labels are uniform across all grades.) For example, the reading standard is divided into these four performance indicator labels:

> Reading
> 1. Interconnected Elements: Comprehension, Vocabulary, Alphabetics, Fluency
> 2. Literary Texts
> 3. Informational Texts
> 4. Persuasive Texts

Finally, the performance indicator labels are divided into specific "performance indicators and descriptors" that are presented either for individual grades or for grade bands. For example, the performance descriptor for grades K-2 for indicator number one (above) is:

> Students read texts, within a grade-appropriate span of text complexity, and apply their knowledge and strategies of comprehension, vocabulary, alphabetics, and fluency (grades K-2)

For reading, grade-specific indicators are provided for grades 3-8. Early elementary indicators are provided together for grades Pre-K-2, and high school standards for 9-Diploma.

The indicators for writing, research, language, listening and speaking, and media are presented together for grades Pre-K-2, 3-5, 6-8, and 9-Diploma.

Clarity and Specificity

The Maine standards are clearly written and easy to understand, and the document includes a glossary where teachers can find definitions for all content-specific terms used throughout the document. This glossary often serves to clarify expectations.

The grade-specific indicators are detailed and logically grouped, and attention was clearly paid to the progression across grade bands.

Unfortunately, because the majority of standards are presented in grade bands rather than for individual grades, it is difficult to discern what skills and content students should learn each year. What's more, though the state appears to have grade-specific indicators and performance descriptors for grade 3-8 reading, many of these are repeated verbatim from year to year, making distinctions between grades impossible to discern. Take, for example, the following standards, which are repeated nearly verbatim for grades 3-5 and 6-8:

> [Students will] [u]se a range of strategies as they read, including constant monitoring, searching, connecting, and inferring to deepen their understanding of text(s) (grades 3-5)
>
> [Students will] [u]se a range of before-, during-, and after-reading strategies to deepen their understanding of text(s) (grades 6-8)

These shortcomings make it difficult to discern the scope and sequence of the material that students should master and result in a score of two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The Maine standards have clear performance indicators that specify systematic vocabulary development, particularly for grades K-8. For example, consider these elementary standards:

> Develop vocabulary using knowledge of word parts and relationships among words including action words and different words that describe similar meanings (Pre-K-2)
>
> Determine the meaning of unknown words by using a variety of strategies including using the context of the text, word connections, and a dictionary (grade 3)
>
> Use phonics including syllable types, word parts, word families and common prefixes and suffixes to read fluently and build meaning as they read (grade 3)
>
> Determine the meaning of unknown words by using a variety of strategies including applying knowledge of synonyms, antonyms, homophones, and homographs (grade 4)

The reading standards are also particularly strong in grades 5-8, in part because they provide grade-level descriptors of student expectations for working with literary, informational, and persuasive texts. Consider these eighth-grade standards for literary and persuasive texts:

> Literary Text
> Evaluate the structural elements of the plot, such as subplots, parallel episodes, and climax; the plot's development; and the way in which conflicts are (or are not) addressed and resolved (grade 8)
>
> Persuasive Texts
> Identify rhetorical devices an author uses to persuade the reader, including bandwagon, peer pressure, repetition, testimonial, hyperbole, loaded words, transfer, amplification, and extended metaphor (grade 8)

In writing, standards specify important genres, including narrative, argument/analysis, and persuasive writing, and provide some detail about the essential genre-specific content that students must master.

The Maine standards also include expectations for the correct use of Standard English. These standards are particularly well written for grades Pre-K-5.

Maine underscores the importance of research writing by devoting an entire strand to research, which includes specific criteria and content that students should master across Pre-K-12.

Content Weaknesses

Despite the strengths noted above, some content is absent from Maine's ELA standards. For starters, they do not address American literature, nor do they provide guidance regarding the level of reading/writing expected at each grade or grade band. While the standards claim that students should "read text, within a grade appropriate span of text complexity," the actual standards, indicators, and descriptors neither define nor provide examples of how educators might assess grade-level appropriateness.

The writing standards also fail to include sample rubrics or examples that illustrate the quality of writing expected.

A number of the content-area weaknesses result from Maine's decision to use grade bands in K-2 and high school. The Pine Tree State fails to delineate explicit and systematic expectations for early reading, which is not surprising in a document that groups Pre-K-2 standards together. The indicators for high school vocabulary, perhaps because they are similarly grouped (9-12), do not reference etymology, connotation/denotation, or shades of meaning, all of which are explicitly addressed in grades 7 and 8.

As mentioned, Maine includes expectations regarding the correct use of English conventions, yet its grade 6-8 standards fail to mention some critical content, such as parts of the verb or verb tenses, specific types of pronouns, types of phrases and clauses, or fragments.

The manner in which Maine has organized its ELA standards leads to serious gaps in content—in total, more than a third of the essential content is missing. Consequently, Maine can earn no higher than four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Maine's ELA standards are mediocre. Those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Pine Tree State has in place today.

KSDE002132

Maine • Mathematics

DOCUMENTS REVIEWED

Maine Learning Results: Parameters for Essential Instruction, Mathematics, October 22, 2007.
Accessed from: http://www.maine.gov/education/lres/pei/math_0708.pdf

Overview

Maine's standards are not well explicated; however, the organization is good, and the grade-level statements are generally easy to read and understand. The elementary standards prioritize arithmetic quite well, but they do not develop it appropriately. The high school content is condensed to a single set of standards for all of high school, and the coverage of high school math is inadequate.

Clarity and Specificity:	2/3
Content and Rigor:	3/7
Total State Score:	**5/10**

(*Common Core Grade: A-*)

General Organization

The standards are organized into four content strands such as Number and Data. Each strand is divided into three topics (Number, for instance, includes: Whole Number, Rational Number, and Real Number). The topics subdivide into grade-level "Performance Indicators" and then more specific "Descriptors." For instance, in the Pre-K-2 Whole Number strand, one performance indicator reads, "Students understand and use procedures to add and subtract whole numbers with one and two digits." One of the two accompanying descriptors reads, "Use and explain multiple strategies for computation." Both performance indicators and descriptors are referred to as standards in this review.

The standards are divided into three levels: Pre-K-2, grades 3-8 (for which individual grade-level standards are provided), and 9-Diploma (which includes all of the high school material).

Clarity and Specificity

Each topic is presented in a chart that shows its development through the grades and, appropriately, not all topics have standards for each grade. The topic of Whole Numbers is properly finished in sixth grade, though seventh and eighth grades have a statement that:

> It is expected that students continue to use prior concepts and skills in new and familiar contexts (grades 7-8)

Many standards are straightforward and clear, for example:

> Tell time to the hour and half hour (grade 2)
>
> Represent fractions greater than one as mixed numbers and mixed numbers as fractions (grade 4)
>
> Add and subtract fractions with unlike denominators (grade 5)

The high school coverage is scant—there are roughly fifty standards for all of high school. The standards become less clear and specific than in earlier grades. In many standards, the language is clear enough, but the level of detail is insufficient to interpret the standards, as in the following:

> Use the concept of n^{th} root (high school)
>
> Use concepts such as domain, range, zeros, intercepts, and maximum and minimum values (high school)

KSDE002133

The development of content is also not particularly coherent at the high school level. For example, standards dealing with quadratic equations are not placed together, but scattered across the topics. This is illustrated in the following standard, which appears under the topic Real Numbers rather than with other standards on quadratics:

> Understand that some quadratic equations do not have real solutions and that there exist other number systems to allow for solutions to these equations (high school)

Though the organization is not well explained, it makes sense. The standards are well organized and the K-8 statements are generally clear. The high school standards are less clear and often lack specificity. The standards "do not quite provide a complete guide to users," and therefore receive a Clarity and Specificity score of two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

About half of the elementary grade standards deal with the critical topic of arithmetic. This appropriately prioritizes it and sets the stage for students to succeed in more rigorous mathematics in the middle and upper grades.

Content Strengths

The grade-level standards have good focus. There are not a lot of extraneous standards in the lower grades. For example, probability is not introduced as a topic until it can be defined as a ratio:

> Predict the probability of outcomes of simple experiments and verify predictions using the understanding that the probability of an occurrence is the ratio of the number of actual occurrences to the number of possible occurrences (grade 7)

It is also refreshing to see whole-number arithmetic as a focus in early grades, and then dropping out as a topic that students should have mastered.

The general structure of arithmetic is covered well with standards such as:

> Use the inverse relationships between addition and subtraction and between multiplication and division and the commutative laws of multiplication and addition to solve problems (grade 3)

Fractions are covered reasonably well, and there are some other excellent standards such as:

> Solve problems where different units are used within the metric and traditional systems of measurement (grade 6)

Content Weaknesses

Arithmetic, though prioritized, is not adequately developed. Instant recall of basic number facts is not required. Moreover, there is no mention of addition and subtraction facts *at all* in the standards. Multiplication facts are covered inadequately and also void of instant recall:

> Multiply single-digit numbers and divide using single-digit divisors and up to two-digit dividends (division facts only, but remainders may be present) (grade 3)

The continued development of whole-number arithmetic is weak. For example, consider the following multiplication and division standards:

> Use multiple strategies for multiplication and division (grade 3)
>
> Students multiply and divide numbers up to four digits by numbers up to two digits, and by tens, hundreds, and thousands and interpret any remainders (grade 5)

Neither fluency nor standard methods and procedures are required. The latter standard is fine as far as it goes, but without fluency and standard algorithms, it is insufficient. The first standard allows students to use alternative methods.

The study of linear equations is missing some basic content including point-slope form, finding the equation of a line from two points, and slopes of parallel and perpendicular lines.

The high school standards omit much essential content. Geometry is covered insufficiently with about eleven standards. Proofs of the major theorems are not explicit and axioms are not mentioned. Quadratic equations are covered, but not coherently and lacking some content such as completing the square and solving max/min problems.

The standards are missing much of the STEM-ready content, including series, trigonometric identities, angle formulas, and polar coordinates.

Maine's standards focus on arithmetic in the elementary grades, but it is not sufficiently developed or culminated. The high school standards are scant and are missing much of the essential content. Taken together, these serious problems result in a Content and Rigor score of three points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Maine's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Pine Tree State has in place today.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Maryland • English Language Arts

DOCUMENTS REVIEWED

Maryland Voluntary State Curriculum: Reading/English Language Arts. November 15, 2007. Accessed from: http://mdk12.org/instruction/curriculum/reading/index.html

Overview

The Maryland ELA standards are a mixed bag. Standards are generally well organized, and many are clear and specific. Others, however, fail to clarify expectations or omit essential content that students should master as part of a rigorous, K-12 curriculum. What's more, the failure to delineate grade-specific expectations in high school leaves teachers of grades 9-12 with very little guidance about the essential content and progression of rigor from grade to grade.

Clarity and Specificity: 2/3
Content and Rigor: 4/7
Total State Score 6/10
(*Common Core Grade: B+*)

General Organization

The Maryland state standards for Reading/ELA cover grades Pre-K-12, but are separated into early-middle and high school documents. Standards for Pre-K-8 are divided into the following seven standards categories:

1. General Reading Processes
2. Comprehension of Informational Texts
3. Comprehension of Literary Texts
4. Writing
5. Controlling Language (including grammar, usage, and mechanics)
6. Listening
7. Speaking

Each of these is further subdivided into topics, then indicators, and finally into grade-specific objectives.

The high school standards follow a similar organizational structure, with two important differences. First, the standards are not grade-specific, but clumped together for grades 9-12. Second, they are grouped according to these four learning goals:

1. Reading, Reviewing, and Responding to Texts
2. Composing in a Variety of Modes
3. Controlling Language
4. Evaluating the Content, Organization, and Language Use of Texts

Across all grade levels, the state frequently links objectives to "seeds." According to the state, these seeds "are ideas for the indicator/objective that can be used to build a lesson." They "are not meant to be all-inclusive, nor are they substitutes for instruction." Essentially, seeds are suggested activities for lessons that will help teach specific standards.

Clarity and Specificity

Elements of the Maryland state ELA standards are very specific and provide excellent guidance about what is expected of students at each grade level. For example, the standards for phonics and phonemic awareness are detailed and specific and provide a clear progression from grade to grade.

Unfortunately, many of the standards, particularly those for reading literary and non-literary texts, are cluttered with peripheral skills (such as pre-reading, making use of illustrations, etc.) and jargon that make it difficult to discern exactly what is expected of students at each grade level.

Moreover, because the high school standards are not broken down by grade level, it's impossible to differentiate between the expectations that teachers should have for students in ninth grade versus tenth, eleventh, or twelfth. Worse still, the standards provided for K-8 appear to have little to do with those for grades 9-12. The latter follow a different organization, making it nearly impossible to detect K-12 vertical skill alignment.

Finally, while the standards often provide an overwhelming amount of detail, much of it does little to clarify expectations. In particular, the "seeds," which are provided to help teachers better understand how to teach particular skills, generally describe activities that are only loosely linked to mastery of the essential content and skills in the standard itself.

These shortcomings make it difficult to understand the scope and sequence of the material that students must learn, and as a result, Maryland can earn no higher than two points out of three for Clarity and Specificity (see *Common Grading Metric*, Appendix A).

Content and Rigor

Content Strengths

Among the strengths of the Maryland K-12 standards is their clear focus on the development of phonics skills and phonemic awareness in early reading, with a clear progression of skills from grade to grade. The K-4 standards also include detailed expectations for vocabulary development, with a similar progression.

The grade 9-12 standards set forth rigorous and sophisticated grammar expectations, but because the K-8 standards are somewhat general and basic, it is unclear how students can reach the level expected of them in high school.

In reading, very detailed standards outline expectations for literary analysis and, in high school, the standards mention foundational U.S. documents, including specific references to some authors and texts that students should read. For example:

> The student will
> - Analyze the philosophical arguments presented in a literary work and their relationship to the author's position on those arguments
> - Analyze foundational and other influential U.S. documents for their historical, rhetorical, and literary significance (e.g., The Declaration of Independence, Lincoln's "Gettysburg Address," King's "Letter from Birmingham Jail," Kennedy's Inaugural Address)
> - Apply knowledge of genre characteristics (structure) to interpret and analyze a variety of literary works (e.g., poems, novels, essays, biographies, short stories)
> - Interpret a single literary work from multiple critical approaches (grades 11-12)

The standards include reasonably detailed expectations for listening and speaking, formal oral presentations, and group discussion.

Other standards address expectations for research across all grade levels; the 9-12 research standards are particularly detailed and specific.

Content Weaknesses

The standards for literary analysis are clear and rigorous, as noted, but they also include a great deal of clutter—notably a disproportionate emphasis on pre-reading strategies and other peripheral skills that could distract from the most important literary analysis standards.

Aside from the few brief references in the high school standards to suggested texts and authors, the standards provide no guidance about the quality or complexity of the texts students should read across grade levels. Instead, the document merely provides a long list of genres that students should read. "Diversity" of texts is stressed with no guidance about what that means.

In writing, much of the language is vague and jargon-ridden, with too much emphasis on "activities" and little on knowledge and rigor (though the K–4 standards do slightly better on this front).

The K–8 standards devote meager attention to the characteristics of writing. At the high school level, the standards refer to an "Appendix A," which is supposed to include helpful examples of student writing, but is buried and under another name on the website.

Maryland's ELA standards present a decidedly mixed bag. While many are clear and rigorous, particularly at the high school level, there are serious gaps in content and a lack of alignment between the K–8 and high school documents. Taken together, these challenges present critical shortcomings and earn Maryland four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Maryland's ELA standards are mediocre. Those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Old Line State has in place today.

KSDE002138

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Maryland • Mathematics

DOCUMENTS REVIEWED[1]

Maryland's Voluntary State Curriculum. June 2004.
Accessed from: http://mdk12.org/instruction/curriculum/mathematics/index.html

Overview

Maryland's standards are poorly organized and difficult to interpret without additional explanation, which is only occasionally provided. The major content weakness is in the development of arithmetic.

GRADE: D

Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(Common Core Grade: A-)	

General Organization

Maryland's K–8 standards are subdivided into seven content strands such as Geometry and Measurement. Within each strand is a hierarchy, with "Topics" subdivided into "Indicators," and finally into grade-level objectives. It is the objectives that will be referred to as standards.

The high school standards are organized by courses: Algebra/Data Analysis, Geometry, and Algebra II. The standards are organized within courses by "Core Learning Goals" and also include "Assessment Limits," "Skill Statements," and "Additional Topics." Assessment Limits provide information regarding how the standard will be assessed (e.g., "A coordinate graph will be given with easily read coordinates"). The Skill Statement goes a step further and "gives the reader direction on how an assessment item is written [and] describes how the student is expected to respond to the item." Finally, the Additional Topics provide "content that may be appropriate for the curriculum but is not included in the Core Learning Goals."

Clarity and Specificity

Maryland offers some clearly stated standards, but in general they are difficult to read and understand. The organization itself is sometimes confusing: the statements are often unspecific and are subject to interpretation. The online version is difficult to navigate, and the additional explanatory material found there often fails to clarify the intent of the standards.

One strand—"Processes of Mathematics"—does not vary much from grade to grade.

The standards are generally vague, pedagogical statements such as:

> Make a plan to solve a problem (grades K-8)

This is certainly good advice, but as a standard it is so lacking in specificity as to be completely unmeasureable.

The choice of topics for K–8 is sometimes inappropriate, such as "Sample Space" from grades 1–8, and "Apply Knowledge of Fractions" for grades 1–4. Furthermore, the early standards for this topic are about the basics of fractions, rather than the applications, so the name is also misleading.

The verb "identify" is overused in the standards—more than fifty times in K–8—which often obscures the meaning. These adjacent standards illustrate the confusion generated by the word "identify" as well as the difficulty in interpreting the standards:

> Identify and use divisibility rules (grade 4)
> Identify factors (grade 4)

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For the latter standard, the use of "identify" instead of "find" or "compute" leaves the reader unsure what students are expected to know or what kinds of problems they should be able to solve.

Maryland does provide online clarifications for the standards cited above. For the first, students are expected to be able to use the divisibility rules for two, five, and ten. The clarification of the second standard is about computing factors, not "identifying" them. However, that clarification contradicts the preceding standard by asking students to use a calculator to check for divisibility by two, five, or ten, which is completely inappropriate when students know the simple rules.

The high school standards are even harder to understand, and it is virtually impossible to grasp them without also reading the Assessment Limit that is included for each. For example, the following is a geometry standard and its Skill Statement:

> The student will analyze the properties of geometric figures (high school)
> The student describes and analyzes geometric figures (high school)

And here are the Assessment Limits for this standard and statement:

> Essential properties, relationships, and geometric models include the following:
> 1. congruence and similarity
> 2. line/segment/plane relationships (parallel, perpendicular, intersecting, bisecting, midpoint, median, altitude)
> 3. point relationships (collinear, coplanar)
> 4. angles and angle relationships (vertical, adjacent, complementary, supplementary, obtuse, acute, right, interior, exterior)
> 5. angle relationships with parallel lines
> 6. polygons (regular, non-regular, composite, equilateral, equiangular)
> 7. geometric solids (cones, cylinders, prisms, pyramids, composite figures)
> 8. circle/sphere (tangent, radius, diameter, chord, secant, central/inscribed angle, inscribed, circumscribed) (high school)

The Assessment Limits contain all of the useful content for this standard, including specific topics such as "congruence and similarity."

Some standards are simply unclear, such as:

> The student will determine and interpret a quadratic function when given a graph, table of values, essential characteristics of the function, or a verbal description of a real-world situation (Algebra II)

The meaning of "determine and interpret" is subject to interpretation. Unfortunately, the Skill Statement for this standard is so convoluted and lengthy that it fails to clarify. In short, it reads, "Given one or more of the following:" followed by a list and then, "the student will be able to do each of:" followed by another list. This gives over twenty possibilities. Worse, some of the combinations make no sense. For example, one combination is: "[G]iven" a graph, students "will be able to" graph the function. This illustrates the general disorganization of the standards. The reader has very little idea what kinds of problems students are expected to be able to solve on quadratic equations.

The standards offer "limited guidance to users" and receive a Clarity and Specificity score of one point out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Maryland has many standards for each grade, generally over sixty. In elementary grades, nearly 40 percent of those standards are devoted to the development of arithmetic. This prioritizes arithmetic moderately well.

Content Strengths

The standards cover some of the basic properties of arithmetic well, including commutativity, associativity, and distributivity. They also explicitly cover the inverse relationship of addition and subtraction and of multiplication and division.

Despite the difficulty of interpretation, much of the essential content for high school is covered.

Content Weaknesses

The weaknesses in the foundation for whole-number arithmetic are pronounced. The standards do not adequately specify that students have automaticity, or quick recall, of basic number facts. These are the basic building blocks for future mathematics: students who are still struggling with basic facts are not prepared to move on to the next level of mathematics.

In the following examples, the grade 4 standard is a desirable standard, but a rigorous treatment should include fluency with the standard algorithm. The grade 3 standard with the phrase "a variety of strategies" does not support mastery of the standard algorithm either.

> Add whole numbers (grade 4)
> Add numbers using a variety of strategies (grade 3)

The rest of the development of arithmetic is similar. Neither fluency nor standard methods are specified. In addition, common denominators are not covered.

In high school, the standards for quadratic equations are missing the technique of completing the square, which is necessary to develop the quadratic formula. Some STEM-ready material is missing, including trigonometry.

Maryland's standards do not sufficiently prioritize or develop arithmetic, particularly whole-number arithmetic. In high school, the treatment of quadratic equations is incomplete, and some STEM-ready topics are not covered. These "serious problems" result in a Content and Rigor score of three points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, Maryland's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Old Line State has in place today.

1 Fordham's 2005 *State of State Math Standards* reviewed the August 2003 draft version of Maryland's math standards. For this evaluation in 2010, we reviewed the updated and finalized version (from June 2004). Along with this slight change in material reviewed, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Through this new lens, and with this finalized standards document, Maryland's math grade dropped from a C in 2005 to a D in 2010. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=338&pubsubid=1162#1162.

Massachusetts • English Language Arts

The 2001 Massachusetts ELA standards have been among the strongest in the nation since their adoption almost a decade ago. Yet, even as the National Governors Association and Council of Chief State Schools Officers were working on drafts of the Common Core standards, Massachusetts was working to update and improve its standards as well. This presents Bay State officials with a complex choice among the Common Core standards, their existing standards, or their newly revised draft.

In order to help inform that decision, we have included a complete review of the 2001 standards, as well as an analysis of the changes and improvements that can be found in the 2010 draft.

Current Massachusetts Standards

DOCUMENTS REVIEWED[1]

Massachusetts English Language Arts Curriculum Framework. 2001. Accessed from: http://www.doe.mass.edu/frameworks/current.html

Supplement to Massachusetts English Language Arts Curriculum Framework. 2004. Accessed from: http://www.doe.mass.edu/frameworks/current.html

Overview

For almost a decade, the *Massachusetts English Language Arts Framework* has been one of the strongest sets of academic standards in use in U.S. public schools. Because its original framework was written for grade spans only, Massachusetts developed a supplement in 2004, which clarifies grade by grade standards for grades 3-8. The supplement rounds out a rigorous, specific, and clear set of expectations for teachers and students.

Clarity and Specificity:	2/3
Content and Rigor:	7/7
Total State Score:	**9/10**
(Common Core Grade: B+)	

General Organization

Massachusetts organizes its ELA standards into four strands or content areas: Language, Reading and Literature, Composition, and Media.

There are two to twelve "general standards" within each strand, for a total of twenty-seven. These are "broad statements that outline what students should know and be able to do in English language arts." For instance, under the Language strand is this general standard: "Students will use agreed-upon rules for informal and formal discussions in small and large groups."

General standards are then broken into more detailed "learning standards" for Pre-K-2, individual grades, 3-8, and grade spans, 9-10 and 11-12. For example, one of the learning standards for grades 11-12 is:

> Drawing on one of the widely used professional evaluation forms for group discussion, evaluate how well participants engage in discussions at a local meeting (grades 11-12)

In addition to the standards, the framework includes a number of "learning scenarios" that basically function as sample lesson plans. Each scenario includes an introduction, practice exercise, and formative assessment ideas to gauge student mastery. Scenarios often span one or more of the four strands. Several appendices describe the quality and complexity of reading materials that students are expected to encounter in various grade levels, offer sample reading passages, and

provide guidance on a number of other relevant issues such as best practices for teaching English language learners and a summary of the research on early reading acquisition.

Clarity and Specificity

Across nearly all grade levels and strands, Massachusetts's standards are clear and specific, as in the following "genre" standard for grades 11-12:

> Identify and analyze characteristics of genres (satire, parody, allegory, pastoral) that overlap or cut across the lines of genre classifications such as poetry, prose, drama, short story, essay, and editorial (grades 11-12)

On the rare occasions when vaguely worded standards are included, Massachusetts provides examples that clarify the expectations in useful ways, for example:

> Make predictions using prior knowledge, pictures, and text
> - For example, students and their teacher read together Jump, Frog, Jump by Robert Kalan. When each creature comes to the pond and hints at the next hazard for Frog, the teacher stops reading and asks students to use the pictures and their prior knowledge to make a prediction about what will happen next (Pre-K-K)

Such examples, coupled with the inclusion of sample lesson plans or "learning scenarios," clarify what, precisely, students should know and be able to do.

Unfortunately, some of these excellent standards are difficult to track, due to a somewhat confusing organizational structure. As discussed above, the 2001 document provides standards by grade band only. The 2004 supplement provides additional standards, but only for grades 3, 5, and 7. While the intent of this supplement is to help teachers piece together grade-specific expectations for grades 3-8, the state doesn't provide explicit guidance about how these standards fit together, leaving some room for interpretation.

Furthermore, no grade-specific guidance is provided for grades Pre-K-3 or 9-12.

While the standards are clear and specific, the failure to provide specific expectations for every grade, coupled with a complicated and difficult-to-navigate organizational structure, earn them two points out of three for Clarity and Specificity (see *Common Grading Metric*, Appendix A).

Content and Rigor

Content Strengths

Massachusetts's early reading standards are strong. Careful attention has been paid to phonemic awareness, phonics, and fluency, as in the following "Beginning Reading" standards for grades Pre-K-K:

> Use letter-sound knowledge to identify unfamiliar words in print and gain meaning:
> - know that there is a link between letters and sounds;
> - recognize letter-sound matches by naming and identifying each letter of the alphabet;
> - understand that written words are composed of letters that represent sounds;
> - use letter-sound matches to decode simple words (grades Pre-K-K)

In addition, the vocabulary strand is well-developed and emphasizes word analysis and etymology. Massachusetts includes a sub-strand for "Vocabulary and Concept Development," as well as one entitled "Structure and Origins of Modern English" that highlights the development of the English language and focuses on grammar and usage.

Literary and information texts are handled separately, and each is treated thoroughly. The following standards, for example, illustrate the thorough treatment of theme in literary texts:

> Identify themes as lessons in stories, fables, and poems (grade 3)
>
> Identify themes as lessons in folktales, fables, and Greek myths for children (grades 3-4)
>
> Apply knowledge of the concept that theme refers to the main idea and meaning of a literary passage or selection when stated (grade 5)
>
> Apply knowledge of the concept that theme refers to the main idea and meaning of a selection, whether it is implied or stated (grades 5-6)
>
> Identify and supply evidence for theme in a selection (grade 7)
>
> Analyze and evaluate similar themes across a variety of selections, distinguishing theme from topic (grades 7-8)

The progressive rigor in the treatment of an important characteristic of literary text is evident. Many of these "theme" standards also include examples. All literary genres are covered, and nonfiction is addressed in similar detail in its own section.

Massachusetts defines the quality and complexity of texts to be read by including two exemplary reading lists, one titled "Authors, Illustrators, and Works Reflecting Our Common Literary and Cultural Heritage" and the other, "Suggested Authors and Illustrators of Contemporary American Literature and World Literature." These lists can help ensure that students will be exposed both to quality American literature of historical significance and to significant contemporary authors from around the world.

Listening and speaking standards are rigorous, especially because of examples that consistently help clarify student expectations, as in the following "discussion" standard:

> Identify and practice techniques such as setting time limits for speakers and deadlines for decision-making to improve productivity of group discussions.
>
> For example, in preparation for a student council meeting, students plan an agenda for discussion, including how long they will allow each speaker to present a case or argument. They build into their agenda time for making decisions and taking votes on key issues (grades 9-10)

Similarly, the standards for oral presentation are rigorous, addressing agreed-upon rules for formal and informal small- and large-group discussions, for "questioning, listening and contributing," and a separate category for oral presentations where scoring rubrics for evaluation are required.

The standards for writing are comprehensive, and include formal research and the correct use of oral and written conventions. Again, examples help to indicate the level of rigor expected, as in this standard from grades 11-12:

> Write coherent compositions with a clear focus, objective presentation of alternate views, rich detail, well-developed paragraphs, and logical argumentation.
>
> - For example, students compose an essay for their English and American history classes on de Toqueville's observations of American life in the 1830s, examining whether his characterization of American society is still applicable today (grades 11-12)

Research and media (both their analysis and production) are carefully addressed, and standards for media begin as early as Pre-K, as in the following:

> Identify techniques used in television (animation, close-ups, wide-angle shots, sound effects, music, graphics) and use knowledge of these techniques to distinguish between facts and misleading information (grades Pre-K-2)

Introducing this concept early is likely to help Massachusetts students' careful discernment when viewing media as older students and adults.

In short, virtually all essential content is included and covered well.

Content Weaknesses

Considering the strengths of the composition standards, it is surprising that Massachusetts does not expect students to write a coherent paragraph until grade 5. Students are certainly capable of this important skill in fourth and even third

grade, and should be expected to exhibit it particularly since the standards ask students to write multi-paragraph reports in grade 5.

Where writing is concerned, the development and use of criteria for its evaluation is referenced several times, but no student writing samples are included to illustrate expected levels of rigor and proficiency.

These minor shortcomings are dwarfed by the inclusion of detailed, specific, and rigorous content throughout the grades. Consequently, Massachusetts easily earns seven points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

Massachusetts's existing standards are clearer, more thorough, and easier to read than the Common Core standards. Essential content is grouped more logically, so that standards addressing inextricably linked characteristics, such as themes in literary texts, can be found together rather than spread across strands. In addition, Massachusetts frequently uses standard-specific examples to clarify expectations. Unlike the Common Core, Massachusetts's standards treat both literary and non-literary texts in systematic detail throughout the document, addressing the specific genres, sub-genres, and characteristics of both text types. While both sets of standards address American literature and append lists of exemplar texts, Massachusetts's reading list is far more comprehensive. Standards addressing vocabulary development and grammar are also more detailed and rigorous in the Massachusetts document.

On the other hand, Common Core includes samples of student writing to clarify grade- and genre-specific writing expectations. In addition, the Common Core standards explicitly address foundational U.S. documents. Such enhancements would benefit Massachusetts's already-strong standards.

Massachusetts 2010 Draft Standards Comparison

DOCUMENTS COMPARED

WORKING DRAFT: Massachusetts English Language Arts Curriculum Framework. June 2010.
Accessed from: http://www.doe.mass.edu/frameworks/ela/0610draft.pdf

—COMPARED TO—

Massachusetts English Language Arts Curriculum Framework. 2001.
Accessed from: http://www.doe.mass.edu/frameworks/current.html

Supplement to Massachusetts English Language Arts Curriculum Framework. 2004.
Accessed from: http://www.doe.mass.edu/frameworks/current.html

Overview

The 2010 draft ELA standards have improved upon already clear and rigorous expectations without losing any of the essential content that was included in the original. The organization of the draft standards is clearer, and most of the few gaps that existed have been addressed.

Comparison

Improvements

The organization of the 2010 draft is dramatically improved. Grade-specific standards are now presented for all grades in a single, coherent document.

By more clearly delineating grade-specific standards, the 2010 draft has also more clearly defined the progression of content and rigor across all strands. While many states slip into repetition across grades, this draft makes meaningful distinctions in every strand from one grade to the next.

The 2010 draft also includes several small enhancements that further strengthen Massachusetts's already-excellent expectations. For example, while the 2001 document included standards addressing "discussion and presentation" within the Language strand, the 2010 draft devotes a separate strand to "discussion and presentation." Within this strand, the state has more clearly and rigorously defined standards for discussion, group work, and oral presentation.

Each genre of writing is also now addressed in its own sub-strand, making genre-specific expectations even clearer, more detailed, and rigorous.

Finally, the draft standards have addressed the two minor weaknesses that were noted (above) in the 2001 document. They now include expectations that specifically address foundational U.S. documents, and they require students to write a coherent paragraph in third grade.

No Change

All of the strengths that existed in the 2001 document remain, or have been improved and enhanced, in the 2010 update. For example, the standards continue to include helpful examples to clarify the intent and rigor of the standards, as in these from various strands:

> Identify the sense (touch, hearing, sight, taste, smell, and taste) implied in words appealing to the senses (fiction, grade 1)
>
> Analyze the function of character types (e.g., antagonist, protagonist, foil, tragic hero) (fiction, grade 9)
>
> Identify the type of evidence used to support a claim in a persuasive text (e.g., scientific research evidence, anecdotal evidence based on personal knowledge, or the discipline-based opinion of experts) (nonfiction, grade 5)

In addition, the reading, writing, grammar, and research standards remain clear, specific, and rigorous.

The one gap that remains in the 2010 draft is the continued absence of exemplar student writing samples that could further clarify writing expectations across grade levels.

The Bottom Line

The 2001 edition of the Massachusetts ELA standards were already among the best in the nation. The 2010 draft manages to further strengthen these standards without losing any of the essential content or clarity. These standards are a model of clear, rigorous K-12 ELA content and expectations.

1 Massachusetts's curriculum frameworks have not changed since Fordham's last evaluation, the *State of State English Standards 2005*. However, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Through this new lens, Massachusetts's ELA grade went from an A in 2005 to an A-minus in 2010. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=337&pubsubid=1048#1048.

Massachusetts • Mathematics

As the National Governors Association and Council of Chief State Schools Officers were working on drafts of the Common Core standards, Massachusetts was working to update and improve its existing mathematics standards as well. This presents Bay State officials with a complex choice among the Common Core standards, their existing standards, or their newly revised draft.

In order to help inform that decision, we have included a complete review of the current standards, as well as an analysis of the changes and improvements that can be found in the 2010 draft.

Current Massachusetts Standards

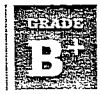
DOCUMENTS REVIEWED[1]

Massachusetts Mathematics Curriculum Framework. November 2000.
Accessed from: http://www.doe.mass.edu/omste/ca.html

Supplement to Massachusetts Mathematics Curriculum Framework. 2004.
Accessed from: http://www.doe.mass.edu/omste/ca.html

Overview

Massachusetts's K-8 standards are well organized and easy to read. In the elementary grades, arithmetic is moderately prioritized and, while some of its development is excellent, there are also some issues. The high school material is often strong, but these standards are too broadly stated, and some essential content is not covered.



Clarity and Specificity:	2/3
Content and Rigor:	6/7
Total State Score:	**8/10**
(Common Core Grade: A-)	

General Organization

Massachusetts's standards are presented in two documents: a standards document (written in 2000) and a supplement (added in 2004). In both documents, the K-12 standards are organized into five content strands such as Number Sense and Operations and Geometry.

The 2000 document divides these strands into standards for grade bands from Pre-K-K through 11-12. The 2004 supplement adds grade-specific standards for grades 3, 5, and 7.

In addition to the grades 9-10 and 11-12 standards referenced above, the high school material includes separate standards for Algebra I and II, Geometry, and Pre-Calculus.

Clarity and Specificity

The standards are generally well presented and easy to read. Many are clear and concise, such as:

> Identify angles as acute, right, or obtuse (grade 4)
>
> Find and position whole numbers, positive fractions, positive mixed numbers, and positive decimals on a number line (grade 5)

Clarifications and examples are provided for some standards, though their use is not consistent and sometimes the examples do not relate to the standard.

Some standards, particularly in high school, are so broadly stated that it is unclear what students are expected to know and what kinds of problems they should be able to solve, for example:

> Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative and recursive patterns such as Pascal's Triangle (grades 11-12)
>
> Perform operations on functions, including composition. Find inverses of functions (grades 11-12)

In addition, the presentation of the standards is confusing, because standards are spread across two separate documents, making the progression of content difficult to track.

The shortcomings described above detract from the overall clarity of the standards, thus earning the standards two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

While Massachusetts does not explicitly prioritize its standards, by counting the number of standards devoted to various topics, it is possible to determine which content is considered most important. By that gauge, arithmetic is moderately prioritized, comprising about 40 percent of the standards in the crucial elementary grades.

Content Strengths

The standard algorithms for addition, subtraction, and multiplication are made explicit:

> Demonstrate in the classroom an understanding of and the ability to use the conventional algorithms for addition (two 3-digit numbers and three 2-digit numbers) and subtraction (two 3-digit numbers) (grade 2)

The structure of arithmetic is well and thoughtfully covered. For example, the standards introduce the inverse nature of addition and subtraction in grade 2 and then revisit it in grades 5-8, as shown below:

> Understand and use the inverse relationship between addition and subtraction (e.g., 8 + 6 = 14 is equivalent to 14 − 6 = 8 and is also equivalent to 14 − 8 = 6) to solve problems and check solutions (grade 2)
>
> Demonstrate an understanding of the inverse relationship of addition and subtraction, and use that understanding to simplify computation and solve problems (grade 5)

The number line is introduced early and emphasized throughout. Fractions are continually located on the number line in grades 2-6, starting with:

> Identify and represent common fractions (1/2, 1/3, 1/4) as parts of wholes, parts of groups, and numbers on the number line (grade 2)

The geometry standards cover content reasonably well. Proofs are required and postulates are mentioned, although in a rather densely written standard:

> Write simple proofs of theorems in geometric situations, such as theorems about congruent and similar figures, parallel or perpendicular lines. Distinguish between postulates and theorems. Use inductive and deductive reasoning, as well as proof by contradiction. Given a conditional statement, write its inverse, converse, and contrapositive (Geometry)

There are some solid standards for quadratic equations:

> Find solutions to quadratic equations (with real roots) by factoring, completing the square, or using the quadratic formula. Demonstrate an understanding of the equivalence of the methods (grades 9-10)

In addition, most of the STEM-ready content is covered.

Content Weaknesses

Some of the development of whole-number arithmetic is not quite rigorous enough. In particular, automaticity with the basic number facts is not explicitly required.

The standard algorithm is barely applied to division, with only a single-digit divisor:

> Demonstrate in the classroom an understanding of and the ability to use the conventional algorithm for division of up to a three-digit whole number with a single-digit divisor (with or without remainders) (grade 4)

By failing to require students to divide using numbers greater than single-digit divisors, this standard is woefully inadequate.

The standards do not mention common denominators.

In high school, there are some gaps in content. The coverage of linear equations is missing some content, including standard form, and finding the equation of a line between two points. For quadratics, the general theory is not well developed. The vertex form and symmetry are not developed and max/min problems are not specifically included.

While proofs are mentioned in geometry, it is not specified that the major theorems are to be proven; instead, they are only to be used or applied, for example:

> Apply properties of angles, parallel lines, arcs, radii, chords, tangents, and secants to solve problems (Geometry)

The arithmetic of rational expressions is not covered and the STEM-ready content does not mention inverse trigonometric functions. The following standard may include them but is not specific enough to interpret:

> Perform operations on functions, including composition. Find inverses of functions (grades 11-12)

Taken together, the omissions and shortcomings mentioned above leave Massachusetts with a Content and Rigor score of six points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With minor differences, Common Core and Massachusetts both cover the essential content for a rigorous K-12 mathematics program. Massachusetts's standards are generally clear, briefly stated, and often further clarified with the use of examples and other explanatory material. These enhancements make Massachusetts's standards easier to read and follow than Common Core. What's more, in Massachusetts, the standards presented for high school courses tend to be better organized than the Common Core.

Massachusetts and Common Core have things to learn from each other in high school geometry. Common Core covers some high school algebra content that is missing from the Massachusetts standards, and it excels in the coverage of arithmetic. Finally, Massachusetts's standards lack the admirable focus of Common Core in the early grades, and would benefit from the careful guidance that Common Core gives on fractions.

Massachusetts 2010 Draft Standards Comparison

DOCUMENTS COMPARED

WORKING DRAFT: *Massachusetts Mathematics Curriculum Framework.* June 2010.
Accessed from: http://www.doe.mass.edu/frameworks/math/0610draft.pdf

—COMPARED TO—

Massachusetts Mathematics Curriculum Framework. November 2000.
Accessed from: http://www.doe.mass.edu/omste/ca.html

Supplement to Massachusetts Mathematics Curriculum Framework. 2004.
Accessed from: http://www.doe.mass.edu/omste/ca.html

Overview

The draft 2010 mathematics standards address several of the content and clarity gaps in the existing standards. Unfortunately, some of those improvements have been offset by the deterioration in the coverage of important content.

Comparison

Improvements

The organization of the 2010 draft has improved dramatically. In the current document, grade-specific standards can be pieced together for grades 3–8, but those standards are presented in two different documents, making them difficult to read and the progression of content difficult to track. The 2010 draft is far more readable. Grade-specific standards are presented for all grades in a single, coherent document.

In addition, the number of standards has been reduced, and the share devoted to arithmetic in the crucial elementary grades has increased. This is an excellent improvement.

The 2010 draft also addresses some of the content gaps in the current standards, including: proof of the Pythagorean Theorem, the equation of a line going through two points, and max/min for quadratic functions.

The knowledge of number facts has improved significantly. Whereas the existing standards don't explicitly require students to have automaticity with the basic facts, the new standards include the following:

> Know addition facts (addends to ten) and related subtraction facts to automaticity (grade 1)
>
> Know multiplication facts and related division facts through 12 x 12 to automaticity (grade 4)

No Change

Some content gaps in the existing standards have not been addressed, including: common denominators, inverse trigonometric functions, vertex form for quadratic functions, division for polynomials, and the arithmetic of rational expressions. These remain serious oversights.

New Shortcomings

While the 2010 draft makes several admirable improvements as noted above, it also introduces some new problems. Specifically, while the expectations for the number facts have improved, the goals for subsequent whole-number arithmetic have been weakened. The addition and subtraction sequence of standards in the current version is:

> Demonstrate in the classroom an understanding of and the ability to use the conventional algorithms for addition (two 3-digit numbers and three 2-digit numbers) and subtraction (two 3-digit numbers) (grade 2)
>
> Add and subtract (up to four-digit numbers) and multiply (up to two-digit numbers by a one-digit number) accurately and efficiently (grade 3)

Observe above the requirement that conventional algorithms are to be learned. In the new draft, however, this sequence has changed to:

> Add three-digit numbers accurately and efficiently in a variety of ways, including use of the conventional algorithm (grade 2)
>
> Add and subtract up to five-digit numbers accurately and efficiently. Include the conventional algorithm with and without regrouping (grade 3)

Here, the conventional algorithm is included along with unspecified other methods. This undermines students' learning fluency with the standard algorithms.

Similar standards exist for multiplication. Fraction arithmetic in the current standards is done in a straightforward way without mentioning methods. The new draft again includes the unnecessary and undermining "variety of strategies":

> Using a variety of strategies, multiply positive fractions with whole numbers (grade 5)

The Bottom Line

The improvements in the new draft are substantial but these are offset to some extent by weaker threads for whole-number arithmetic and the arithmetic of fractions, material that forms the foundation of K–12 mathematics. Both versions omit some important mathematics.

1 Massachusetts's curriculum frameworks have not changed since Fordham's last evaluation, the *State of State Math Standards 2005*. However, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Through this new lens, Massachusetts's math grade went from an A in 2005 to a B-plus in 2010. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=338&pubsubid=1163#1163.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Michigan • English Language Arts

DOCUMENTS REVIEWED

Michigan English Language Arts Grade Level Content Expectations: ELA Across the Grades, v.12.05. 2006.
Accessed from: http://www.michigan.gov/mde/0,1607,7-140-28753_33232---,00.html

High School Content Expectations: English Language Arts. April 2006.
Accessed from: http://www.michigan.gov/documents/ELA11-140pem_142201_7.pdf

Overview

Although the Michigan standards have a few moments of clarity, specificity, and rigor, overall they are a muddle. The standards include many loosely worded general statements and few clear and specific expectations for students. They emphasize process over content and student outcomes.

Clarity and Specificity:	1/3
Content and Rigor:	2/7
Total State Score:	**3/10**

(Common Core Grade: B+)

General Organization

In grades K-8, the Michigan standards are organized into three strands:

- Reading
- Writing
- Listening, Speaking and Viewing

Each strand is then divided into multiple sub-strands, which are further divided into grade-level expectations.

In high school, however, a single set of standards is presented for grades 9-12, with no specific grade-level expectations. The strands (which have sub-strands) are:

- Writing, Speaking, and Expressing
- Reading, Listening, and Viewing
- Literature and Culture
- Language

Clarity and Specificity

In general, the Michigan standards are neither clear nor specific. In some cases, specific content is included, but more often broad statements take the place of specific, measurable expectations. Consider this fourth-grade Speaking standard:

> Engage in interactive, extended discourse to socially construct meaning in book clubs, literature circles, partnerships, or other conversation (grade 4)

How would a teacher measure whether this expectation had been met?

A number of strands include entire sub-strands for which the purpose is unclear, and for which expectations are often difficult to understand, much less to measure. For instance, this standard, which is the only one to be found under the sub-strand "Reading Attitude," is listed for every grade, 3-8:

> Be enthusiastic about reading and do substantial reading and writing on their own (grades 3-8)

KSDE002152

Many other standards are repeated verbatim (or nearly verbatim) across grade levels, such as this "response" standard in the Reading strand, repeated in grades 6, 7, and 8:

> Respond to multiple text types when listened to or viewed knowledgeably, by discussing, illustrating, and/or writing in order to anticipate and answer questions; determine personal and universal themes; and offer opinions or solutions (grades 6-8)

A standard like this contains no specified outcomes, which is unfortunately true of the majority of Michigan's standards. The standards earn a score of one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

Speaking and listening standards are difficult to do well. However, Michigan's contain some good content, as in the standards under the Speaking sub-strand, "Conventions," that require students to "use common grammatical structures correctly when speaking" and to "speak effectively using rhyme, rhythm, cadence, and word play for effect in narrative and informational presentations."

The listening standards in grades 6-8 also address the analysis of media, as in this seventh-grade standard:

> Identify persuasive and propaganda techniques and analyze the effect on the view of images, text, and sound in the electronic media (e.g., television, movies), and determine if the techniques used achieved their intended effects (grade 7)

In high school, multimedia analysis and production are treated quite thoroughly.

Also in high school, the standards designate American literature as a topic for study, as in this example:

> Explore the relationships among individual works, authors, and literary movements in English and American literature (e.g., Romanticism, Puritanism, the Harlem Renaissance, Postcolonial), and consider the historical, cultural, and societal contexts in which works were produced (high school)

The high school standards also ask students to:

> Demonstrate knowledge of American minority literature and the contributions of minority writers (high school)

It is difficult to evaluate the rigor of such broad statements, but Michigan is to be commended for acknowledging the importance of studying our own literary heritage.

Content Weaknesses

The weaknesses far outweigh the strengths of the Michigan standards, beginning with early reading content, which is rather superficial. The following "phonics" standard for Kindergarten is one of just four total:

> Use grapho-phonemic (letter-sound) cues to recognize a few one-syllable words when presented completely out of context. Begin to associate letters and sounds, particularly initial and final consonants (Kindergarten)

The early reading standards, moreover, appear to offer phonics as a choice among reading strategies, as in this "Word recognition, Word Study and Fluency" standard in Kindergarten:

> Narrow possibilities in predicting words using initial letters/sounds (phonics), patterns of language (syntactic), and picture clues (semantic) (Kindergarten)

In addition, the Reading strand includes a "Metacognition" sub-strand in which reading "strategies" (e.g., "making credible predictions based on illustrations") eclipse word study.

KSDE002153

Where vocabulary is concerned, there is only one standard that ostensibly addresses word structure, but the standards emphasize other strategies for determining word meaning, such as "context clues," "mental pictures," "semantic feature analysis," and "questioning." Use of a dictionary is mentioned only twice—once in third grade and once in high school.

The analysis of literary text is overly concerned with politically correct interpretations of literature rather than close examination of genres, characteristics of genres, literary elements, and literary devices. Consider this seventh-grade standard:

> Investigate various examples of distortion and stereotypes such as those associated with gender, race, culture, age, class, religion, and other individual differences through classic, multicultural, and contemporary literature recognized for quality and literary merit (grade 7)

It is far from clear what actual knowledge or skills a student should demonstrate to meet this standard, but it has very little to do with analysis of genres, structures, literary elements, or devices.

Another standard asks students to:

> Describe how characters form opinions about one another in ways that can be fair and unfair in classic, multicultural, and contemporary literature recognized for quality and literary merit (grade 6)

Asking students to judge whether characters are "fair" or not seems at least idiosyncratic, if not ridiculous.

Informational text structures and features are covered in a rudimentary way, without much detail, and the analysis of informational text is thin, without any reference to the analysis of reasoning and the truthfulness or validity of arguments. In high school, where informational text is mentioned, it is tossed in with literary text, as in this high school standard:

> Examine differing and diverse interpretations of literary and expository works and explain how and why interpretation may vary from reader to reader (high school)

The standard hardly provides guidance for teachers at different grade levels about how students should analyze informational text structures and features.

Michigan's writing standards emphasize narrative writing, which appears at nearly every grade level from K-8. Other "genres" are sprinkled across grades and treated summarily, as in this standard from eighth grade:

> Write an historical expository piece such as a journal, biography, or simulated memoir that includes appropriate organization, illustrations, marginal notes and/or annotations (grade 8)

In high school, writing is addressed in a strand called, Writing, Speaking and Visual Expression. Explicit writing expectations are often missing. One unmeasurable "writing attitude" standard is included; it simply exhorts students at each grade level from K-8 to "be enthusiastic about writing and learning to write."

Standards for grammar and usage are pell-mell. They include some specific content, but also tend to include arbitrary grade-level assignments. "Infinitives, gerunds, participial phrases, and dashes or ellipses" are to be covered in eighth grade. Continuous verb tenses (which could easily be moved down several grades) are to be covered in seventh grade, yet "adjective and adverbial subordinate clauses" (which are more difficult) are to be covered in sixth. Spelling standards are, for the most part, very superficial.

Speaking and Listening standards could be more rigorous, especially in high school, where they are lost in two strands. The treatment of reading and writing also suffers in high school because too many of these "hybrid" standards are skills-based statements that are ultimately devoid of content, such as:

> Compose written, spoken, and/or multimedia compositions in a range of genres (e.g., personal narrative, biography, poem, fiction, drama, creative nonfiction, summary, literary analysis essay, research report, or work-related text): pieces that serve a variety of purposes (e.g., expressive, informative, creative, and persuasive) and that use a variety of organizational patterns (e.g., autobiography, free verse, dialogue, comparison/contrast, definition, or cause and effect) (high school)

It would be far more helpful to teachers to describe the expected characteristics of each genre listed, and to state which genres are most appropriate for study at each grade level.

Standards for formal oral presentation are included, but only nominally and mostly in grades K-8, where students are asked to use, for example, "an informational organizational pattern" but are never asked to do more important things like anticipating counterclaims.

In sum, despite some laudable efforts, these standards are too fraught with vague language and nonacademic expectations to comprise a rigorous set of expectations for students and teachers. Consequently, they can earn no higher than two points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, Michigan's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Great Lake State has in place today.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Michigan • Mathematics

DOCUMENTS REVIEWED

Mathematics Grade Level Content Expectations v.12.05. March 2006.
Accessed from: http://www.michigan.gov/documents/MathGLCE_140486_7.pdf

Algebra I (v.09.09) and II (v.11.07), Geometry (v.11.07), and Pre-Calculus.
Accessed from: http://www.michigan.gov/mde/0,1607,7-140-38924_41644_42668---,00.html

Overview

Michigan's standards are well organized and clearly written. They cover much of the essential content with both depth and rigor, particularly in high school. Elementary school has many excellent features, but some of the basics for whole-number arithmetic are missing.

Clarity and Specificity:	3/3
Content and Rigor:	6/7
Total State Score:	**9/10**
(Common Core Grade: A-)	

General Organization

The K-8 standards are organized into five content strands such as Algebra and Geometry. The strands are divided into three or four domains, which are further organized by topics, then into grade-level expectations. Not all domains or strands appear in each grade. For example, the Algebra strand does not appear until sixth grade.

The high school standards are organized by course. Within each course the standards are organized similarly to K-8 but with different strands, domains, and topics.

Clarity and Specificity

The standards are well organized and easy to read and understand. They are stated clearly and succinctly, for example:

> Add and subtract money in dollars and cents (grade 3)
> Locate tenths and hundredths on a number line (grade 4)
> Express fractions and decimals as percentages and vice versa (grade 5)
> Convert ratio quantities between different systems of units, such as feet per second to miles per hour (grade 7)

While the succinctness of the standards results in many per grade—fifty-five in fourth grade alone—breaking the standards down into these discrete small bites generally serves to add to specificity rather than detract from clarity.

In high school, particularly in the generally rigorous Algebra I, some standards are either too vague or too general to give proper guidance, for example:

> Identify and interpret the key features of a function from its graph or its formula(s) (high school)
> Write the general symbolic forms that characterize each family of functions (high school)
> Identify the family of function best suited for modeling a given real-world situation (high school)

It is not clear what students are expected to know or what kinds of problems they should be able to solve.

Though not all standards are clear, Michigan's grade-level expectations are generally well organized and easy to read and interpret. They provide solid guidance to users about the content and skills students must master and therefore merit three points out of three for Clarity and Specificity (see *Common Grading Metric*, Appendix A).

KSDE002156

Content and Rigor

Content Priorities

The majority of the standards in elementary grades are focused on arithmetic. This appropriately prioritizes arithmetic, which should be the foundation of elementary- and middle-school mathematics.

Content Strengths

Michigan's standards include most of the essential content. Many of the K-8 standards, in particular, give excellent guidance on the mathematical content that students must master. The number line appears early and is included throughout. The development of fractions is notably strong. In fourth grade, two topics are "Understand Fractions" and "Add and Subtract Fractions." In fifth grade, the often neglected topic of common denominators appears explicitly under the topic "Add and Subtract Fractions Using Common Denominators." Also, the concept of fractions as division is made explicit with:

> Understand a fraction as a statement of division (grade 5)

The invert and multiply formula for the division of fractions is done better than in most textbooks:

> Understand division of fractions as the inverse of multiplication, e.g., if 4/5 ÷ 2/3 = □, then 2/3 • □ = 4/5, so □ = 4/5 • 3/2 =12/10 (grade 6)

The development of area is also strong, including, for example, the following standards:

> Know the definition of area and perimeter and calculate the perimeter of a square and rectangle given whole-number side lengths (grade 3)
>
> Use square units in calculating area by covering the region and counting the number of square units (grade 3)
>
> Know and understand the formulas for perimeter and area of a square and a rectangle; calculate the perimeters and areas of these shapes and combinations of these shapes using the formulas (grade 4)

The standards for high school are often well stated and rigorous, including most STEM-ready standards.

Linear equations are well covered. In this Algebra I example, linear equations' various forms and the ability to convert between them are made explicit:

> Write the symbolic forms of linear functions (standard, point-slope, and slope-intercept) given appropriate information and convert between forms (high school)

The geometry standards are excellent. Not only do they include proofs, they set up the foundation for geometry with:

> Recognize Euclidean geometry as an axiom system. Know the key axioms and understand the meaning of and distinguish between undefined terms, axioms, definitions, and theorems (high school)

In addition, important facets of quadratic equations are stated clearly:

> Convert quadratic functions from standard to vertex form by completing the square (high school)
>
> Express quadratic functions in vertex form to identify their maxima or minima and in factored form to identify their zeros (high school)

Content Weaknesses

Michigan does not develop the foundation for whole-number arithmetic sufficiently. The standards do not adequately specify that students have automaticity, or quick recall, of basic number facts. These are the basic building blocks for future mathematics; students who are still struggling with basic facts are not prepared to move on to the next level of mathematics.

KSDE002157

Moreover, students are expected to know, not necessarily instantly recall, only the facts for addition. The others they can solve for or find. Students should not be struggling with basic number facts as they continue on to more difficult mathematics.

The standards do call for fluency with basic whole-number operations, but they do not adequately include standard methods and procedures. For example, the following second-grade standard mentions strategies and algorithms, but does not specify what algorithms are to be used:

> Add fluently two numbers through 99, using strategies including formal algorithms; subtract fluently two numbers through 99 (grade 2)

High school covers much mathematics with both depth and rigor. In elementary school, arithmetic is appropriately prioritized, and fluency is required, but the standards do not support the standard algorithms. This minor problem results in a Content and Rigor score of six points out of seven (see *Common Grading Metric*, Appendix A).

The Bottom Line

With some minor differences, Common Core and Michigan both cover the essential content for a rigorous K-12 mathematics program. That said, Michigan's standards are exceptionally clear and well presented. Standards are briefly stated and sometimes clarified with the use of examples, making them easier to read and follow than Common Core. In addition, the high school content is organized so that standards addressing specific topics, such as quadratic functions, are grouped together in a mathematically coherent way. The organization of the Common Core is more difficult to navigate, in part because standards dealing with related topics sometimes appear separately rather than together.

The chief weakness in Michigan's standards stems from their lack of specific content expectations in the development of arithmetic. Common Core provides admirable focus and explicitly requires standard methods and procedures, and the inclusion of those essential details would enhance Michigan's standards.

KSDE002158

Minnesota • English Language Arts

DOCUMENTS REVIEWED[1]

Minnesota Academic Standards: Language Arts K-12. May 19, 2003.
Accessed from: http://education.state.mn.us/mdeprod/groups/Standards/documents/LawStatute/000269.pdf

Overview

Minnesota's ELA standards are clearly organized and presented, and often include clear and detailed expectations. Unfortunately, the inclusion of vague standards coupled with the omission of some critical content across grade levels leaves teachers in the North Star State without the guidance they need to drive rigorous curriculum, instruction, and assessment across all strands.

Clarity and Specificity:	2/3
Content and Rigor:	4/7
Total State Score:	**6/10**

(Common Core Grade: B+)

General Organization

The K-8 *Minnesota Academic Standards in Language Arts* are divided into three strands that span all grade levels: Reading and Literature; Speaking, Listening, and Viewing; and Writing. Each strand is divided into sub-strands, then further separated into grade-specific standards, and finally into detailed benchmarks.

The high school standards follow a similar structure, but grade-specific standards and benchmarks are not provided. Instead, standards and benchmarks for grades 9-12 are combined and written as "completion outcomes," which describe what students should know and be able to do upon completion of twelfth grade.

Clarity and Specificity

Minnesota's ELA standards are well organized. The structure of the standards is easily accessible, and grade-level expectations are clear.

In addition, many standards are written in easy to understand language that leaves little room for misinterpretation or confusion. In particular, the grammar standards spell out in detail exactly which English conventions students should master in each grade. For example:

> Apply punctuation conventions correctly in writing, including:
> a. apostrophes
> b. semi-colon
> c. capitalization of proper nouns
> d. abbreviations
> e. sentence beginnings and first words in quotes
> f. commas (in compound sentences, and after subordinating conjunctions, noun of address, and non-essential clauses)
> g. quotation marks (to identify dialogue) (grade 7)

KSDE002159

Still, some standards and benchmarks are vague, lacking in the detail necessary for planning, instruction, and assessment development. For example:

> Read a variety of high-quality, traditional, classical and contemporary literary works specific to America, as well as significant works from other countries (grade 8)
>
> Participate in and follow agreed-upon rules for conversation and formal discussions in large and small groups (grade 4)
>
> Demonstrate active listening and comprehension (grade 4)

Specifying that students should follow "rules" or demonstrate "active listening," or generally encouraging students to read a "variety of high-quality texts" does not provide enough information to ensure that students across the state are being held to equally rigorous standards.

Because no grade-specific indicators are provided for high school, the secondary standards are particularly vague and make it difficult to understand the scope and sequence of essential skills. Take, for example, the following writing standard:

> Plan, organize and compose narrative, expository, descriptive, persuasive, critical and research writing to address a specific audience and purpose (grades 9-12)

This is so general that it's impossible to know which genres should be prioritized across grades or what is an appropriate progression of skills within each genre.

These shortcomings make the scope and sequence of the material across grades unclear, earning the standards two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

Minnesota provides reasonably detailed expectations for writing, including research and conventions. These include a separate and detailed sub-strand for research; clearly delineated expectations for conventions that students are expected to master in each K-8 grade; and admirable encouragement for grammar to be taught as a separate unit, thus underscoring the importance of the explicit and focused grammar standards.

Although sometimes repetitive across grade levels, the Literature strand includes several standards that outline clear expectations for reading literary texts, such as:

> Identify first person and third person point of view (grade 4)
>
> Identify and determine the meanings of similes and metaphors (grade 4)
>
> Critically read and evaluate text to determine author's purpose and point of view (grade 4)

While they don't always clearly progress across grades, the standards are reasonably strong in listening and speaking, such as the following seventh-grade standards:

> Distinguish between speaker's opinion and verifiable facts and analyze the credibility of the presentation (grade 7)
>
> Adjust delivery and language in oral presentations for the intended audiences and purposes (grade 7)
>
> Perform expressive oral readings of prose, poetry or drama (grade 7)

The standards also include expectations for analysis of information presented in multimedia formats.

Finally, high school provides some useful standards for reading and analyzing informational text, such as:

> Summarize and paraphrase main idea and supporting details (grades 9-12)
>
> Trace the logical development of an author's argument, point of view or perspective and evaluate the adequacy, accuracy and appropriateness of the author's evidence in a persuasive text (grades 9-12)
>
> Identify, understand and explain the various types of fallacies in logic (grades 9-12)

These standards could be enhanced through language clarification and grade-specific indicators.

Content Weaknesses

Minnesota ELA standards lack much critical content. Some are poorly written or vague; exemplar texts or rubrics would help clarify expectations, but these are not supplied.

Across all grade levels, the Reading standards fail to name any specific authors or works that students should read, nor do they refer to book lists. American literature (and literature of other cultures) is mentioned only in passing.

Expectations regarding text complexity across grade levels are also veiled, such as:

> Read, analyze and evaluate traditional, classical and contemporary works of literary merit from American literature (grades 9-12)
>
> Read, analyze and evaluate traditional, classical and contemporary works of literary merit from British literature (grades 9-12)
>
> Read, analyze and evaluate traditional, classical and contemporary works of literary merit from civilizations and countries around the world (grades 9-12)

The phrase "works of literary merit," absent guidance about how to judge whether a book meets that criterion, is open-ended and fails to delineate appropriate, rigorous texts for each grade.

While some expectations for the comprehension and analysis of literary and non-literary texts are clear, many are not. For example:

> Identify and understand recurring themes across literary works, citing evidence from texts (grade 8)
>
> Identify and analyze structural elements particular to dramatic literature (grade 8)

Clear standards would specify the structural elements and recurring themes that students should study, and there would be a clear progression of this content across grade levels.

In writing, standards are focused on process almost to the exclusion of clarifying expectations for genre-specific writing. Similarly, the reading standards seem to emphasize the teaching of comprehension strategies over content. For example:

> Notice when reading breaks down, reread and use phonetic and other strategies to self-correct (grade 3)
>
> Monitor comprehension and use strategies to self-correct when needed (grade 5)

Far too many standards in the reading strand are repeated almost verbatim from grade to grade, making it difficult to see a progression of rigor across grades.

Some standards—particularly vocabulary—expect students to master material that is never outlined in the standards themselves. For instance, sixth-grade students are supposed to employ knowledge of Latin and Greek roots, yet standards for K-5 never mention actually learning those roots.

Taken together, more than 35 percent of critical K-12 ELA content is missing, earning Minnesota a score of four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Minnesota's ELA standards are mediocre. Those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the North Star State has in place today.

1 The Minnesota ELA standards have not changed since our last evaluation, the *State of State Standards 2005*. However, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) These changes contributed to a change in Minnesota's final ELA grade: from a B to a C. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=337&pubsubid=1050*1050.

Minnesota • Mathematics

DOCUMENTS REVIEWED

Minnesota Academic Standards: Mathematics K-12. 2007.
Accessed from: http://education.state.mn.us/MDE/Academic_Excellence/Academic_Standards/Mathematics/index.html

Overview

Minnesota's standards are well organized, easy to read, and cover some content with depth and rigor. Arithmetic is appropriately prioritized but there are some issues with its coverage. The high school standards are sometimes strong but do not cover much STEM-ready content.

Clarity and Specificity:	2/3
Content and Rigor:	5/7
Total State Score:	**7/10**
(Common Core Grade: A-)	

General Organization

The K-8 standards are organized by four content strands such as Numbers & Operation and Algebra. Each strand is then broken into topics, which are specific to each grade, and finally into grade-specific standards that detail what students should know and be able to do.

High school material is organized similarly, except that standards are presented together for grades 9-11. (No standards are included for grade 12.)

Clarity and Specificity

The standards are well presented, easy to read, and sometimes include examples to clarify intent. Statements are often clear and specific, such as:

> Demonstrate an understanding of the relationship between length and the numbers on a ruler by using a ruler to measure lengths to the nearest centimeter or inch (grade 3)
>
> Measure angles in geometric figures and real-world objects with a protractor or angle ruler (grade 4)

Some standards, however, are too broadly stated to be clear. These, for instance, have examples that do not provide sufficient clarification:

> Represent the relationship between two varying quantities with function rules, graphs and tables; translate between any two of these representations (grade 6)
>
> Obtain information and draw conclusions from graphs of functions and other relations (high school)

In high school, the standards are frequently too broadly stated to understand what, specifically, students should know and be able to do. In addition, the organization by strands is confusing and does not present related content coherently. For example, standards about specific topics, such as quadratic equations, may be scattered throughout the strands.

Minnesota's standards are often clear and specific. They make frequent use of examples to clarify the intent. However, many standards are too broadly stated to interpret. The standards "do not quite provide a complete guide to users" and receive a Clarity and Specificity score of two points out of three. (See *Common Grading Metric*, Appendix A.)

KSDE002162

Content and Rigor

Content Priorities

Arithmetic is well prioritized—nearly half of the standards in the crucial grades address the development of arithmetic.

Content Strengths

The structures of arithmetic are well covered. The number line is introduced early and used throughout. Word problems also appear frequently. Understanding fraction multiplication and division is specified:

> Use the meanings of fractions, multiplication, division and the inverse relationship between multiplication and division to make sense of procedures for multiplying and dividing fractions
>
> For example: Just as 12/4 = 3 means 12 = 3 × 4, 2/3 ÷ 4/5 = 5/6 means 5/6 × 4/5 = 2/3. (grade 6)

Linear equations are covered quite well. Included are the following basic, but often overlooked, standards:

> Understand that a function is linear if it can be expressed in the form f(x)=mx+b or if its graph is a straight line (grade 8)
>
> Express linear equations in slope-intercept, point-slope and standard forms, and convert between these forms. Given sufficient information, find an equation of a line (grade 8)

Quadratics are covered in unusual depth, as in the following example:

> Identify the vertex, line of symmetry and intercepts of the parabola corresponding to a quadratic function, using symbolic and graphical methods, when the function is expressed in the form $f(x) = ax^2 + bx + c$, in the form $f(x) = a(x - h)^2 + k$, or in factored form (grades 9-11)

The arithmetic of polynomials and rational expressions is included.

High school geometry sets up the foundations of geometry and discusses proofs. The actual standards emphasize applying results rather than proving basic theorems, but the examples make it clear that proof is important, as in:

> Know and apply properties of equilateral, isosceles and scalene triangles to solve problems and logically justify results
>
> For example: Use the triangle inequality to prove that the perimeter of a quadrilateral is larger than the sum of the lengths of its diagonals (grades 9-11)

Content Weaknesses

The development of arithmetic is problematic, in part because instant recall of the number facts is not explicitly required. In addition, the standards undermine mastery of the standard algorithms by allowing any procedure to be acceptable as long as students have touched briefly on the standard algorithms:

> Add and subtract multi-digit numbers, using efficient and generalizable procedures based on knowledge of place value, including standard algorithms (grade 3)
>
> Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms (grade 4)

Division is handled the same way. This lack of support for standard procedures continues through the fractions and decimals, and the integers and rational numbers, strands:

> Add and subtract decimals and fractions, using efficient and generalizable procedures, including standard algorithms (grade 5)
>
> Multiply and divide decimals and fractions, using efficient and generalizable procedures, including standard algorithms (grade 6)

Common denominators are not mentioned.

KSDE002163

The standards are infused with the use of calculators and other technologies when it comes to doing arithmetic in applications, for example:

> Use addition and subtraction to solve real-world and mathematical problems involving whole numbers. Use various strategies, including the relationship between addition and subtraction, the use of technology, and the context of the problem to assess the reasonableness of results (grade 3)

The high school content is missing much STEM-ready material. This includes more advanced content for trigonometry, series, and logarithms.

Minnesota's standards include some mathematically rich content and are often strong. Arithmetic is well prioritized but its development is not quite rigorous enough. Calculators and other technology appear too frequently in the standards. The high school content is missing some of the STEM-ready content. The missing "crucial content" results in a Content and Rigor score of five points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of B, Minnesota's mathematics standards are decent, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are superior to what the North Star State has in place today.

KSDE002164

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

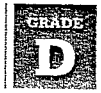
Mississippi • English Language Arts

DOCUMENTS REVIEWED

Mississippi Language Arts Curriculum Framework, 2007.
Accessed from: http://www.mde.k12.ms.us/ACAD/ID/Curriculum/LAER/frameworks.html

Overview

The Mississippi standards are mysterious, as if they were constructed to obfuscate rather than clarify student expectations. They are organized under just two headings: Reading and Writing. Some content is strong, as in early reading, but most of the standards are characterized by complicated and repetitive prose in which content and skills are mostly disconnected from one another, making it difficult to identify the expectations for students.



Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(Common Core Grade: B+)	

General Organization

Mississippi's standards are organized under the two headings Reading and Writing. Each of these is divided into two "competencies." For Reading, the competencies are "word recognition" and "vocabulary & reading strategies" and for Writing they are "express, communicate, evaluate, or exchange ideas effectively" and "apply standard English" [sic]. These four competencies comprise the required learning for all students, according to the state, although they are further broken into more detailed "objectives" and numbered bullet points for each grade K-12.

Clarity and Specificity

The Mississippi standards are specific in some places, but overall they are woefully lacking in clarity and extremely repetitive, making it impossible to identify specific expectations for students at each grade level.

In many cases, the standards include overarching statements jam-packed with skills for students to demonstrate, as in the following grade 10 reading objective:

> The student will analyze (e.g., interpret, compare, contrast, evaluate, etc.) literary elements in multiple texts from a variety of genres and media for their effect on meaning (grade 10)

This and other skills-based statements are often followed by bulleted lists of specific content. The tenth-grade standard shown above, for example, is followed by a list of nearly every genre and literary device imaginable (along with a shorter list for informational texts). No connection is ever made between the skills and the content. Which verbs in the overarching statement go with which predicates in the bulleted list—and to what end? Separating the skills from the content in this way makes it impossible to know what students are supposed to be learning.

Besides this confusion, repetition of standards verbatim (or nearly verbatim) across grade levels further clouds Mississippi's expectations for students. The long list of genres and literary devices that accompanies the standard above is repeated nearly verbatim from grades 2-7:

> The student will identify ("use" at grade 7) and use ("produce" at grade 4) grade-level synonyms, antonyms and homonyms (grades 2-7)

KSDE002165

One happy exception is in the "word recognition" competency in the early grades, which is quite specific about phonemic awareness, phonics, and vocabulary development.

These critical shortcomings leave Mississippi with one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

Phonemic awareness and phonics are both addressed systematically and in great detail, with examples, as in these first-grade objectives:

> Identify and produce rhyming words orally that include consonant blends and digraphs (e.g., flat/splat, trap/snap, sing/ring) (grade 1)
>
> Identify, blend, and segment syllables within spoken words (e.g., clap the syllables in "bi-cy-cle," bas + ket + ball = basketball, telephone = tel + e + phone) (grade 1)

Fluency targets are identified, including specific numbers of high-frequency and irregularly spelled words. The vocabulary objectives are detailed, with lists of roots and affixes for each grade. Dependence on context clues seems minimal, and the use of reference materials, such as the dictionary, is required.

Another bright spot is the analysis of the "tools of persuasion," which builds from grades 4–8 and culminates in these objectives:

> 1) Evaluate the author's use of and distinguish between fact and opinion
> 2) Evaluate use of tools of persuasion (e.g., name calling, endorsement, repetition, air and rebut the other side's point of view, association, stereotypes, bandwagon, plain folks, tabloid thinking, shock tactics and fear, intertextual references, card stacking, slanted words, glittering generalities, false syllogisms, etc). (grade 8)

Not many state standards address these specific "tools of persuasion," and it is a shame that Mississippi's high school standards don't do more of it at higher levels of complexity.

Standards for grammar are included under the writing competency, and they are detailed if a bit repetitive. Good examples are offered to illustrate expectations in some cases.

Content Weaknesses

Mississippi's reading comprehension standards are bloated, repetitive, and skills-based, with little connection between the skills and any content. For example, competency two states:

> The student will apply strategies and skills to comprehend, respond to, interpret, or evaluate a variety of texts of increasing levels of length, difficulty, and complexity

As is clear from the objectives attached to it, this competency conflates literary and informational texts and does not make important distinctions about how each type should be read and analyzed.

Nowhere is the study of American literature required, nor are any examples offered of the quality and complexity of reading that students should be doing.

The writing standards are process-heavy and repetitive across grades. Products are superficially treated, even in eleventh grade, as in this objective:

> The student will compose formal persuasive texts, providing evidence as support (grade 11)

By the junior year of high school, we would expect to see more detail about the necessary characteristics of persuasive writing, such as the use of rhetorical techniques, the anticipation of counterclaims, and the quality of the reasoning.

Research is given sporadic treatment, first in the reading comprehension section for grades 9-12, where the same standard is repeated for each grade:

> The student will apply understanding of electronic text features to gain information or research a topic using electronic libraries (grades 9-12)

Research is also addressed in the writing section of the standards, with some coverage beginning in second grade. The research process is outlined, but the only products specified are "to present the results using a variety of communication techniques." No standards address proper citation of sources. In high school, the standards for research simply state that students will:

> Research a topic comparing and/or contrasting information from a variety of sources to present findings (grade 10)

Research papers are mentioned briefly at twelfth grade, but no characteristics or page lengths are provided.

Finally, it must be noted that Mississippi has no standards for listening and speaking, and that different media are only nominally mentioned in the publishing phase of the writing process where students are asked to "publish writing formally and informally using a variety of media." Such omissions are glaring.

The missing content coupled with the vague and repetitive language makes it impossible to understand what is expected of Mississippi's students.

Taken together, close to 65 percent of the essential K-12 ELA content is missing from these standards, leaving Mississippi with three points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, Mississippi's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Magnolia State has in place today.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Mississippi • Mathematics

DOCUMENTS REVIEWED

2007 Mississippi Mathematics Framework Revised, 2007.
Accessed from: http://www.mde.k12.ms.us/acad/id/curriculum/math/2007_framework/2007 MS Math Framework Competencies and Objectives 9-18-07.pdf

Overview

Mississippi's standards are well organized and concise. In the elementary grades, arithmetic is moderately prioritized, but the development is not quite rigorous enough. The high school material covers much of the essential content, including STEM-ready content.

Clarity and Specificity:	2/3
Content and Rigor:	4/7
Total State Score:	**6/10**
(*Common Core Grade: A-*)	

General Organization

The standards are organized into five content strands such as Number and Operations and Measurement. Grade-level standards are provided through seventh grade, and then, from eighth grade on, standards are presented by course rather than by grade.

For each grade or course, the strands have broad "competency" statements which are subdivided into more specific "Objectives." It is the latter that are treated here as standards.

Also provided are five process standards, including "problem solving" and "reasoning and proof." According to the state, these process standards should "permeate all instructional practices."

Clarity and Specificity

The standards are well presented and generally easy to read. Statements are often concise and clear, such as:

> Read and write time to the hour, half-hour, quarter-hour, and five-minute intervals using digital and analog clocks (grade 2)
> Add and subtract decimals through hundredths (grade 4)

However, some standards are subject to wide interpretation on the part of the reader, such as:

> Use a pattern rule to translate and recognize patterns from one pattern representation to another (grade 1)
> Identify and analyze the relationships between and among points, lines, line segments, angles, and rays (grade 4)
> Predict and calculate the volume of prisms (grade 6)
> Explain the meaning of multiplication and division of rational numbers (grade 6)
> Develop generalizations to characterize the behaviors of graphs (linear, quadratic, and absolute value) (transition to algebra)

These standards do not clearly outline what students are expected to know or what types of problems they are expected to solve.

The lack of specificity in the following standard makes it unclear if inverse trigonometric functions should be covered:

> Provide a convincing argument (or proof) regarding the inverse relationship of two functions (Advanced Algebra)

KSDE002168

Mississippi's standards are well presented and generally easy to read with many clear and specific standards. There are, however, some standards that are too broadly stated to interpret, so that the standards "do not quite provide a complete guide to users." (See *Mathematics Content-Specific Grading Criteria*, Appendix A.) The Clarity and Specificity score is two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

While the state does not explicitly set priorities, the number of standards devoted to particular content areas communicates implicit priorities. In Mississippi, fewer than 40 percent of the standards in the crucial elementary grades are devoted to arithmetic, which prioritizes this essential content only moderately well.

Content Strengths

The structure of arithmetic is emphasized. For example, the inverse nature of addition and subtraction appears in all grades 2-7, and commutativity in all grades 3-7.

The high school content is often strong. Examples include the following important standards for manipulative skills, quadratic equations, and geometry:

> Add, subtract, multiply, and divide polynomial expressions (Transition to Algebra)
> Determine the solutions to quadratic equations by using graphing, tables, completing the square, the Quadratic formula, and factoring (Algebra I)
> Classify triangles and apply postulates and theorems to test for triangle inequality, congruence, and similarity (Geometry)

Content Weaknesses

The development of arithmetic is inadequate, in part because automaticity with basic number facts is not explicitly required.

In addition, although there are some clear expectations for whole-number arithmetic, the development is sometimes weak. Specifically, fluency with the standard algorithms is not specified. The development of multiplication is illustrated in the following standards:

> Model multiplication using arrays, equal-sized groups, area models, and equal-sized moves on the number line (grade 3)
> Explain two or more methods of multiplying whole numbers (one- and two-digits) with justification (grade 4)
> Multiply four-digit numbers by two-digit numbers (including whole numbers and decimals) (grade 6)

The grade 6 standard above is desirable but not adequately supported by the preceding standard, which mentions "two or more methods" and may undermine student mastery of the standard algorithm.

In addition, there is little development of fractions. When fractions are introduced, they are not explicitly introduced as parts of a set or a whole, but with:

> Identify and model representations of fractions (halves, thirds, fourths, fifths, sixths, and eighths) (grade 3)

Although fraction arithmetic is expected, methods and procedures, including common denominators, are not mentioned. Fractions are not put on a number line until sixth grade.

The standards are also weak on explicating place value. It is never mentioned specifically, though it appears implicitly as in:

> Compose and decompose five-digit numbers and decimal numbers through hundredths, with representations in words, physical models, and expanded and standard forms (grade 4)

The high school content, though generally well covered, is missing some details. These include point-slope form for linear equations, vertex form for quadratic equations, and constructions in geometry.

KSDE002169

The STEM-ready content is missing inverse trigonometric functions.

Taken together, these critical shortcomings result in a Content and Rigor score of four points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Mississippi's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Magnolia State has in place today.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Missouri • English Language Arts

DOCUMENTS REVIEWED

Communication Arts Grade-Level Expectations for K-8. October 2008.
Accessed from: http://dese.mo.gov/divimprove/curriculum/GLE/documents/ca_gle_2.0_k8_1008.pdf

Communication Arts Course-Level Expectations for High School. Updated October 2008.
Accessed from: http://dese.mo.gov/divimprove/curriculum/GLE/CAcle.html

Information and Communications Technology Literacy Grade-Level Expectations 2.0. 2009-2010.
Accessed from: http://dese.mo.gov/divimprove/curriculum/GLE/

Information and Communications Technology Literacy Course-Level Expectations. 2009-2010.
Accessed from: http://dese.mo.gov/divimprove/curriculum/GLE/

Overview

The Missouri ELA standards include some important K-12 content. Unfortunately, this content is buried among vaguely worded and repetitive standards that fail to provide the kinds of content-rich expectations that teachers need to plan robust, college-prep curricula, instruction, and assessment.

Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(Common Core Grade: B+)	

General Organization

Missouri's K-8 ELA standards—dubbed *Communication Arts Grade-Level Expectations* by the state—are divided into three strands: Reading; Writing; and Listening and Speaking. Each strand is further divided into sub-strands, which are common across several grades, and finally into grade-level expectations (GLEs).

The high school standards follow the same organizational structure but are grouped by course—English I-IV—rather than by grade level, though one assumes that English I corresponds with ninth grade, English II with tenth, and so on.

Finally, the state provides an additional set of standards called *Information and Communications Technology Literacy Grade-Level Expectations*. These follow the same organizational structure as the K-12 ELA standards, with two exceptions. First, "information and communications technology literacy" is treated as one strand, which is then divided into sub-strands and grade-level expectations. Second, the expectations therein are designed to be shared by teachers across content areas (ELA, science, history, etc.) and include standards for research, media, and technology.

Clarity and Specificity

The organization of the Missouri ELA standards is reasonably clear, though two major flaws diminish the utility of the document.

First, separating the communication technology literacy standards from the ELA standards makes it much less likely that they will be well integrated into instruction, particularly since the state gives very little guidance as to which teachers are ultimately responsible for ensuring student mastery of those expectations. Instead, the state explains that these standards exist separately because "the knowledge and skills required for proficiency in this area are not limited to one content area." Unfortunately, by neither integrating any of the strands—notably the research-writing strand—more deliberately into the ELA standards, nor assessing the expectations laid out in the document, Missouri runs the serious risk that these standards will not be used to guide instruction in its classrooms.

Second, while the standards themselves are generally written in plain, jargon-free language, many of them lack the specificity needed to guide planning, instruction, and assessment. Take, for example, the following phonics standard:

> Develop and apply decoding strategies to "problem-solve" unknown words when reading grade-level instructional text (grade 1)

This standard lacks the specificity needed to guide early reading instruction. What's more, the standard is repeated—without the word "develop"—verbatim for grades 2-9.

The repetition of equally vaguely worded standards across several grades is a pervasive problem, across all strands and grade levels, making it very difficult to discern the progression of skills across grades. This is particularly true of the high school Reading standards, as demonstrated by the following, repeated verbatim for English I-IV:

> Analyze and evaluate the text features in grade-level text (English I-IV)

The failure to provide any details on the text features that students should master renders this standard instructionally meaningless.

Taken together, these shortcomings fail to make clear precisely what students should know and be able to do at various grade levels. Therefore, Missouri can earn no higher than one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The Missouri grade- and course-level expectations include some expectations for much of the essential K-12 ELA content. For example, there is a focus on reading and writing across genres, research processes, early reading, and speaking and listening.

The K-4 standards also address systematic vocabulary development reasonably well, although they could be improved by expecting students to study basic prefixes and suffixes, and compound words.

Conventions are also addressed systematically in grades K-4, as demonstrated by the following:

> In written text
> a. space correctly between words in a sentence and in margins
> b. capitalize months of year, titles of individuals, greeting and closing of letter
> c. use correct ending punctuation in imperative and exclamatory sentences
> d. correctly use verbs that agree with the subject, and comparative and superlative forms of adverbs and adjectives
> e. correctly spell simple compounds, homophones, contractions and words with affixes (grade 3)

The *Information and Communication Technology Literacy* GLEs include a robust research strand with clear and specific expectations about the research process, including these high school expectations:

> - Locate multiple primary and secondary sources of various media using appropriate organizational tools
> - Select material appropriate to student's reading ability
> - Analyze information to determine relevance in relationship to the topic
> - Analyze impact of timeliness when selecting sources
> - Analyze the source to determine its credibility
> - Evaluate accuracy of information by determining whether it contradicts or verifies other sources
> - Evaluate for bias by analyzing viewpoint(s) conveyed in source
> - Evaluate the copyright date of information to best meet the information need [sic] (grades 9-12)

Finally, the standards outline specific expectations for reading and analyzing literary and non-literary texts, including a focus on the analysis of text features, such as graphics, tables of contents, indices, etc. For example:

> Use details from text to
> - identify and explain flashback, mood and theme
> - analyze point of view
> - analyze author's viewpoint/ perspective
> - determine how an incident foreshadows a future event (grade 8)

Unfortunately, the progression of essential content and skills across grade levels is often unclear, as explained below.

Content Weaknesses

The biggest challenge with the Missouri standards is that they provide GLEs in name only. Most of these expectations repeat from grade to grade and address content only at a very general level, leaving significant gaps across all strands.

To begin, the early-reading standards fail to delineate an actionable set of expectations for early-reading development. While the statements touch on fluency, phonics, and phonemic awareness, they provide few details about what, exactly, students should know and be able to do at various grade levels, as shown by the grade 1 phonics standard reproduced above.

Many of the reading standards for middle and high school are similarly vague, and there is disproportionate focus on standards that specify comprehension strategies, such as self-monitoring and reflection, rather than on critical content. Take, for example, the following strategies-focused standard, which is repeated verbatim for English I-IV:

> During reading, utilize strategies to
> a. determine meaning of unknown words
> b. self-monitor comprehension
> c. question the text
> d. infer
> e. visualize
> f. paraphrase
> g. summarize (English I-IV)

Worse, Missouri fails to include examples of texts, discussion of text difficulty, samples of texts or authors—including any mention of foundational works of American literature—or any other information that would help educators ensure that they are teaching progressively rigorous texts across grade levels.

While the K-4 grammar standards (mentioned above) are clear and include much important content, the middle and high school GLEs fail to build upon this strong base. Instead, they continue to focus on low-level capitalization, punctuation, and spelling skills rather than demanding mastery of more advanced content including analysis of sentence structure, fragments and run-ons, or types of phrases and clauses, and sentence structure.

Further, the state fails to provide adequate genre-specific expectations for writing. While some expectations focus on the characteristics and quality of writing expected from grade to grade, the standards at the middle and high school level do not show a sufficient progression of rigor. For instance, many of them remain focused on basic organization and structure rather than on demonstrating, for example, an increasingly sophisticated understanding of audience and purpose or the development of ideas through multi-paragraph essays. The inclusion of annotated samples of student work or genre-specific rubrics would better clarify expectations across grades.

The GLEs do not address specific skills for effective participation in groups, or specific media viewing and production skills and criteria.

The combination of vague and repetitive standards leads to serious content gaps. More than 50 percent of the critical K-12 ELA content is missing, earning Missouri three points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, Missouri's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Show Me State has in place today.

KSDE002174

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Missouri • Mathematics

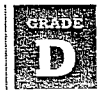
DOCUMENTS REVIEWED

Grade Level Expectations 2.0, Mathematics (K-8). April 2008.
Accessed from: http://dese.mo.gov/divimprove/curriculum/GLE/documents/ma_gle_2.0_k8_0408.pdf

Course Expectations, Mathematics—2008-2009 (High School). April 2008.
Accessed from: http://dese.mo.gov/divimprove/curriculum/GLE/documents/ma_cle_0408.pdf

Overview

Missouri's standards are well presented and organized, but the statements are often very broad and difficult to interpret. In K-8, arithmetic is covered reasonably well, but not sufficiently prioritized. In high school, the standards are vague and do not cover some essential content.



Clarity and Specificity:	1/3
Content and Rigor:	2/7
Total State Score:	**3/10**
(Common Core Grade: A-)	

General Organization

The Missouri K-8 math standards are divided into five content strands that are common across all grades. Each strand is divided into topics and then sub-topics, and not all topics and sub-topics appear at every grade. Finally, grade-specific standards are provided for each sub-topic.

High school standards are organized similarly, except they are presented by course instead of grade level.

Clarity and Specificity

The standards are well presented and easy to read. Some sequencing is nice, for example:

> Tell time to the nearest half hour (grade 1)
> Tell time to the nearest five minutes (grade 3)
> Solve problems involving elapsed time (hours and minutes) (grade 6)

Unfortunately, it is often difficult to interpret many standards because they are far too broadly stated. Examples are:

> Identify, model and describe situations with constant or varying rates of change (grade 5)
> Describe the effects of multiplication and division on fractions and decimals (grade 6)
> Compare and contrast various forms of representations of patterns (every high school course)

The word "describe" appears frequently, and there is no clarification about what type of mathematical problem this might apply to. In addition, many awkward phrases appear, such as "number relationships of addition" and "analyze patterns using words." One might describe the results of a mathematical analysis of a pattern with words, but it is not a mathematical activity to analyze a pattern with words.

Though well organized and easy to read, Missouri's standards are generally neither clear nor specific. They offer "limited guidance to users" and therefore receive a Clarity and Specificity score of one point out of three. (See *Common Grading Metric*, Appendix A.)

KSDE002175

Content and Rigor

Content Priorities

While Missouri doesn't explicitly prioritize content, it's possible to glean priorities by analyzing the number of standards devoted to various topics. Unfortunately, only about a third of the standards in the crucial elementary grades are devoted to the development of arithmetic, which does not sufficiently prioritize the development of this essential content.

Content Strengths

The early development of whole-number arithmetic is reasonable. For example, quick recall of addition and subtraction facts is specified:

> Demonstrate fluency including quick recall with basic number relationships of addition and subtraction for sums up to 20 (grade 2)

Multiplication and division facts are not stated quite so explicitly, but fluency is required:

> Demonstrate fluency with basic number relationships (12 x 12) of multiplication and related division facts (grade 4)

The structure of arithmetic is also covered.

Content Weaknesses

Some otherwise-desirable standards do not specify fluency with standard methods:

> Apply and describe the strategy used to compute up to 3-digit addition or subtraction problems (grade 3)
>
> Demonstrate fluency with efficient procedures for adding and subtracting decimals and fractions (with unlike denominators) and division of whole numbers (grade 5)

There is no mention of common denominators, and multiplication and division of decimals is not explicit.

Area is not developed for rectangles, parallelograms, or triangles. The only coverage for these is in the general standard:

> Solve problems involving the area or perimeter of polygons (grade 6)

High school content is extremely weak. The standards are so broadly stated that it is unclear what students are expected to know or be able to do. Specific content is rarely mentioned, as demonstrated by the following standards:

> Compare properties of linear, exponential, logarithmic and rational functions (Algebra II)
>
> Describe and use algebraic manipulations, inverse or composition of functions (Algebra II)
>
> Use and solve equivalent forms of equations and inequalities (Algebra II)

Linear equations are mentioned several times but most of the basic material is omitted. Slope is mentioned only once in eighth grade. Although standards include solving problems with graphs and recognizing linear functions from graphs, there is no explicit standard for graphing linear equations or any mention of finding a linear equation from two points, using the point-slope form, or the relationship between the slopes of parallel and perpendicular lines.

The geometry standards do not specifically include many of the standard results. There is vague mention of proof in the following standard, but axioms or postulates, or what students are expected to be able to prove, are not mentioned:

> Use inductive and deductive reasoning to establish the validity of geometric conjectures, prove theorems and critique arguments made by others (Geometry)

Basic material on quadratic equations is missing. Although students are expected to solve them, and factoring is mentioned elsewhere in the standards, there is no mention of solving quadratics by factoring, completing the square, or the quadratic formula. Complex roots, vertex form, and max/min problems are also not covered.

Polynomials are not mentioned at all. They appear only indirectly in the following poorly stated standard:

> Describe and use algebraic manipulations, including factoring and rules of integer exponents and apply properties of exponents (including order of operations) to simplify expressions (Algebra I)

STEM-ready standards are almost entirely missing. Although trigonometric functions are mentioned, there are no graphs, identities, inverse trigonometric functions, or polar coordinates.

Many of Missouri's standards are so broadly stated that it is difficult to interpret the intent. Arithmetic is not set as a priority, and, though the early development is reasonable, some important topics such as decimal multiplication are missing. High school is missing much of the essential content, and there is little guidance given to the development of the material that is included. These "serious problems" result in a Content and Rigor score of two points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, Missouri's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Show Me State has in place today.

Montana • English Language Arts

DOCUMENTS REVIEWED

Grade-Level Expectations, Reading (Grades 3-8, 11). March 31, 2010.
Accessed from: http://opi.mt.gov/pdf/standards/ReadingExpect.pdf

Grade-Level Expectations, Writing (Grades 4, 8, 12). March 31, 2010.
Accessed from: http://www.opi.mt.gov/pdf/Standards/ContStds-Writing.pdf

Grade-Level Expectations, Literature (Grades 4, 8, 12). March 31, 2010.
Accessed from: http://www.opi.mt.gov/pdf/Standards/ContStds-Literature.pdf

Montana K-12 Communication Arts Content Standards Framework, (January 2010).
Accessed from: http://opi.mt.gov/PDF/Standards/ContStds-CommArts2010.pdf

Overview

The Montana ELA standards are woefully deficient. Specific indicators are provided only for three grade levels—fourth, eighth, and upon graduation—leaving the vast majority of teachers in the Treasure State with no guidance about what students should know and be able to do. Worse still, even when benchmarks are provided, they are generally too vague to be instructionally useful.

Clarity and Specificity:	0/3
Content and Rigor:	2/7
Total State Score:	**2/10**
(Common Core Grade: B+)	

General Organization

The *Montana Communication Arts Content Standards* are five in number: Speaking and Listening; Reading; Literature; Media Literacy; and Writing. For each of these standards, the state provides a "rationale," which includes a several-paragraph description of why the standard is included. For instance, the Reading rationale states:

> ...Reading is a strategic problem-solving process in which readers gain personal meaning as they interact with media forms in a culturally diverse society. Readers systematically inquire, assess, analyze, synthesize, and critically evaluate information. Constructing meaning from text is first accomplished with teacher guidance, moving students to become proficient and independent readers...

The standards are then divided into benchmarks that describe what "proficient" students should know and be able to do by the end of fourth grade, eighth grade, and upon graduation. (No grade-specific benchmarks are provided.)

Finally, Montana provides "performance descriptors" for the three benchmark grades (fourth grade, eighth grade, and upon graduation). These descriptors are designed to "define how well students apply the knowledge and skills they have acquired" and to "gauge the level to which benchmarks have been attained in terms of range, frequency, facility, depth, creativity and quality."

Clarity and Specificity

On the positive side, the Montana ELA standards are well organized and clearly presented. Unfortunately, that clarity is more a reflection of the emptiness of the standards than a particularly thoughtfully designed organizational structure.

As noted above, the state provides benchmarks for only three grades: fourth, eighth, and upon graduation. While the standards acknowledge that "a district's curriculum should include the entire progression of knowledge contained in the

benchmarks," the state fails to provide any specific guidance about what that progression should look like. And most of the benchmarks that it does provide for grades 4, 8, and 12 are too nebulous to be instructionally valuable. For example:

> Expand and utilize general and specialized vocabulary through the use of context clues, analysis of word origins, and reference sources (upon graduation)
> Recognize the need for background knowledge and research to enhance comprehension (upon graduation)
> Identify and use text features to enhance comprehension (end of grade 4)

Similarly vague benchmarks plague the document across grade levels and strands.

Rather than adding clarity or specificity, the performance descriptors generally just repeat the vague language of the indicators themselves. Take, for example, the following indicators and corresponding performance descriptors:

> Standard: Make and revise predictions
> Performance Descriptor: Makes predictions (end of grade 4)
> Standard: Make, revise, and explain predictions
> Performance Descriptor: Revises and explains predictions (end of grade 8)
> Standard: Make, revise, and justify predictions
> Performance Descriptor: Justifies predictions (upon graduation)

Taken together, these shortcomings leave Montana teachers with virtually no guidance about what students should know and be able to do. The standards earn zero points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

Given both their vagueness and their failure to articulate expectations for most grades, the Montana standards are thin on content. On the positive side, they give a perfunctory nod to some essential content. For instance, the state delineates expectations for the comprehension and analysis of literary and non-literary texts, including:

> Explain how authors' choices of language and use of devices contribute to the meaning of literary works (end of grade 4)
> Identify and explain the impact of the organizational structure of a selection, including order of importance, spatial, problem-solution, and cause-effect (end of grade 8)

Similarly, the standards address, albeit in generic terms, the characteristics and quality of writing expected of students, such as:

> Demonstrate knowledge of language choices and their impact on writing through control of voice, strong sentence fluency, and effective word choice (end of grade 8)

Standards outlining expectations for listening, speaking, the delivery of formal oral presentation, and multimedia are also included.

Content Weaknesses

Even among the areas of strength noted above, there is much room for improvement. The larger problem, however, is the immense amount of essential content that is missing entirely from Montana's standards.

For starters, standards covering phonics, phonemic awareness, and vocabulary development provide virtually no content-specific guidance, as demonstrated below:

> Decode unknown words combining the elements of phonics, use of word parts, and context clues (end of grade 4)

In addition, while standards are included for the comprehension and analysis of literary and non-literary texts (discussed above), other than briefly mentioning in the reading rationale that students should read books that have "stood

the test of time," the state fails to provide any guidance about the quality or complexity of texts that students should read from grade to grade. They also only make passing (and politically correct) reference to the importance of reading outstanding works of American literature that reflect our common cultural heritage, as shown below:

> Recognize author's purpose, point of view, and language use in culturally diverse texts, including those by and about Montana American Indians (end of grade 4)

This standard, with minor variation, also appears in benchmarks for grade 8 and upon graduation.

The standards also fail to include specific guidance—rubrics, exemplar student work, etc.—that would help clarify the quality of writing that students should produce each year. Nor do they specify in which genres students should gain experience and proficiency by writing at each grade level, thus omitting nearly all of the essential genre-specific writing content.

While benchmarks addressing grammar are covered, they are woefully inadequate and repeated verbatim for each benchmark level. For example:

> Apply conventions of standard written English (e.g., usage, punctuation, spelling) appropriate for purpose, audience, and form (end of grade 4, end of grade 8, upon graduation)

Finally, the standards include no benchmarks for research at any grade level.

Taken together, these critical shortcomings leave well over 80 percent of the essential K-12 content missing and earn the standards two points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of F, Montana's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Treasure State has in place today.

KSDE002180

Montana • Mathematics

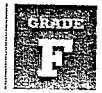
DOCUMENTS REVIEWED[1]

Grade Level Expectations: Grades 3-8 and 10, Mathematics. 2003.
Accessed from: http://www.measuredprogress.org/assessments/clients/montana/MathGLE.pdf

Montana K-12 Mathematics Content Standards Framework. September 2009.
Accessed from: http://www.opi.mt.gov/pdf/Standards/hoContStds-Math.pdf

Overview

Montana's mathematics standards are so minimal that they supply nearly no guidance. There are only eight broadly worded standards per grade. While the standards are accompanied by a *Content Standards Framework* document, that framework is only occasionally more specific than the grade-level material and falls far short of clearly explicating specific content expectations.



Clarity and Specificity:	1/3
Content and Rigor:	0/7
Total State Score:	**1/10**
(Common Core Grade: A-)	

General Organization

Montana's grade-level expectations (GLEs) are provided for grades 3-8 and grade 10, with eight standards per grade. For example, one of the eight standards for grade 3 is "Communicates solutions to problems in a variety of ways (e.g., concrete, pictorial, graphical)."

The *Framework* document contains benchmark expectations for the end of grades 4, 8, and "upon graduation." The benchmark statements are presented in grade-banded charts, which are organized by four content strands: Number Sense and Operation, Data Analysis, Geometric Reasoning, and Algebraic and Functional Reasoning. For example, here is benchmark 1.1 under Number Sense and Operation:

> A proficient student will:
> - End of Grade 4—1.1 Whole Number Relationships: Demonstrate relationships among whole numbers; identify place value up to 100,000 and compare numbers (e.g., greater than, less than, and equal to)
> - End of Grade 8—1.1 Rational Number Relationships: Recognize, model, and compare different forms of integers and rational numbers including percents, fractions, decimals, and numbers using exponents and scientific notation
> - Upon Graduation—1.1 Quantification: Use multiple notations to perform and interpret the effects of operations on very large and very small numbers with and without technology

Both the benchmark expectations and the GLEs are referred to as standards below.

Clarity and Specificity

The standards are far from clear or specific. The GLEs (eight per grade) are generally stated so broadly that they are not measurable. The benchmark statements at the end of grades 4, 8, and upon graduation are slightly more substantial, yet still far from clear. Examples of vague GLEs and benchmarks include:

KSDE002181

> Selects and uses appropriate problem-solving strategies (e.g., estimate, look for a pattern, simplify the problem) and technologies (e.g., paper and pencil, calculator) in many contexts (GLE, grade 3)
>
> Use spatial reasoning to identify slides and flips of congruent figures within artistic and cultural contexts, including those of Montana American Indians (benchmark, end of grade 4)
>
> Applies geometric relationships such as coordinates and transformations to solve selected problems (GLE, grade 7)
>
> Formulates and communicates logical arguments using appropriate mathematical ideas (e.g., mathematical terms, notations) (GLE, grade 8)
>
> Applies functions, graphs, and algebraic concepts to solve real-world problems (GLE, grade 10)

The lack of detail in these standards renders them almost completely subject to interpretation on the part of the reader. Further, since they are basically the totality of the statements on each topic, there is no other material to offer clarification.

In general, Montana's standards are almost completely lacking in clear, specific statements that explicate the material that students are expected to know. Most statements are sweeping generalities that do not provide the necessary detail to determine the intent. They "offer limited guidance to users," and receive a Clarity and Specificity score of one point out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Montana does not provide explicit guidance on the relative importance of the content. The GLEs for the crucial elementary grades have only a few standards covering arithmetic. The benchmarks contain more standards about arithmetic, but in the crucial elementary grades, these standards still amount to less than 30 percent of the expectations, which does not sufficiently prioritize this essential content.

Content Strengths

Strengths are hard to come by in Montana's standards. That said, the standards do specify that students have minimal computational skills, for example:

> Uses addition, subtraction, multiplication, and division of whole numbers to estimate, compute, and determine whether results are accurate (GLE, grade 4)
>
> Compute fluently and solve multi-step problems using integers, fractions, decimals, and numbers in exponential form (benchmark, end of grade 8)

Content Weaknesses

Very little essential content is covered, as illustrated by the following words that do not appear at all in the Montana standards: denominator, triangle, rectangle, parallelogram, compass, parallel, perpendicular, polynomial, factor (in high school), series, point, absolute, quadratic, sine, and logarithm.

A similar list of key content words (e.g., slope, line) are mentioned only minimally. "Place value" is not in the grade-level standards at all, and is mentioned in the benchmark standards only twice.

Aside from the bare statements that students should learn operations in arithmetic, there is no development of arithmetic. Standard procedures are not included, and very little of the structure of arithmetic is mentioned. The totality of fraction development is:

> Identify and model common fractions such as tenths, fourths, thirds, and halves; and decimals such as money and place value to 0.001; and recognize and compare equivalent representations (benchmark, end of grade 4)

Linear functions are not developed as a topic, and only a few standards relate to them. For example, slope is mentioned only once:

> Identify and compute rate of change/slope and intercepts from equations, graphs, and tables; model and solve contextual problems involving linear proportions or direct variation using cultural contexts, including those of Montana American Indians (benchmark, end of grade 8)

There is only one more standard on linear equations:

> Identify linear and non-linear functional relationships and contrast their properties using tables, graphs, or equations with appropriate technology (benchmark, end of grade 8)

Missing content on lines includes practically all the basics such as point-slope form and finding the equation of a line between two points.

High school geometry is similarly lacking. Proof is mentioned, but the content implicit in the following standard is entirely subject to interpretation:

> Establish the validity of geometric conjectures using deductive reasoning, indirect proof, and counterexamples, and critique arguments made by others (benchmark, upon graduation)

A few standards express expectations about functions, such as:

> Applies functions, graphs, and algebraic concepts to solve real-world problems (GLE, grade 10)
>
> Represent functions in a variety of ways including tables, graphs or diagrams, verbal descriptions, and symbolic expressions in recursive and explicit form. Justify the choice of an appropriate form for solving a given problem (benchmark, upon graduation)

Yet these do not develop specific functions that these standards might be referring to. This renders them essentially useless in terms of evaluating the content that they are supposed to cover.

All STEM-ready content is missing from the standards, including graphs of trigonometric functions, inverse trigonometric functions, polar coordinates, and logarithms.

Finally, Montana's standards fall victim to political correctness. The state's constitution requires that "the implementation of these standards must incorporate the distinct and unique cultural heritage of Montana American Indians." Therefore, there are fifteen references in the GLEs to Montana American Indians. Here are two:

> Evaluating Data: Solve problems and make decisions using data descriptors such as minimum, maximum, median, and mode within scientific and cultural contexts, including those of Montana American Indians (benchmark, end of grade 4)
>
> Finding Probability and Predicting: Create sample spaces and simulations from events found in different cultures, including those of Montana American Indians, determine experimental and theoretical probabilities, and use probability to make predictions (benchmark, end of grade 8)

Including references to Montana American Indians as part of the "cultural context" of math is distinctly not math. Further, by so doing, the standards "embrace fads, suggest political bias, or teach moral dogma"—all of which is discouraged in the *Common Grading Metric* (see Appendix A).

Montana's standards are so sparse and poorly written as to supply very little of the essential content of mathematics. The almost complete lack of specific content, coupled with the politically correct references, render these standards of little use in guiding mathematics education, and they receive a Content and Rigor score of zero points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of F, Montana's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Treasure State has in place today.

1 Montana's Office of Public Instruction released an updated version of their grade-level expectations (called Essential Learning Expectations, or ELEs) on March 31, 2010. This is a guiding document only, and therefore has no official adoption date. Given the date of creation, the document materials have not yet begun to be used in classrooms. Since they have not been officially adopted, and are not yet used in classrooms, they did not fit criteria for reviewable documents (see Methods section, *Introduction and National Findings*). Therefore, Fordham reviewers did not review these most recent Montana ELEs.

KSDE002184

Nebraska • English Language Arts

DOCUMENTS REVIEWED

Nebraska Language Arts Standards: K-4. April 2009.
Accessed from: http://www.nde.state.ne.us/Assessment/documents/StandardsGradesK-4BoardApproved_000.pdf

Nebraska Language Arts Standards: 5-8 and 12. April 2009.
Accessed from: http://www.nde.state.ne.us/Assessment/documents/StandardsGrades5-8.12BoardApproved.pdf

Overview

The Nebraska standards are a disappointment. The prevalence of vaguely worded standards that repeat across grades makes it difficult to discern a rigorous progression of content from grade to grade. What's more, the state's failure to include standards for grades 9, 10, and 11 leaves enormous content gaps at the high school level. Students, teachers, curriculum, and assessment developers will have a hard time understanding what Nebraska expects its students to know and be able to do.

Clarity and Specificity:	1/3
Content and Rigor:	1/7
Total State Score:	**2/10**

(*Common Core Grade: B+*)

General Organization

The standards are organized into four strands:

- Reading
- Writing
- Speaking/Listening
- Multiple Literacies

Each strand is organized into one to six broad sub-strands. For instance, the Writing strand includes two sub-strands, Writing Process and Writing Genres. For grades K-8, each sub-strand is divided into grade-specific standards. For high school, standards are provided only for grade 12.

Clarity and Specificity

The standards are clearly organized, but unmeasurable verbs, generalized or tendentious language, and repetition characterize the Nebraska standards. Students are often asked to "demonstrate an awareness of," "recognize," "use," or "engage in" something, but the purpose is not always clear, and the action is presented in a way that cannot be measured nor success determined. For example:

> Demonstrate awareness of and sensitivity to the use of words (grade 1)
>
> Respond to text verbally, in writing, or artistically (grade 4)
>
> Use narrative and informational text to develop a national and global multi-cultural perspective (grade 5)

Where specificity is attempted, it is often a laundry list of content presented parenthetically, such that specific outcomes for students are indiscernible. For example:

> Apply knowledge of organizational patterns found in informational text (e.g., sequence, description, cause and effect, compare/contrast, fact/opinion, proposition/support) (grade 8)

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It is commendable that these text structures are mentioned, but ultimately the state provides no guidance about what it means to "apply knowledge of" them.

Because the standards are generally unmeasurable and do not provide specificity about student expectations, they earn one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

Nebraska's standards for "concepts about print," "phonological awareness," and "word analysis" are detailed, frequently offering helpful examples to clarify intent, as in:

> Use common word patterns to read, write, and spell new words (e.g., r-controlled letter-sound associations, endings [-s, -ing, -ed], consonant blends) (grade 1)

Fluency targets (for sight words) are included in Kindergarten and grade 1.

Content Weaknesses

Despite their strengths mentioned above, the early reading standards are ultimately too broadly worded to help teachers develop a systematic sequence of early reading content, as in this word analysis standard repeated in first and second grades:

> Manipulate phonemes orally (e.g., blend, segment) (grades 1-2)

Nebraska gives equal weight to essential early reading content—such as phonics and phonemic awareness—and to comprehension strategies. The latter, however, are a mish-mash of repetitive standards related to literary and informational text features, retelling, and author's purpose, and of content-less and unmeasurable standards such as this one:

> Build and activate prior knowledge in order to identify text to self, text to text, and text to world connections before, during, and after reading (grades K-3)

Standards for vocabulary at the early grades do not fully address word analysis and etymology and they repeatedly call instead for the use of context clues to determine the meaning of unknown words (though dictionary use is also mentioned). Vocabulary in upper elementary includes some structural analysis of words, but also includes "selecting" a context clue strategy "to determine meaning."

Nebraska outlines standards for analyzing literary and non-literary texts, but they are not systematically treated. At times the two text types are addressed together, as in this all-encompassing "multi-genre" standard:

> Describe the defining characteristics of narrative and informational genres (e.g., folk tales, poetry, historical fiction, biographies, chapter books, textbooks) (grade 4)

Much of the language that is specific to text type is similarly all-encompassing and often repeated across grades, as in this standard for literary text:

> Identify and analyze elements of narrative text (e.g., character development, setting, plot development, conflict, point of view, theme) (grade 7)

Similarly packed statements are included for informational text, and nowhere else are these elements explored in any detail.

The standards nowhere define or illustrate the quality and complexity of reading that students should master, and American literature is never mentioned.

Writing standards are divided into "process" and "genres." The former looks remarkably similar across grade levels and are very general. Thesis statements are not mentioned until grade 8. Distinct characteristics of writing products by specific genres are never delineated. The closest Nebraska comes to detailing expectations for writing in specific genres is the following eighth-grade standard:

> Write considering typical characteristics of the selected genre (e.g., business letter, report, email, class notes, research paper, play, web page/blog) (grade 8)

Even in twelfth grade, where it is essentially the same, this standard fails to identify the kinds of writing (narrative, argument, etc.) that students should know how to produce. Without describing the characteristics of effective persuasive writing, among many other omissions, the standards cannot be helpful in preparing students for the post-high school world.

Conventions are discussed in writing but only nominally. There is no specific progression of expectations for knowledge of grammar, usage, and mechanics. Instead, Nebraska repeats empty editing standards across most grades, as in:

> Edit writing for format and conventions (e.g., spelling, capitalization, grammar, basic punctuation) (grades 1-4)

Speaking and listening standards are perfunctory, vague, and frequently focused on nonacademic content, such as:

> Demonstrate awareness of and sensitivity to the use of words (e.g., helpful and hurtful words, stereotypes, multiple meanings of words) (grade 2)

The standards do not address group discussions or formal oral presentations (or their evaluation).

The final category of standards, "Multiple Literacies," appears designed to address mostly information, media, and technology skills. They are as close as Nebraska comes to "research" standards. Although they laudably note the need for ethical use of source material, they primarily dwell on hard-to-assess activities that might or might not be academic. It's hard to tell:

> Engage in activities with learners from a variety of cultures through electronic means (e.g., podcasts, video chats, distance learning, e-pals) (grades K-4)

Nowhere do the standards outline expectations for a serious research process nor the qualities of any research products. Multimedia is addressed only obliquely in the listening and speaking strand, such as here:

> Utilize available media to enhance communication (e.g., presentation software, poster) (grade 4)

At least 80 percent of essential content is missing here, leaving Nebraska with one point out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of F, Nebraska's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Cornhusker State has in place today.

Nebraska • Mathematics

DOCUMENTS REVIEWED

Nebraska Mathematics Standards, October 8, 2009.
Accessed from: http://www.nde.state.ne.us/math/index.html

Overview

Nebraska's standards are well organized and easy to read. In K-8, however, arithmetic is only slightly prioritized, and there are problems with its development. High school is missing much of the essential content.

Clarity and Specificity:	2/3
Content and Rigor:	3/7
Total State Score:	**5/10**
(*Common Core Grade: A-*)	

General Organization

The K-8 grade-specific standards are organized in four content strands such as Number Sense and Algebraic Concepts, which are further subdivided into topics. The topics change from grade to grade. High school material is provided for grade 12 only.

Clarity and Specificity

The standards are well presented and easy to read. They are divided by topic, though, logically, not every topic appears in each grade. For example, there are no standards about probability in the early grades.

Many standards are succinct and clear, such as:

> Count by multiples of 5 up to 100 (grade 1)
> Compare and order whole numbers 0-1,000 (grade 2)
> Estimate and measure length using customary (nearest 1/2 inch) and metric (nearest centimeter) units (grade 4)

Some, however, are not clear, such as:

> Compare different models to represent mathematical situations (grade 5)
> Justify the classification of three-dimensional objects (grade 6)
> Explain how statistics are used or misused in the world (grade 12)

In these examples, the reader is left with no idea what students are supposed to know or what kinds of problems they should be able to solve. Moreover, as the twelfth-grade standard above illustrates, the high school material tends to be particularly broadly stated and subject to interpretation. Another example of this is the following, which is one of the few standards that mentions quadratic equations but does not make clear what students should know, specifically, about quadratic equations:

> Model contextualized problems using various representations for non-linear functions (e.g., quadratic, exponential, square root, and absolute value) (grade 12)

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In addition, some standards are confusing such as:

> Show equivalence among common fractions and non-repeating decimals and percents (grade 6)
> Prove special types of triangles and quadrilaterals (e.g., right triangles, isosceles trapezoid, parallelogram, rectangle, square) (grade 12)

In regards to the first example, 1/3, a common fraction, gives a repeating decimal. Moreover, technically, non-repeating decimals are never equivalent to fractions. The second one just makes no sense.

Nebraska's standards are generally well presented and easy to read. However, there are some standards that are too broadly stated to interpret. They "do not quite provide a complete guide to users" and receive a Clarity and Specificity score of two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

While the state does not explicitly set priorities, the number of standards devoted to particular content areas communicates implicit priorities. Accordingly, arithmetic is only moderately well prioritized—almost 40 percent of the standards in appropriate grades deal with its development.

Content Strengths

The structure of arithmetic—commutativity, associativity, distributivity, and the inverse nature of addition and subtraction and of multiplication and division—are all well covered.

The number line starts early and is carried through the years, for example:

> Show equivalence among common fractions and non-repeating decimals and percents (grade 6)
> Prove special types of triangles and quadrilaterals (e.g., right triangles, isosceles trapezoid, parallelogram, rectangle, square) (grade 12)

In the development of fractions, common denominators are explicitly included:

> Identify and name fractions in their simplest form and find common denominators for fractions (grade 5)

In addition, the standards include the important skill of conversion between measurement systems:

> Convert between metric and standard units of measurement, given conversion factors (e.g., meters to yards) (grade 8)

In high school, while some standards are too vague to determine the intent, we also find some very strong standards. In geometry, for example, proofs of some major theorems and explicit mention of postulates are both included:

> State and prove geometric theorems using deductive reasoning (e.g., parallel lines with transversals, congruent triangles, similar triangles) (grade 12)
> Recognize that there are geometries, other than Euclidean geometry, in which the parallel postulate is not true (grade 12)

In addition, important high school algebra skills are included, for example:

> Add, subtract, and simplify rational expressions (grade 12)
> Multiply, divide, and simplify rational expressions (grade 12)

Content Weaknesses

The development of whole-number arithmetic is inadequate. One illustration of this is the fact that the phrase "place value" does not even appear in the standards.

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Instant recall of number facts is not required, but is replaced with the less stringent:

> Fluently add whole number facts with sums to 20 (grade 2)
> Compute whole-number multiplication facts 0-10 fluently (grade 3)

In the continued development of whole-number arithmetic, fluency and standard algorithms are not required. There are some clear statements that students are expected to know how to do basic arithmetic, but methods and procedures are not specified.

The development of formulas for area is not specifically included in the standards. Students are expected to "determine" area, but the development of the requisite formulas is not made explicit:

> Determine the area of rectangles and squares (grade 5)
> Determine the area of parallelograms and triangles (grade 6)

The high school standards are missing much essential content.

The coverage of linear functions is missing some basic content such as point-slope form and finding the equation of a line through two points.

Quadratic equations are not well covered. They are mentioned specifically only a few times, and the theory is not developed. Solving quadratic equations is in the following standard, but it does not adequately specify particular content expectations:

> Solve quadratic equations (e.g., factoring, graphing, quadratic formula) (grade 12)

Missing content for quadratics includes the technique of completing the square, vertex form, and max/min problems.

In addition, most of the STEM-ready material is not covered. There is almost no trigonometry after the basic definitions. Other missing content includes logarithms and polar coordinates.

Though slightly prioritized, the development of whole-number arithmetic is not adequate. The high school material is missing much of the essential content. These "serious problems" result in a Content and Rigor score of three points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Nebraska's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Cornhusker State has in place today.

KSDE002190

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

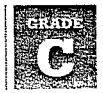
Nevada • English Language Arts

DOCUMENTS REVIEWED

Nevada English Language Arts Standards. November 30, 2007.
Accessed from: http://www.doe.nv.gov/Standards_EnglishLangArts_Standards.html

Overview

Nevada's standards are generally well organized and written in precise, jargon-free language. The repetition of expectations across grade levels, coupled with the inclusion of too many broadly worded standards however, leaves teachers in the Silver State with little specific guidance about what, precisely, students should know and be able to do at each grade level.



Clarity and Specificity:	1/3
Content and Rigor:	4/7
Total State Score:	**5/10**

(*Common Core Grade: B+*)

General Organization

The *Nevada English Language Arts Standards* are divided into eight content standards, which are common across all grades:

- Content Standard 1.0 Word Analysis
- Content Standard 2.0 Reading Strategies
- Content Standard 3.0 Literary Text
- Content Standard 4.0 Expository Text
- Content Standard 5.0 Effective Writing
- Content Standard 6.0 Types of Writing
- Content Standard 7.0 Listening
- Content Standard 8.0 Speaking

Each content standard is divided into several strands, then into grade-specific "indicators." (Note, though, that these grade-level indicators are provided only for K-8. High school indicators are presented in a single band spanning grades 9-12.)

Clarity and Specificity

The Nevada standards are clearly organized, concise, and generally devoid of unnecessary jargon. Some indicators are clear and specific, including:

> Analyze plot development with a focus on
> - exposition
> - rising action
> - falling action (grades 7-12)

Unfortunately, far too many standards are so broadly written and repetitive that they provide little guidance as to what students should know and be able to do from grade to grade. For example, the standard above, while clear and specific, is repeated verbatim in every grade, 7-12, thus showing no progression of rigor.

KSDE002191

Worse, many of the repetitive standards are so general that they are instructionally meaningless. For example, the following vacuous standards are also repeated verbatim across several grades:

> Write poetry (grades 2-12)
>
> Write responses to literary text (grades 1-3)
>
> Write response to expository text (grades 1-3)

In many cases, there are only a small handful of standards provided for each strand, and because many of those are vague, teachers are left with virtually no guidance about what, precisely, students should know or be able to do.

Finally, Nevada makes a woefully inadequate attempt to scaffold skills across grade levels by simply adding the phrase "with assistance" to the front of many standards. According to the state, this term is used to reflect the realities:

> 1. that many skills require more than one year for a student to become proficient,
> 2. that students are provided support from teachers, peers, and other resources when appropriate, and/or
> 3. that these skills are not state-testable at this grade level.

In practice, this distinction adds more confusion than clarity or scaffolding. Take, for example, the following speaking indicators:

> With assistance, communicate information that maintains a clear focus (grade 1)
>
> With assistance, communicate information in a logical sequence (grade 2)

What "assistance" should teachers be providing first- and second-grade students to communicate information that maintains a clear focus or that is presented in a logical sequence? Unfortunately, rather than answering that question by actually scaffolding the knowledge and skills that students would need to master these capstone standards, the state has merely tacked an empty statement onto the beginning, thus leaving far too much room for interpretation.

While Nevada's standards are well organized and concisely written, these serious shortcomings prevent them from providing the guidance that teachers and curriculum and assessment developers need to ensure students are being held to equally rigorous standards across the state. Accordingly, Nevada earns one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

Nevada's standards for phonological awareness, phonemic awareness, phonics, and structural analysis are clearly defined and comprehensive. The standards dealing with English language conventions are also generally strong and delineate a clear progression of skills, particularly for spelling, capitalization, punctuation skills, and sentence types.

Although too many indicators at this level include the nebulous "with assistance" caveat, the K-4 standards do address systematic vocabulary development; for example:

> Comprehend vocabulary using
> - suffixes
> - synonyms
> - antonyms (grade 1)
>
> With assistance, comprehend vocabulary using
> - homographs
> - homophones
> - abbreviations
> - context clues (grade 1)

KSDE002192

The standards also include a strong research strand that outlines expectations for specific components of the research process, such as:

> Write research papers by
> - choosing and narrowing a research topic
> - locating, collecting, and analyzing information from primary and secondary sources
> - recording information
> - paraphrasing and summarizing information
> - organizing collected information
> - documenting and citing sources in a consistent format (grade 8)
>
> Demonstrate an understanding of the difference between original works and plagiarized works (grade 8)
>
> Evaluate credibility of resources (grade 8)

The writing standards generally include expectations for the characteristics of quality writing products, particularly in grades K-4 where the standards clearly delineate a progression from writing sentences to paragraphs, to multiple paragraphs, to multiple paragraphs with transitions.

Standards for literary texts also include some important content. For example, some indicators focus on the methods of characterization used by authors: the character's motivations; the development of characters; supporting conclusions about characters with textual evidence; examining relationships among protagonists, antagonists, supporting characters, etc. In addition, some standards focus on crucial elements of plot development, including climax, resolution, exposition, rising action, and falling action.

Content Weaknesses

Although the standards for reading literary texts do include some important content, it is often impossible to discern how their rigor progresses from grade to grade because too many standards are repeated verbatim across grades 5-12, as in the examples cited above (see "Clarity and Specificity").

The state also specifies standards for reading non-literary texts, though essential genre-specific content is not well prioritized. Take, for example, these two standards from the Expository Text strand:

> Identify and explain the use of
> - bold-faced words
> - underlined words
> - highlighted words
> - italicized words (grades 6-12)
>
> Evaluate information from
> - illustrations
> - graphs
> - charts
> - titles
> - text boxes
> - diagrams
> - headings
> - maps (grades 6-12)

Devoting an entire standard to drawing attention to important words in non-literary texts is excessive, particularly when equally important text features are lumped together in other standards. And, in both cases, the standard is repeated verbatim across six grade levels with no discernable progression of rigor.

In addition, the standards fail to delineate expectations for describing the truth and/or validity of an argument or for recognizing and explaining the presence of fallacious reasoning.

KSDE002193

What's more, the state gives virtually no guidance about the quality and complexity of literary and non-literary texts that students should read across grade levels. While the standards indicate that students should be reading "grade-appropriate" works of literature, what constitutes "grade-appropriate" is inadequately explained:

> Grade-appropriate in this document is determined by length of text, vocabulary, sentence complexity, layers of meaning, complexity of concept, and percentage of text versus pictures.

The failure to mention any exemplar texts or authors leaves little confidence that students across the state will be exposed to equally rigorous texts in any grade. Similarly, the standards fail to mention reading outstanding works of American literature that reflect our common culture.

While the K-4 writing standards, mentioned above, are reasonably strong, the 5-12 standards do not provide clear expectations for the quality of writing expected at each grade level. For example, the following standard is repeated verbatim at every grade, 5-12, with no additional detail about what students should know and be able to do:

> Draft multiple paragraph papers about a single topic that address
> - audience
> - purpose
> - supporting details
> - introduction
> - conclusion
> - transitions (grades 5-12)

In addition, as discussed above, while the state technically includes genre-specific standards for writing, those standards are so broadly written that they fail to outline significant content, nor do they provide guidance about how rigor should progress from grade to grade.

Finally, the state provides no standards for media and viewing.

Taken together, these shortcomings leave as much as 50 percent of the critical ELA content missing, thus earning the standards four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Nevada's ELA standards are mediocre. Those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Silver State has in place today.

KSDE002194

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Nevada • Mathematics

DOCUMENTS REVIEWED

Nevada Mathematics Standards, Integrating Content and Process. Summer 2006.
Accessed from: http://www.doe.nv.gov/Standards/Mathematics/New_Nevada_Math_Standards_Complete_Document_6.29.06_PDF.pdf

Overview

Nevada's standards are well organized and easy to read. Arithmetic is prioritized and developed reasonably well. The high school standards, however, are scant—a single set of standards for grades 9-12 omits much essential content.

Clarity and Specificity:	2/3
Content and Rigor:	4/7
Total State Score:	**6/10**
(Common Core Grade: A-)	

General Organization

Nevada's K-8 math standards are divided into five content strands: Numbers, Number Sense and Computation; Patterns, Functions and Algebra; Measurement; Spatial Relationships, Geometry and Logic; and Data Analysis. Each strand is subdivided into topics, and then into grade-level standards. (Note, though, that not all topics include grade-level standards.)

In high school, the standards are organized similarly, except that only one set of standards is presented for grades 9-12.

In addition to the content strands mentioned above, Nevada provides four process standards, such as problem-solving and mathematical reasoning. These process standards are meant to be integrated into the instruction of all content strands.

Finally, Nevada explicitly prioritizes its standards by labeling them with one of three codes: E for "enduring...big ideas," I for "important," and W for "worth knowing," respectively.

Clarity and Specificity

The standards are well presented and easy to read. Statements are generally concise and clear:

> Identify the value of a given digit in the 1's, 10's and 100's place (grade 2)
> Identify perfect squares to 225 and their corresponding square roots (grade 8)

The organization of the K-8 standards is clear and helpful. Topics are generally focused on important content, such as place value or fractions, which makes the sequencing through the grades clear and easy to follow, as demonstrated below:

> Compare fractions with unlike denominators using models and drawings, and by finding common denominators (grade 5)
> Add and subtract fractions with unlike denominators (grade 6)

Some standards, however, are overly broad and subject to interpretation. This is particularly true in high school, where the standards for all grades are combined. Here are two examples of excessive breadth:

KSDE002195

> Select and use appropriate measurement tools, techniques, and formulas to solve problems in mathematical and practical situations (grades 9-12)
>
> Solve mathematical and practical problems involving linear and quadratic equations with a variety of methods, including discrete methods (with and without technology) (grades 9-12)

Without further detail, it is not clear what students are expected to know or what kinds of problems they should be able to solve.

The organization of the high school standards by strand is unhelpful. Standards on specific topics, such as quadratics or geometry, are not presented coherently, but are scattered throughout the strands.

The organization for K-8 is elegant, simple, and easy to read and understand. In high school, both the organization and clarity of the standards are not as strong. The standards do not quite provide a clear guide to users and receive a Clarity and Specificity score of two points out of three. (See the *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

By labeling each standard E, I, or W (as described above), Nevada provides some helpful guidance about content priorities. While this scheme is not completely clear, the hierarchy suggests that the "big idea" (E) standards are the highest-priority standards, and, using that as a guide, arithmetic standards in the crucial elementary grades comprise more than 40 percent of the standards. This prioritizes arithmetic moderately well.

Content Strengths

Memorization of the basic number facts is explicit:

> Immediately recall and use addition and subtraction facts (grade 3)
>
> Immediately recall and use multiplication and corresponding division facts (products to 144) (grade 4)

Although done without mention of fluency or standard algorithms, Nevada provides straightforward arithmetic standards:

> Add and subtract one- and two-digit numbers without regrouping (grade 2)
>
> Add and subtract two- and three-digit numbers with and without regrouping (grade 3)
>
> Add and subtract multi-digit numbers (grade 4)

This is a clearly developed sequence for addition and subtraction. Multiplication and division are presented similarly.

The connection between decimals and place value is clear:

> Identify and use place value positions of whole numbers and decimals to hundredths (grade 5)

Although the high school standards are generally very weak, some are good and clear:

> Identify parallel, perpendicular, and intersecting lines by slope (grades 9-12)

Content Weaknesses

The content in elementary school has a few problems. Both fluency and standard procedures are missing in the development of arithmetic. Although the structure of arithmetic is generally well covered, the inverse nature of addition and subtraction and of multiplication and division is not developed.

Some essential content is not explicitly covered in the development of perimeter and area. For instance, triangles are not explicitly covered, though students are expected to find the area of plane figures, which implicitly includes triangles. The following sequence of standards illustrates this gap:

> Define and determine the perimeter of polygons and the area of rectangles, including squares (grade 4)
>
> Select, model, and apply formulas to find the perimeter, circumference, and area of plane figures (grade 6)

Nevada's high school standards are too scant to cover the essential content well. In geometry, proofs and axioms are missing, as are theorems about triangles, congruence, similarity, and circles. There are very few algebra standards. Quadratic equations appear in only a few standards, and the development is weak. Although quadratic equations are to be solved, no techniques for doing so are mentioned, such as completing the square. Polynomials, though included as a topic, are covered only with the following:

> Add, subtract, multiply, and factor 1st and 2nd degree polynomials connecting the arithmetic and algebraic processes (grades 9-12)

STEM-ready content is largely missing, including exponential and logarithmic functions, complex numbers, and polar coordinates. Trigonometry is introduced but not developed.

Arithmetic is reasonably well developed and prioritized. The high school standards, which are combined for all grades, are missing much of the essential content. These serious problems result in a Content and Rigor score of four points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Nevada's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Silver State has in place today.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

New Hampshire • English Language Arts

DOCUMENTS REVIEWED

K-12 Reading New Hampshire Curriculum Framework. June 2006.
Accessed from: http://www.education.nh.gov/instruction/curriculum/english_lang/documents/reading_frame.pdf

K-12 Writing and Oral Communication Curriculum Framework. June 2006.
Accessed from: http://www.education.nh.gov/instruction/curriculum/english_lang/documents/writing_frame.pdf

Overview

The New Hampshire standards are generally clearly written and specific, but their presentation is confusing and difficult to follow. In addition, the state fails to prioritize essential content and includes inappropriate or unnecessary standards that distract from the good content that is included throughout.

Clarity and Specificity:	2/3
Content and Rigor:	4/7
Total State Score:	**6/10**
(Common Core Grade: B+)	

General Organization

The New Hampshire ELA standards are organized into two broad categories: standards for reading and standards for written and oral communication. Eight appendices (six for reading and two for writing) are also included.

For each of the two categories, the state presents seven or eight "strands." In reading, for example, the strands include: Early Strategies for Reading, Reading Fluency and Accuracy, Vocabulary, and Reading Strategies. The strands are further subdivided into sub-strands, and finally into grade-level expectations (GLEs) for grades K-8, or grade-span expectations (GSEs) for grades 9-10 and 11-12.

Each GLE or GSE is introduced with a "stem" that repeats across the grades and is designed to "communicate the main curriculum and instructional focus of the GLE/GSE..." One of the stems under the "Word Identification Skills and Strategies" strand, for example, is:

> Applies word identification/decoding strategies by...

The specific GLE or GSE completes the sentence.

Finally, throughout the document, the state indicates which GLEs/GSEs are assessed on the state test and which are not (the latter being reserved for "local curriculum and assessment").

Clarity and Specificity

The New Hampshire ELA standards are frequently clearly written and specific. For example,

> Demonstrate initial understanding of elements of literary texts by...[i]dentifying literary devices as appropriate to genre: rhyme, alliteration, simile, description, or dialogue (grade 4)

KSDE002198

In addition, the GLEs and GSEs often include concrete and helpful examples to further clarify expectations, such as:

> Applies word identification and decoding strategies (leading to automaticity) by...[i]dentifying regularly spelled multi-syllabic words, by using knowledge of sounds, syllable types, or word patterns (including most common spellings for consonants and vowels, e.g., knot, catch, float, fight; or common suffixes)
> - EXAMPLES: Students might be asked to match words to pictures or to match words to words with similar sounds (e.g., flower and shower)
> - EXAMPLES (multi-syllabic words): happiness, shower, sunshine (grade 2)

Unfortunately, the clarity and specificity of the standards is somewhat offset by an overly complex structure. The standards feature a six-page introduction that obfuscates more than it clarifies; in fact, it inaccurately describes the organization of the standards themselves. (The introduction, for instance, claims that the reading standards are divided into five strands, but there are actually eight.)

In addition, as mentioned above, the state distinguishes between standards that are assessed on the state test and those that are not. But the manner in which this is explained is anything but simple:

> ...GLEs and GSEs are meant to capture the "big ideas" of reading that can be assessed, without narrowing the curriculum locally. They are not intended to represent the full reading curriculum for instruction and assessment locally, at each grade. The set of GLEs/GSEs includes concepts and skills intended to be assessed on demand, in a large-scale assessment (indicated by "State") and other GLEs/GSEs (indicated by "Local") for Local assessment purposes only. All of the Reading GLEs/GSEs described in this document are expected to be assessed Locally, even if indicated for large-scale assessment...
>
> Grade Level/Span Expectations—at any grade—represent reading content knowledge and skills **introduced instructionally at least one to two years before** students are expected to demonstrate confidence in applying them independently in an on-demand assessment (emphasis original)

The latter suggests that teachers should begin scaffolding each of the GLEs/GSEs two years *before* it appears as a standard, yet the state provides no guidance about what this scaffolding should look like.

Finally, the eight appendices are bulky. While some supply useful information, others could easily be deleted without compromising content (and, perhaps, adding clarity).

On balance, the inclusion of mostly clear and specific GLEs and GSEs is weakened by the standards' too-complex structure, thus earning New Hampshire two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The standards include expectations for phonics, phonemic awareness, and vocabulary development in the early grades that are generally strong, including:

> Demonstrates phonemic awareness by...[b]lending and segmenting phonemes in more complex one-syllable words (which may include combinations of blends and digraphs, as in th-i-ck, t-r-a-sh) (Kindergarten)
>
> Shows breadth of vocabulary knowledge through demonstrating understanding of word meanings and relationships by... [s]electing appropriate words or explaining the use of words in context, including content specific vocabulary, words with multiple meanings, or precise vocabulary
> - EXAMPLE (multiple meanings): Students explain the intended meanings of words found in text—"Based on the way 'spring' is used in this passage, would having a 'spring' be necessary for survival? Explain how you know" (grade 5)

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The state also clearly prioritizes the study of both literary and non-literary texts and includes genre-specific content in both strands, such as:

> Demonstrate initial understanding of elements of literary texts by...[i]dentifying or describing character(s), setting, problem/solution, major events, or plot, as appropriate to text; or identifying any significant changes in character(s) over time (grade 4)
>
> Demonstrate initial understanding of informational texts (expository and practical texts) by...[o]rganizing information to show understanding (e.g., representing main/central ideas or details within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting) (grade 7)
>
> Demonstrate initial understanding of informational texts (expository and practical texts) by...[i]dentifying the characteristics of a variety of types of text (e.g., reference: reports, magazines, newspapers, textbooks, biographies, autobiographies, Internet websites, public documents and discourse, essays, articles, technical manuals; and practical/functional: procedures/instructions, announcements, invitations, book orders, recipes, menus, advertisements, pamphlets, schedules) (grade 8)

One of the appendices also offers general guidance about the complexity of texts that students should be reading across grade levels.

Standards delineating genre-specific expectations for writing are included for each grade, including sub-strands devoted to persuasive, research, literary analysis, and narrative writing. The writing standards are strengthened by the inclusion of reasonably strong expectations for English language conventions, including:

> In independent writing, students demonstrate command of appropriate English conventions by...[a]pplying rules of standard English usage to correct grammatical errors
>
> • EXAMPLES: subject-verb agreement, pronoun-antecedent, consistency of verb tense, case of pronouns (grade 8)

The state also delineates clear expectations for listening and speaking, the delivery and evaluation of formal oral presentations, and group discussion.

Content Weaknesses

As noted above, New Hampshire delineates expectations for the analysis of literary and non-literary texts and includes general guidance about their usage at each grade level. The appendix appears to be intended to identify exemplar texts and authors that students should read. Unfortunately, this appendix includes virtually no actual titles or authors and therefore adds little value, as demonstrated by this suggested "list" of high school informational texts:

> Informational Texts include, but are not limited to, Reference materials: Reports, magazines, newspapers, textbooks, biographies, autobiographies, Internet websites, legal documents (i.e., Supreme Court case decisions, lease agreements), public documents (drivers' manuals) and discourse, essays (including literary criticisms), articles, technical manuals, editorials/commentaries, primary source documents, periodicals, job-related materials, speeches, on-line reading, documentaries, etc. [and] Practical/functional texts: Procedures/instructions, announcements, invitations, advertisements, pamphlets, schedules, memos, applications, catalogues, etc. (high school)

Standards addressing the research process and research writing are inadequate and often include sweeping language that provides little guidance to instructors.

In some cases, unnecessary and potentially distracting standards are included. For example, the "reading fluency and accuracy" sub-strand extends well beyond its usefulness into the upper grades and includes standards devoted to tracking student fluency and accuracy rates. In the upper grades, it's more appropriate to evaluate reading comprehension and only resort to measuring fluency and accuracy when student comprehension of grade-appropriate texts is poor.

Finally, while the state includes much sound content, the standards fail to appropriately prioritize it. For instance, far too many expectations—and an entire appendix—are devoted to skills and strategies, such as reading comprehension and self-monitoring strategies. By failing to give clear priority to mastery of essential content, educators could easily focus excessive attention on teaching content-empty strategies and skills rather than genre-specific material.

Taken together, the omission of some critical content coupled with the inclusion of sometimes inappropriate or content-empty standards earns New Hampshire four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, New Hampshire's ELA standards are mediocre. Those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Granite State has in place today.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

New Hampshire • Mathematics

DOCUMENTS REVIEWED

K-12 Mathematics New Hampshire Curriculum Framework. June 2006.
Accessed from: http://www.education.nh.gov/instruction/curriculum/math/documents/framwork.pdf

Overview

New Hampshire's standards are poorly organized and difficult to read. Whole-number arithmetic in the elementary grades is neither prioritized nor well developed. The high school standards, despite poor presentation, do include much of the essential content, including STEM-ready material.

Clarity and Specificity:	2/3
Content and Rigor:	3/7
Total State Score:	**5/10**
(*Common Core Grade: A-*)	

General Organization

The K-8 standards are organized into four content strands: Number and Operations; Geometry and Measurement; Functions and Algebra; and Data, Statistics and Probability. There are also two process strands—Problem Solving, Reasoning, and Proof; and Communication, Connections, and Representations—that are less content-focused and meant to be integrated across the four content strands. The grade-level standards are organized by topic and all begin with the same or similar stem phrase, with that phrase having different completions in different grades.

High school standards are organized similarly but not divided by grade. They are instead divided into two categories: "High School" and "Advanced Mathematics."

Clarity and Specificity

The standards are neither clear nor easy to read. The stem-phrase organization of the grade-level material is poorly implemented and results in many standards that are awkwardly worded and unnecessarily complex. For example, in the following standard, a simple expectation is conflated with data analysis expectations through the use of the stem phrase, which is in bold:

> **Analyzes patterns, trends, or distributions in data in a variety of contexts by determining** or using more, less, or equal (grade 1) (emphasis added)

This pattern of unnecessary complexity continues in other ways. Consider this confusing "multi-stem" standard in eighth grade:

> **Demonstrates conceptual understanding of linear relationships** (y=kx; y=mx+b) **as a constant rate of change by** solving problems involving the relationship between slope and rate of change; informally and formally determining slopes and intercepts represented in graphs, tables, or problem situations; or describing the meaning of slope and intercept in context; **and distinguishes between linear relationships (constant rates of change) and nonlinear relationships (varying rates of change)** represented in tables, graphs, equations, or problem situations; **or describes how change in the value of one variable relates to change in the value of a second variable** in problem situations with constant and varying rates of change (grade 8) (emphasis added)

This standard is not only difficult to read, it is also difficult to discern what students are expected to know and what kinds of problems they should be able to solve. For example, it is not clear how a student "informally" determines the slope of a line or "describes" varying rates of change.

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The standards are difficult to read and many of them are not clear or measurable. They do not provide a "clear guide for users" (see *Common Grading Metric*, Appendix A), and receive a Clarity and Specificity score of one point out of three.

Content and Rigor

Content Priorities

New Hampshire has few standards per grade, which could have served to prioritize arithmetic in elementary school. However, standards about arithmetic comprise less than 30 percent of the standards, meaning that arithmetic is not properly prioritized.

Content Strengths

While K-8 content is severely deficient, the standards cover much of high school mathematics well, including STEM-ready material. They include polar coordinates, inverse trigonometric functions, trigonometry identities, and the arithmetic of rational expressions.

Content Weaknesses

Whole-number arithmetic is not adequately developed. Fluency with basic facts and standard procedures are not required. The overview of the Number and Operations strand states:

> Having students know basic facts and having students compute fluently (i.e., accurately and efficiently) continues to be an important goal in mathematics education....A deep understanding of the operations and their properties will help students make sense of computation algorithms and lead to fluency in computation.

These laudable goals are not reflected in the standards themselves. The first building block for arithmetic is instant recall of the basic facts. The standards do not adequately specify that students have automaticity, or quick recall, of basic number facts, as in:

> Mentally adds and subtracts whole-number facts through 20 (addends whose sum is at most 20 and related subtraction facts) (grades 2-4)

There are similar standards for multiplication and division facts.

The capstone for whole-number multiplication is this standard:

> Accurately solves problems involving multiple operations on whole numbers or the use of the properties of factors and multiples; and addition or subtraction of decimals and positive proper fractions with like denominators. (Multiplication limited to 2 digits by 2 digits, and division limited to 1-digit divisors) (grade 4)

This is the only standard that explicitly mentions whole-number multiplication, and it does not ensure mastery. The poor development of arithmetic continues with fractions and decimals. Students are expected to be able to compute, yet common denominators are never mentioned nor are any standard procedures for these operations. While computational fluency is mentioned in the overviews, it is not supported within the standards.

In high school, there are some standards that are more appropriately covered in calculus classes than in regular high school mathematics. For example, this ambitious but overly broad multi-part standard requires calculus but is included among the high school standards:

> Demonstrates conceptual understanding of linear and nonlinear functions and relations (including characteristics of classes of functions) through an analysis of constant, variable, or average rates of change, intercepts, domain, range, maximum and minimum values, increasing and decreasing intervals and rates of change (e.g., the height is increasing at a decreasing rate); describes how change in the value of one variable relates to change in the value of a second variable; or works between and among different representations of functions and relations (e.g., graphs, tables, equations, function notation) (high school)

In geometry, the role of proof is not clear. The standards do require proof, but no mention is made of axioms or pos-

KSDE002203

tulates. The advanced mathematics material for high school makes reference to Euclidean systems, but the basic high school standards do not. Linear equations are missing point-slope form and finding the equation of a line through two points. Quadratics is missing complex roots, vertex form, and max/min problems.

While high school mathematics is covered reasonably well, including much STEM-ready content, the K-8 material fails to prioritize or sufficiently develop arithmetic. Neither computational fluency nor standard procedures are expected. These "serious" problems result in a Content and Rigor score of two points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, New Hampshire's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Granite State has in place today.

KSDE002204

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

New Jersey • English Language Arts

DOCUMENTS REVIEWED

New Jersey Core Curriculum Content Standards for Language Arts Literacy: K-8. 2004. Accessed from: http://www.state.nj.us/education/cccs/2004/s3_lal.pdf

New Jersey Core Curriculum Content Standards for Language Arts Literacy: 9-12. January 2008. Accessed from: http://www.state.nj.us/education/cccs/2004/s2_lal/

Overview

New Jersey's standards exhibit some strengths in key areas, such as reading, but enough problems exist in content coverage of other areas, as well as in overall clarity and specificity, that the standards on balance are rather mediocre.

Clarity and Specificity:	2/3
Content and Rigor:	4/7
Total State Score:	**6/10**
(*Common Core Grade: B+*)	

General Organization

The New Jersey standards are organized into the following strands:

- Reading
- Writing
- Speaking
- Listening
- Viewing and Media Literacy

Within each of the strands, the standards are organized into categories (eight for Reading, and two to four for the other strands), and finally into grade-specific standards. Grades 9-12 is the exception: Just one set of standards is offered for all four grades.

Clarity and Specificity

The New Jersey standards are a mix of specific and vague. In most places, their language is specific enough to communicate clear expectations for students, but some standards are vague and unmeasurable, such as the following "Comprehension Skills and Response" standards in Kindergarten:

> Comprehension Skills and Response to Text
> 1. Respond to a variety of poems and stories through movement, art, music, and drama
> 2. Verbally identify the main character, setting, and important events in a story read aloud
> 3. Identify favorite books and stories (Kindergarten)

Among those three standards, only the second is academic *and* measurable.

Student outcomes are also unclear in this "Reading Strategies" standard for third grade:

> Develop and use graphic organizers to build on experiences and extend learning (grade 3)

KSDE002205

In standards such as these for vocabulary, one from Kindergarten and one from grade 7, the expectations are too broadly drawn to be useful:

> Continue to develop a vocabulary through meaningful, concrete experiences (Kindergarten)
> Develop an extended vocabulary through both listening and independent reading (grade 7)

On the other hand, in the same set of seventh-grade standards, the following specific standard also appears:

> Clarify pronunciations, meanings, alternate word choice, parts of speech, and etymology of words using the dictionary, thesaurus, glossary, and technology resources (grade 7)

New Jersey's standards would be more useful to teachers and students if more of them reached this level of clarity and specificity.

At each grade level, "Comprehension Skills and Response to Text" standards deal with the analysis of both literary and informational texts. These standards are not organized in any systematic way, making it difficult to track expectations across grades by type of text. In some grades, as many as seventeen disparate standards appear in this category. Organizing them by text type would make them much easier to track.

Finally, it must be noted that New Jersey has developed a single set of standards for grades 9-12. It is impossible for one set of standards to cover so much material at a level of specificity that is useful, and no guidance is offered for specific high-school grade levels.

These challenges leave the scope and sequence of the material not completely apparent or sensible, thus earning New Jersey two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The New Jersey early reading standards are fairly rigorous. Key topics—concepts about print, phonological awareness, decoding and word recognition, and fluency—are all addressed. Here is part of a first-grade standard for "Decoding and Word Recognition":

> 1. Identify all consonant sounds in spoken words (including blends such as bl, br; and digraphs such as th, wh)
> 2. Recognize and use rhyming words to reinforce decoding skills
> 3. Decode regular one-syllable words and nonsense words (e.g., sit, zot)
> 4. Use sound-letter correspondence knowledge to sound out unknown words when reading text
> 5. Recognize high-frequency words in and out of context
> 6. Decode unknown words using basic phonetic analysis (grade 1)

These six items are reasonably rigorous, though it is a shame that the last item in the set, shown below, wrongly suggests that words can be decoded by using context clues:

> 7. Decode unknown words using context clues (grade 1)

Holding aside this last stumble, the standard above is typical of the early reading content.

Vocabulary is addressed in every grade, including important categories such as knowledge of word parts, synonyms and antonyms, connotation and denotation, and dictionary use.

Although it is sometimes difficult to locate, the content of the standards for literary and informational texts is largely on target, as in the following standard on literary elements from grade 7:

> Locate and analyze the elements of setting, characterization, and plot to construct understanding of how characters influence the progression and resolution of the plot (grade 7)

The high school standards also include the welcome statement that "foundational U.S. documents are to be studied for their historical and literary significance."

Standards for Speaking and Listening are mostly commendable. They address active listening and effective speaking skills, including recitations and oral presentations. The speaking standards include a word choice category, which is helpful. The standards also suggest the use of a scoring rubric to evaluate oral presentations, though no rubric is provided.

Content Weaknesses

Informational text is not given as much attention as literary text throughout the document. Of the fifteen standards for "Comprehension Skills and Response to Text" in grade 8, for example, only two address informational text explicitly:

> Differentiate between fact/opinion and bias and propaganda in newspapers, periodicals, and electronic texts
> Read critically by identifying, analyzing, and applying knowledge of the purpose, structure, and elements of nonfiction and providing support from the text as evidence of understanding (grade 8)

The high school standards are a bit better, but they tend to focus more on functional documents instead of the analysis of arguments and persuasive writing.

In addition, other than the solitary standard noted above that mentions foundational U.S. documents, nowhere does New Jersey define the quality and complexity of reading that is appropriate for students.

The writing standards address "process" and "products," as well as "forms, audiences and purposes." The second and third categories are blurred, which makes priorities difficult to glean. Conventions are discussed within the writing strand, but the standards are mostly generic, as in this grade 5 standard:

> Use Standard English conventions in all writing, such as sentence structure, grammar and usage, punctuation, capitalization, spelling, and handwriting (grade 5)

In some places, specific aspects of grammar are mentioned, but not in a systematic or thorough way.

Inquiry and research are treated in both reading and writing, but the expectations are thin and appear sporadically. Within grade 8 writing, for example, the only standard that mentions research states:

> Prepare a works consulted page for reports or research papers (grade 8)

Research is mentioned in bits and pieces throughout the standards document, but the standards do not fully address all aspects of the research process either within a grade or across grades.

Though some of the standards are unmeasurable, the expectations for Viewing and Media Literacy are good enough when it comes to analysis of media. The standards fall short of expecting students to produce media products, however, save for one standard in grades 9-12. This essential college- and career-ready skill should be addressed.

These gaps leave at least 35 percent of the essential K-12 content missing, earning New Jersey four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, New Jersey's ELA standards are mediocre, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Garden State has in place today.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

New Jersey • Mathematics

DOCUMENTS REVIEWED

New Jersey Core Curriculum Content Standards for Mathematics. January 2008.
Accessed from: http://www.state.nj.us/education/cccs/2004/s4_math_sands.doc

New Jersey Standards Clarification Project Phase I. January 2008.
Accessed from: http://www.state.nj.us/education/aps/cccs/math/njscp.htm

Draft Proposed New Jersey Algebra I Core Content. Revised April 14, 2010.
Accessed from: http://www.state.nj.us/education/aps/cccs/math/alg1content.pdf

Achieve ADP Algebra II End-of-Course Exam Content Standards with Comments and Examples: Core. January 2010.
Accessed from: http://www.achieve.org/files/ADPAlgebraIIEOCExamStandardsupdated012710.pdf

Overview

New Jersey's standards are extremely difficult to read and understand. They are presented in several different documents and, within each presentation, the organization is complex, making them difficult to follow. Arithmetic is moderately prioritized, but its development is inadequate. High school content is reasonably well covered, but it is presented in several different documents, with some STEM-ready material missing.

Clarity and Specificity: 1/3
Content and Rigor: 4/7
Total State Score: 5/10
(Common Core Grade: A-)

General Organization

New Jersey divides its math expectations into five strands, each of which is divided into between three and six different topics. Grade-specific expectations are then presented for grades 2-8 and grade 12. (Note that one of the five strands is a process strand that is devoted to general problem solving and pedagogy.)

In addition, the state provides a "clarification" document for grades 3-8 that is designed to clarify expectations at both the strand and the standard level. At the strand level, the state offers essential questions, areas of focus, and example problems. At the standard level, "comments and examples" are included.

In addition to the twelfth grade standards mentioned above, the state also presents course-specific standards for Algebra I and II. The Algebra I standards are organized the same way as the Clarification Project but with different content strands and topics. For Algebra II, New Jersey uses Achieve's *ADP Algebra II* core standards.

Clarity and Specificity

The general presentation of the standards is very poor and extremely difficult to follow because essential content and clarification is scattered across several documents.

In addition, standards are frequently repeated across the grades with no grade-specific clarification, for example:

> Use coordinates in four quadrants to represent geometric concepts (grades 7-8)

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Some standards are clear and concise, such as:

> Understand and use the concepts of equals, less than, and greater than to describe relations between numbers (grade 3)
> Use a protractor to measure angles (grade 5)

Unfortunately, essential details that help clarify student expectations are often difficult to find. Take, for example, the following standard, which is repeated verbatim across grades 3-6:

> Compare and order numbers (grades 3-6)

In order for teachers to discern what numbers are included for specific grades (i.e., whole numbers, fractions, decimals, etc.), they must dig through two different (and confusing) documents.

What's more, the clarifications frequently are not helpful; this standard and its clarification is one example:

> Recognize, describe, extend, and create space-filling patterns
> Clarification: This is an area of focus in grade 3 and may be assessed at a higher level of understanding in grade 4 (grades 3-4)

The use of examples in the clarification documents is a good feature, but they are not provided consistently and frequently fail to provide needed illumination. These standards are so difficult to follow that they "offer limited guidance to users" and receive a Clarity and Specificity score of one point out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

In a clarification document, New Jersey explicitly prioritizes the most important standards by labeling them as "focal points." Unfortunately, arithmetic comprises less than 40 percent of the "focal points" standards in the crucial grades, a moderate, but inadequate, setting of priorities.

Content Strengths

In the early development of arithmetic, memorization of basic number facts is made explicit:

> Develop proficiency with basic addition and subtraction number facts using a variety of fact strategies (such as "counting on" and "near doubles") and then commit them to memory (grade 2)
> Develop proficiency with basic multiplication and division number facts using a variety of fact strategies (such as "skip counting" and "repeated subtraction") and then commit them to memory (grade 4)

The number line is introduced in grade 3 and appears throughout. Standards on measurement are strong and clear. Converting between measuring systems is included, for example:

> Know approximate equivalents between the standard and metric systems (e.g., one kilometer is approximately 6/10 of a mile) (grade 5)

Some of the high school content is well covered, particularly in the Algebra II standards. For example, algebraic facility with polynomial and rational functions is included.

Content Weaknesses

The coverage of whole-number arithmetic does not include fluency or standard algorithms:

> Use efficient and accurate pencil-and-paper procedures for computation with whole numbers
> - Addition of 3-digit numbers
> - Subtraction of 3-digit numbers
> - Multiplication of 2-digit numbers
> - Division of 3-digit numbers by 1-digit numbers (grade 4)

KSDE002209

This failure to instill standard methods continues with decimals and fractions where students are expected to construct their own procedures for decimals:

> Construct and use procedures for performing decimal addition and subtraction (grade 4)

Technology is introduced early and included often in the standards, undermining students' mastery of arithmetic. For example, the following standard appears to give students the choice to always use a calculator:

> Select pencil-and-paper, mental math, or a calculator as the appropriate computational method in a given situation depending on the context and numbers (grades 2-6)

Another example is the following, where important introductory algebraic skills and concepts may be subsumed by the use of calculators:

> Solve simple linear equations informally and graphically: Multi-step, integer coefficients only (although answers may not be integers); [u]sing paper-and-pencil, calculators, graphing calculators, spreadsheets, and other technology (grade 7)

The high school material is missing some content. The coverage of linear equations omits point-slope form and finding the equation for a line between two points. In geometry, major theorems are not proven, and axioms and postulates are not mentioned. In addition, much STEM-ready content is missing, including most of that relating to trigonometry.

Arithmetic is moderately prioritized, but the development is inadequate. Some high school content is reasonably well covered, but much of the STEM-ready material is missing. These shortcomings result in a Content and Rigor score of four points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, New Jersey's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Garden State has in place today.

New Mexico • English Language Arts

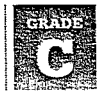
DOCUMENTS REVIEWED

New Mexico Language Arts Standards, Grades K-4. June 2009.
Accessed from: http://www.ped.state.nm.us/standards/Language%20Arts/Language%20Arts%20K-4.pdf

New Mexico Language Arts Standards, Grades 5-8. June 2009.
Accessed from: http://www.ped.state.nm.us/standards/Language%20Arts/Language%20Arts%205-8.pdf

New Mexico Language Arts Standards, Grades 9-12. August 2009.
Accessed from: http://www.ped.state.nm.us/AssessmentAccountability/AssessmentEvaluation/dlho/Language%20Arts%209-12.pdf

Overview



Clarity and Specificity:	1/3
Content and Rigor:	4/7
Total State Score:	**5/10**
(Common Core Grade: B+)	

New Mexico provides essentially two separate sets of standards—one for K-8 students and one for high school. Whereas the former are vague, repetitive, and fail to provide clear guidance about what, precisely, students should know and be able to do across content strands, the 9-12 standards are generally clear and rigorous. Given this dichotomy, it's unclear how elementary and middle school students will be adequately prepared for the rigors that lie ahead.

General Organization

The New Mexico K-8 ELA standards are divided into three strands: Reading and Listening for Comprehension, Writing and Speaking for Expression, and Literature and Media.

These strands are subdivided into "content standards," which broadly define student learning goals. For example, Content Standard I for the "reading and listening" strand says: "students will apply strategies and skills to comprehend information that is read, heard and viewed."

Each content standard is broken into "benchmarks" by grade band (K-4, 5-8, and 9-12), and finally into "performance standards," which are grade-specific.

The high school standards follow a similar organizational structure, with three important distinctions. First, there are nine strands rather than three: Reading, Language, Communication, Writing, Research, Logic, Informational Text, Media, and Literature. Second, some of the high school performance standards are presented for grade bands—9-10, 11-12, or 9-12—rather than for individual grades. Third, the grade-specific expectations for high school are called "performance indicators" rather than "performance standards."

Clarity and Specificity

The New Mexico ELA standards for grades 9-12 are clearly presented and logically organized. Many of the performance indicators also very specifically outline what students should know and be able to do, as in the following vocabulary standards:

> Use comprehension strategies for unfamiliar vocabulary:
> - Use knowledge of roots, prefixes, suffixes (e.g., Greek/Latin) and etymology to determine the meaning of unfamiliar vocabulary (grades 9-10)
> - Use general and specialized dictionaries, thesauri and glossaries...to determine the definition and pronunciation of unfamiliar words (grades 9-10)
> - Use etymology, the principles behind spelling, and usage of words to determine meaning (grades 11-12)
> - Differentiate shades of meaning and multiple meanings of words, including the significance of both connotation and denotation (grades 11-12)

By contrast, the organization of the K-8 standards is confusing. They combine reading and listening in one strand, and speaking and writing in another, but then include writing performance standards in the Reading strand and reading standards in the Writing. Not only is this confusing, it also leads to a number of standards that are repeated verbatim across strands and benchmarks.

In addition, the benchmarks, which are intended to organize the grade-specific performance standards, actually add more confusion than clarity. For example, a 5-8 benchmark requiring students to "apply grammatical and language conventions to communicate" includes a performance standard asking students to "relate prior knowledge to textual information," something that seems better suited to reading than to a conventions benchmark.

Finally, the K-8 standards are plagued with performance standards that are so broad and unmeasurable as to be instructionally meaningless, such as:

> Increase vocabulary through reading, listening and interacting (grade 4)
>
> Respond to non-fiction using interpretive, critical and evaluative processes (grade 4)

It's clear that New Mexico has invested significant time in improving the organization and clarity of the 9-12 ELA standards. Unfortunately, because the organization of the K-8 standards is so poor and the standards so vague, New Mexico can earn no higher than one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

While there is much room for improvement in the New Mexico ELA standards, a few bright spots can be seen. The performance standards include reasonably clear expectations for phonics and phonemic awareness. They address listening and speaking skills in each grade, including standards that provide criteria for making formal oral presentations. The standards for conventions are generally good and require mastery of essential grammar content. And the state has wisely chosen to include a separate strand focused on essential research skills.

Unfortunately, as noted above, the 9-12 standards are far superior and provide more guidance about what essential content and skills students should master than do the K-8 standards. (See a vocabulary example supplied above.)

The high school standards include a separate strand for logic that admirably focuses on argument—assessing the truth and validity of an argument, recognizing, explaining, and analyzing fallacious reasoning, and analyzing rhetorical strategies.

There is also a new high school strand devoted to literary elements that clearly describes the content and skills that students must master, such as:

> Analyze various aspects of characterization (e.g., antagonist/protagonist, hero/heroine, tragic hero, archetype, stock character, flat character/round character, static character/dynamic character, foil) (grade 10)
>
> Analyze essential elements of plot (e.g., setting, exposition, conflict, rising action, climax, denouement) and identify the various effects of flashback, foreshadowing, and multiple subplots (grade 10)
>
> Identify characteristics of common genre fiction (e.g., science fiction, fantasy, magical realism, mystery, suspense, Western, horror, romance, Gothic literature, Manga, etc.) (grade 10)

Poetry and drama also have separate, more specific, and rigorous benchmarks in grades 9-12.

Content Weaknesses

As noted earlier, the weaknesses of the New Mexico standards are concentrated at the K-8 level. In reading, the K-8 standards disproportionately focus on comprehension skills and strategies, rather than essential content, and it is frequently difficult to track the progression of skills from grade to grade. What's more, no standards reflect the importance of reading grade-appropriate works of American literature, nor is there any guidance—book lists, authors, etc.—about the types, amount, or complexity of reading that students should be doing.

While the state does list genres that students should read, the K-8 standards do not provide genre-specific performance standards that would help teachers better understand what content and skills students should focus on within each genre. Take, for example, the exhausting and instructionally useless fourth-grade standard below:

> Read a variety of texts, including: fiction (e.g., legends, novels, folklore, science fiction), non-fiction (e.g., auto-biographies, informational books, diaries, and journals), poetry, drama (grade 4)

The state includes K-8 standards that specify the writing genres that students should study each year, but again the expectations fail to consistently clarify the essential characteristics of those genres. For instance, the K-4 standards provide very little genre-specific guidance, whereas the 5-8 standards include some clear expectations for research and argument. (These, however, are inexplicably buried in a reading strand, rather than among the writing standards.)

The K-8 standards do not require that students study synonyms, antonyms, basic prefixes and suffixes for identifying word meanings, compound words, multiple-meaning words. (They do expect students to use affixes to decode and to distinguish multiple-meaning words when writing, but they don't include either of these elements as part of a comprehensive vocabulary acquisition program.)

Finally, a disproportionately large number of reading standards focus on students' personal connections to texts, such as "evaluating personal circumstances and background that shape interaction with literature and media" (grade 8), which suggests that all interpretations are equally valid, depending on one's own perspective.

New Mexico's failure to delineate clear expectations for grades K-8 leaves more than 35 percent of the essential K-12 content missing, thus earning the standards four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, New Mexico's ELA standards are mediocre. Those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Land of Enchantment has in place today.

New Mexico • Mathematics

DOCUMENTS REVIEWED[1]

Mathematics Content Standards, Benchmarks, and Performance Standards. June 2002; Reformatted January 2008. Accessed from: http://www.ped.state.nm.us/MathScience/dlo8/Standards/MathStandardsComplete2008.pdf

Overview

New Mexico's standards are so excessive in number that they are difficult to read. There are weaknesses in arithmetic and in high school mathematics, but the greatest shortcoming is a failure to set priorities.

Clarity and Specificity:	1/3
Content and Rigor:	4/7
Total State Score:	**5/10**
(Common Core Grade: A-)	

General Organization

The standards are organized by content strands such as Algebra and Geometry. These strands are further subdivided into "Benchmarks," which are finally broken down into grade-level "Performance Standards."

High school is not broken down into grades, but rather into content strands, which are slightly different from those for K-8. The organization by Benchmarks and Performance Standards is the same as for K-8.

Clarity and Specificity

Some of New Mexico's standards are excellent and explain exactly what a student should be able to do. Examples are often provided to clarify standards, such as:

> Solve simple multiplication and division problems (e.g., 135 ÷ 5 = __) (grade 3)

Unfortunately, the important standards are completely overwhelmed by the sheer number of standards, leaving readers with the general impression that New Mexico's math standards are unfocused and unclear. They lack clarity in two ways: they are poorly organized, and many of the statements lack specificity.

The standards are so numerous that they are repetitious and their presentation seems haphazard. Topics may be mentioned many times, even within a grade, and may appear in different places under different headings. For example, in the seventh grade, "add and subtract fractions with unlike denominators" appears twice under different Benchmarks. In second grade, there are at least seven standards relating to addition that appear under various Benchmarks. This makes it very difficult to determine what students are supposed to know about addition in second grade. This confusion continues throughout the standards, and the scope and sequencing of important content becomes very difficult to discern.

In addition, many standards are also vague, overly general, and hard to measure, such as:

> Participate in group and individual activities based on the concepts of space and location (grade 1)
>
> Select and use an appropriate model for a particular situation (grade 7)

The excellent content within the standards is buried among voluminous and vaguely worded expectations. These shortcomings render them of little guidance to users. (See the *Common Grading Metric*, Appendix A.) Accordingly, New Mexico receives a Clarity and Specificity score of one point out of three.

Content and Rigor

Content Priorities

The gravest problem with New Mexico's standards is in their failure to prioritize content. Given the sheer number of standards presented at each grade—generally more than sixty, typically divided further into lists of sub-standards—the reader is left with no guidance about what content is most important. Vague standards about "concepts of space and location" (see example above) appear to be weighted equally with key topics such as counting and beginning addition and subtraction.

In fourth grade, whole-number operations culminate with an excellent standard requiring that students use the standard algorithms for arithmetic. Teaching students to master these algorithms is an appropriate focus for much of fourth grade mathematics. Yet this is just one standard out of sixty-one, with no indication that it is particularly important. Similarly, fractions are covered in only a few of the many fourth-grade standards.

Fewer than 30 percent of the math standards in the elementary grades are devoted to developing arithmetic, a woefully inadequate proportion given the centrality of this content at this stage of schooling.

Content Strengths

New Mexico covers much of the essential content, often rigorously. Basic properties of arithmetic such as commutativity, associativity, and distributivity are covered, as are the inverse nature of addition and subtraction and of multiplication and division. An outstanding feature is that students are expected to understand and use the standard algorithms for whole-number arithmetic.

The high school standards include much essential content, including proofs in geometry and many STEM-ready topics such as geometric series, exponential and logarithmic functions, and trigonometric identities.

Content Weaknesses

Although the capstone standards for whole-number arithmetic are explicit and appropriate, the prerequisite instant recall with basic number facts is not required. The highest such requirements are these second- and third-grade standards:

> Use addition combinations (addends through 10) and related subtraction combinations (grade 2)
>
> Compute with basic number combinations (e.g., multiplication pairs up to 10 x 10 and their division counterparts) (grade 3)

Using or computing with the number facts is not the same as recalling them with automaticity. The standards do not adequately specify that students have automaticity, or quick recall, of basic number facts. These are the basic building blocks for future mathematics; students who are still struggling with basic facts are not prepared to move on to the next level of mathematics.

In high school, the treatment of quadratic equations is incomplete. The technique of completing the square is not included, and this makes it impossible to do a thorough analysis of quadratic equations and their graphs. Also missing in the high school standards are such STEM topics as the manipulation of complex numbers and polar coordinates.

The biggest issue with New Mexico's standards, however, is their failure to set priorities. Combined with missing content related to quadratics and STEM in high school, these critical shortcomings result in a Content and Rigor score of four points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, New Mexico's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Land of Enchantment has in place today.

1 Fordham's 2005 *State of State Math Standards* reviewed New Mexico's June 2002 content standards document. In January 2008, the content standards were reformatted, changing the document some. Along with these changes to the document reviewed, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Through this new lens, and with this reformatted standards document, New Mexico's math grade dropped from a B to a C. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=338&pubsubid=1173#1173

New York • English Language Arts

DOCUMENTS REVIEWED

Learning Standards for English Language Arts. March 1996.
Accessed from: http://www.emsc.nysed.gov/ciai/ela/pub/elalearn.pdf

English Language Arts Core Curriculum. May 2005.
Accessed from: http://www.emsc.nysed.gov/ciai/ela/elacore.pdf

Student Work. March 1996.
Accessed from: http://www.emsc.nysed.gov/ciai/ela/pub/elawork.pdf

Overview

The presentation of the New York State Learning Standards for ELA—and the accompanying *English Language Arts Core Curriculum*—is somewhat confusing; and although much of the essential K-12 ELA content is included, it is often buried among non-essential standards more focused on instructional strategies than on student outcomes. In addition, many vaguely worded standards leave too much room for weak or inconsistent implementation across schools and districts.

Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(Common Core Grade: B+)	

General Organization

New York's ELA standards consist of two documents: the *Learning Standards for English Language Arts* and *the English Language Arts Core Curriculum.*

The former is divided into four standards common to all grades:

- Information and understanding
- Literary response and expression
- Critical analysis and evaluation
- Social interaction

Each of these standards is broken down into four strands (Reading, Writing, Listening, and Speaking). Each strand then describes expectations for three grade bands: elementary, intermediate, and commencement.

These learning standards are supplemented by the *English Language Arts Core Curriculum*, which is where one finds grade-specific performance indicators (what are typically thought of as "standards"). The *Core Curriculum* is divided into three categories:

- "Core performance indicators," which are common to all grades and which broadly describe what students should know and be able to do across all four standards
- "Literacy competencies"
- Grade-specific "performance indicators"

While the "literary competencies" and "performance indicators" are presented separately, the difference between the two is not immediately clear.

KSDE002216

Finally, the state provides "sample tasks" to accompany selected performance indicators, as well as a supplementary document containing examples of student work, "intended to begin articulating the performance standards for each level of achievement."

Clarity and Specificity

The organization of the standards is somewhat muddled. It appears that the "learning standards" are broad descriptions of what students should know and be able to do across three different grade bands (elementary, intermediate, and commencement), yet the state does not clearly link these standards to the performance indicators found in the *Core Curriculum.*

The presentation of the latter document is equally confusing. The state breaks its expectations into "literary competencies" and "performance indicators," but it's difficult to understand what the intended difference between the two is; both include statements that describe what students should know and be able to do at each grade.

In addition, much of the language in both documents is too vague and generic to guide curriculum, instruction, or assessment development. Take, for example, the following performance indicators for the fifth-grade "critical analysis and evaluation" standard:

> Use strategies, such as note taking, semantic webbing, or mapping, to plan and organize writing (grade 5)
> Analyze the impact of an event or issue from personal and peer group perspectives...(grade 5)

While the inclusion of the supplementary document with student work samples and examples of student writing is admirable, the document itself feels unfinished and is somewhat difficult to navigate.

Such defects muddle the overall presentation, earning the standards two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The standards include reasonably clear expectations for research papers. Students at the high school level are expected to use primary and secondary sources, select and limit their topics, use language appropriate to research, and accurately cite sources.

The expectations for K-8 grammar are similarly clear, although they could be strengthened by delineating a clearer progression from middle to high school.

The standards also devote ample attention to listening and speaking skills and to the analysis of media.

Many of the writing performance indicators are clear and outline important genre-specific expectations across grade levels. For example, these standards include:

> Narrative:
> - Develop literary texts that contain characters, simple plot and setting
> - Use rhythm and rhyme to create short poems and songs (grade 4)

> Informational/Expository Writing:
> - Use at least two sources of information when writing a report.
> - State a main idea and support it with facts and details.
> - Use organizational patterns such as compare/contrast and time/order for expository writing.
> - Compare and contrast ideas between two sources (grade 4)

KSDE002217

Many Reading standards are similarly detailed, including:

> Use indexes to locate information and glossaries to define terms (grade 7)
>
> Identify the author's point of view, such as first-person narrator and omniscient narrator (grade 7)
>
> Determine how the use and meaning of literary devices (e.g., symbolism, metaphor and simile, alliteration, personification, flashback and foreshadowing) convey the author's message or intent (grade 7)

Content Weaknesses

The problem of vagueness noted above is exacerbated in the Reading standards by the omission of any authors or literary works across grades K-8. Take, for example, the following fourth-grade reading standard:

> Identify literary elements, such as setting, plot, and character, of different genres, with assistance (grade 4)

Such standards are meaningless unless the state makes it clear that students should be working with sufficiently rigorous and complex texts.

While the high school standards make some attempt to supply such guidance, the language of the performance indicators is too vague to ensure that students are reading consistently complex and rigorous texts across schools and districts. For example:

> Read a selection of poems of different forms, including sonnets, lyrics, elegies, narrative poems, and odes, and recognize the effect of the structure and form on the meaning (commencement)
>
> Act out scenes from a full-length play in class (commencement)
>
> Read and interpret works of recognized literary merit from several world cultures and recognize the distinguishing features of those cultural traditions (commencement)

The standards also make no mention of American literature. Instead, they merely emphasize reading a "wide range" of literature.

While important content (mentioned above) is included in the New York standards, much of it is hard to find because it's buried among standards laced with unnecessary content or distracting detours into pedagogy. For example:

> Get to know the writer through friendly notes, cards, longer letters, and personal narratives read aloud to classmates and fellow listeners (grade 3)
>
> Share the process of writing with peers and adults; for example, write a condolence card, get-well card, or thank-you letter with writing partner(s) (grade 10)
>
> Share reading experiences to build relationships with peers or adults; for example, read together silently or aloud (grade 4)

Finally, the standards place disproportionate emphasis on "social interaction." Not only does each standard implicitly address social interaction ("Students will read, write, listen, and speak for..."), but the fourth standard ("Students will read, write, listen, and speak for social interaction") is explicitly devoted to it.

Thus, despite a few areas of strength and the effort at comprehensiveness, the standards lack literary content, contain much vague language, leave excessive room for weak implementation, and include far too many standards focused on social interaction, pedagogy, or unnecessary content. Taken together, these shortcomings cause the omission of more than 35 percent of the critical K-12 ELA content, leaving New York with a score of four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, New York's ELA standards are mediocre. Those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Empire State has in place today.

KSDE002218

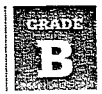
New York • Mathematics

DOCUMENTS REVIEWED

Mathematics Core Curriculum MST Standard 3, PreKindergarten-12. Revised March 2005. Accessed from: http://www.emsc.nysed.gov/3-8/MathCore.pdf

Overview

New York's standards are generally strong. They cover much of the essential content with both depth and rigor. The main weakness in the standards is with the development of arithmetic. Though it is reasonably prioritized, its coverage is not quite rigorous enough. High school content is often strong, including STEM-ready material.



Clarity and Specificity:	2/3
Content and Rigor:	5/7
Total State Score:	**7/10**
(Common Core Grade: A-)	

General Organization

The Pre-K-12 standards are divided into five content strands, such as Number Sense and Operations and Algebra. (An additional five process strands are also provided.) Each strand is subdivided into topics, and then, for grades K-8, into grade-specific standards.

The high school standards follow a similar organizational structure, except the standards are presented by course rather than by grade.

Clarity and Specificity

The content standards are generally well presented and easy to read. However, these useful content standards are buried after a very long list of vague process standards, such as:

> Explore, examine, and make observations about a social problem or mathematical situation (grades K-4)
>
> Observe patterns and formulate generalizations (grades 7-8)
>
> Use mathematics to show and understand social phenomena (grades 1-8, all high school courses)

Worse, the state generally provides a greater number of process standards than content standards at each grade, thus burdening the standards with unnecessary and potentially distracting content.

Once past the vague process standards, the content standards are generally well presented and easy to read and understand. Most statements are succinct and detailed, for example:

> Skip count by 4's to 48 for multiplication readiness (grade 2)
>
> Measure objects, using ounces and pounds (grade 3)
>
> Know and understand equivalent standard units of length:
>
> 12 inches = 1 foot
>
> 3 feet = 1 yard (grade 4)

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Some standards, however, are vague, such as:

> Formulate questions about themselves and their surroundings (grades 2-3)
> Understand the concept of rate (grade 6)

It is not clear what students are expected to know or what kinds of problems they should be able to solve.

The standards even go so far as to redefine words. For example, according to the state, the word "justify" can mean to find "a set of examples that supports the conjecture," something that would not normally be considered a justification.

The high school standards are generally explicit, detailed, and rigorous. An example is this series on lines from the high school course in Integrated Algebra:

> Explain slope as a rate of change between dependent and independent variables
> Determine the slope of a line, given the coordinates of two points on the line
> Write the equation of a line, given its slope and the coordinates of a point on the line (Integrated Algebra)

While the plethora of process standards in each grade detracts from ease of reading, the content standards themselves are generally clear and well presented. Still, because some standards are too broadly stated to determine the intent, New York does not quite provide a "complete guide to users," and therefore receives a Clarity and Specificity score of two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

New York does not explicitly set priorities among its standards, though it does implicitly prioritize content through the number of standards devoted to particular topics. Admirably, New York prioritizes arithmetic reasonably well by devoting nearly half of the content standards in the crucial elementary grades to it.

Content Strengths

The structure of arithmetic—commutativity, associativity, distributivity, and the inverse nature of addition and subtraction and of multiplication and division—is well covered.

The number line is introduced early and continued throughout. Fractions are explicitly placed on the number line in this standard, which also makes explicit the connection of fractions to division:

> Develop an understanding of fractions as locations on number lines and as divisions of whole numbers (grade 4)

High school coverage is often excellent. Besides the examples above, the development of linear equations continues in Integrated Algebra with:

> Write the equation of a line, given the coordinates of two points on the line (Integrated Algebra)
> Write the equation of a line parallel to the x- or y-axis (Integrated Algebra)
> Determine the slope of a line, given its equation in any form (Integrated Algebra)

Quadratic equations are well covered and include the important technique of completing the square.

Geometry is extraordinary in its attention to detail and covers significant content quite well. In addition, most STEM-ready content is covered, including material on trigonometry and logarithms.

Content Weaknesses

The development of whole-number arithmetic is inadequate, in part because instant recall of the basic number facts is not explicitly required.

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The continued development of whole-number arithmetic is missing both fluency and the standard algorithms, the crucial capstone standards for whole-number arithmetic. Instead, the standards specify "a variety of strategies" as in these for addition and subtraction:

> Use a variety of strategies to add and subtract 3-digit numbers (grade 3)
> Use a variety of strategies to add and subtract numbers up to 10,000 (grade 4)

There are similar standards for multiplication and division and all operations for decimals. Worse, when computations get more complicated, the standards explicitly state that a calculator should be used:

> Use a variety of strategies to multiply three-digit by three-digit numbers Note: Multiplication by anything greater than a three- digit multiplier/multiplicand should be done using technology (grade 5)

The development of fractions is missing common denominators.

One standard is at best misleading:

> Determine whether a given triangle is a right triangle by applying the Pythagorean Theorem and using a calculator (grade 7)

Calculators cannot make this determination, which requires the converse of the Pythagorean Theorem, not the theorem itself.

Although the geometry standards in high school are often excellent, there are some issues with proof and the foundations for geometry. The phrase "investigate, justify, and apply theorems" is used often. Proofs of major theorems are not specified, and axioms are included only in the introduction to the geometry course.

New York covers much of the essential content quite well, particularly in high school. In K-8, though arithmetic is reasonably prioritized, there are some weaknesses in its development. These few shortcomings result in a Content and Rigor score of five points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of B, New York's mathematics standards are decent, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are superior to what the Empire State has in place today.

KSDE002221

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

North Carolina • English Language Arts

DOCUMENTS REVIEWED

North Carolina Standard Course of Study for English Language Arts. 2004.
Accessed from: http://www.ncpublicschools.org/curriculum/languagearts/scos/2004/

Overview

The *North Carolina Standard Course of Study for English Language Arts* is one of the most befuddling sets of standards reviewed for this report. It is difficult to describe its organization and purpose, for neither is obvious to the reader. The standards are jam-packed with jargon and littered with generic skills that appear in multiple strands (often nonacademic skills, such as personal reflection). Glimpses of good content can be found in early reading, vocabulary, analysis of arguments, and even conventions, but in many places the standards are devoid of academic content.

Clarity and Specificity:	0/3
Content and Rigor:	3/7
Total State Score:	**3/10**
(Common Core Grade: B+)	

General Organization

The North Carolina ELA standards are divided into three strands: Oral Language, Written Language, and Media/Technology use. For each strand, the state lists five or six "competency goals," such as these for grade 5:

- Competency Goal 1: The learner will apply enabling strategies and skills to read and write
- Competency Goal 2: The learner will apply strategies and skills to comprehend text that is read, heard, and viewed
- Competency Goal 3: The learner will make connections through the use of oral language, written language, and media and technology
- Competency Goal 4: The learner will apply strategies and skills to create oral, written, and visual texts
- Competency Goal 5: The learner will apply grammar and language conventions to communicate effectively (grade 5)

While these goals appear to approximate traditional ELA standards categories, the lines among reading, writing, listening, and speaking are frequently blurred in confusing ways. Some goals remain the same over a few grade levels and then morph into new goals at other grade levels. Each of the competency goals are broken into grade-level objectives.

Clarity and Specificity

The North Carolina standards are rarely specific, and even more rarely clear. One reason is that the "competency goals" for each grade are all-encompassing, and the standards that appear under them are simply long lists of generic, skills-based expectations. For example:

> Goal 1: The learner will use language to express individual perspectives through analysis of personal, social, cultural, and historical issues (grade 7)

This competency goal does not specify what academic content is covered, nor do the standards that follow, which state that the student will: "narrate a personal account...," "analyze expressive materials that are read, heard, and/or viewed," "interact in group activities...," and "reflect on learning experiences...." (The second standard is itself followed by a list of metacognitive strategies for analyzing expressive materials, such as "making connections between works, self and related topics.") But what products are students producing and why? What kinds of texts are they reading, hearing, and

KSDE002222

viewing? North Carolina supplies scarcely even a clue. The standards throughout the grades include similar lists of skills unconnected to any actual content.

The standards themselves are overloaded with sweeping or otherwise unclear language, as in this second-grade standard:

> Use text for a variety of functions, including literary, informational, and practical (grade 2)

"Using" texts is not something that can be assessed. A similar standard, which states that students should "read a variety of texts," appears in several grades, including this fifth-grade standard:

> Read a variety of texts, such as:
> - fiction (tall tales, myths)
> - nonfiction (books of true experience, newspaper and magazine articles, schedules)
> - poetry (narrative, lyric, and cinquains)
> - drama (plays and skits) (grade 5)

Much more guidance is needed to know what students should read and what they should do with what they have read.

At the upper grades, the standards tend to get even more abstract, as in this standard from grade 12:

> Analyze general principles at work in life and literature by:
> - discovering and defining principles at work in personal experience and in literature
> - predicting what is likely to happen in the future on the basis of those principles (grade 12)

These significant shortcomings of organization make it impossible to give North Carolina points for Clarity and Specificity. As a consequence, they earn zero points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

The North Carolina standards exhibit a few spots where the language is specific enough to convey rigorous expectations for students, but overall the weaknesses far outweigh the strengths.

Content Strengths

Standards for early reading are fairly clear and specific in grades K-3. Phonemic awareness and phonics are addressed, as in this standard from grade 1:

> Demonstrate decoding and word recognition strategies and skills:
> - generate the sounds from all the letters and appropriate letter patterns which should include consonant blends and long and short vowel patterns
> - use phonics knowledge of sound-letter relationships to decode regular one-syllable words when reading words and text
> - recognize many high-frequency and/or common irregularly spelled words in text (e.g., have said, where, two)
> - read compound words and contractions
> - read inflectional forms (e.g., -s, -ed, -ing) and root words (e.g., looks, looked, looking)
> - read appropriate word families (grade 1)

Long lists of comprehension strategies are also offered, some of which are unmeasurable and are really just instructional activities, but at least most of the core content for early reading can be found here.

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American literature is specifically addressed in grade 11—as is British literature in grade 12. The grade 11 standard reads:

> Interpret the significance of literary movements as they have evolved through the literature of the United States by:
> - analyzing the characteristics of literary genres, including fiction, nonfiction, drama, and poetry, and how the selection of genre shapes meaning
> - relating ideas, styles, and themes within literary movements of the United States
> - understanding influences that progress through the literary movements of the United States
> - evaluating the literary merit and/or historical significance of a work from Colonial Literature, the Romantic Era, Realism, the Modern Era, and Contemporary Literature (grade 11)

North Carolina deserves credit for making this attempt to codify the importance of studying our literary heritage.

The standards do a decent job of addressing oral and written language conventions, with a competency goal at each grade level identifying specific content to be mastered. Similarly, the standards cover research fairly well, although the content is buried in a generic goal about "using and evaluating information from a variety of resources."

In upper grades, the standards address the analysis of "argumentative works" in ways that convey real expectations for students.

Content Weaknesses

The greatest weakness of the North Carolina standards is that no priority is given to real academic content, which is included along with many, many nonacademic goals for students (for instance, appraising changes in themselves).

In reading, literature and nonfiction are consistently considered in the same breath, making it difficult to know what students are supposed to do with each type of text. These standards (like the one appearing below) tend to be repeated across grades.

> Identify and interpret elements of fiction and nonfiction and support by referencing the text to determine the:
> - author's purpose
> - plot
> - conflict
> - sequence
> - resolution
> - lesson and/or message
> - main idea and supporting details
> - cause and effect
> - fact and opinion
> - point of view (author and character)
> - author's use of figurative language (e.g., simile, metaphor, imagery) (grades 3-4)

Other student expectations for reading have more to do with personal feelings and responses than with analyzing genres, literary elements, stylistic devices, or rhetorical techniques. Consider this eighth-grade standard:

> Reflect on learning experiences by:
> - evaluating how personal perspectives are influenced by society, cultural differences, and historical issues.
> - appraising changes in self throughout the learning process.
> - evaluating personal circumstances and background that shape interaction with text (grade 8)

Such nonacademic expectations have no place in a state standards document.

Finally, with regard to reading, the quality and complexity of reading materials are never defined; there is no list or other "exemplar" document that would indicate what students should be reading at each grade.

The Writing standards suffer from the same problem of not indicating what kind of writing should be produced at each grade, or even noting the characteristics of each genre. Standards cover a mish-mash of genres, as in this fourth-grade standard:

> Compose fiction, nonfiction, poetry, and drama using self-selected and assigned topics and forms (e.g., personal and imaginative narratives, research reports, diaries, journals, logs, rules, instructions) (grade 4)

It would be much more helpful if specific characteristics of each genre were outlined and scaffolded at appropriate grade levels.

In twelfth grade, there are two "feel-good," experience-centric standards:

> Compose reflective texts that give the audience:
> - an understanding of complex thoughts and feelings
> - a sense of significance (social, political, or philosophical implications)
> - a sense of encouragement to reflect on his or her own ideas (grade 12)
>
> Compose texts (in print and non-print media) that help the audience understand a principle or theory by:
> - researching experience for relevant principles that relate to themes in literature and life.
> - presenting a thesis, supporting it, and considering alternative perspectives on the topic.
> - adjusting the diction, tone, language, and method of presentation to the audience (grade 12)

Listening is covered only superficially, embedded in standards about comprehending text that is "read, heard or viewed." No standards for formal oral presentations are included, nor any for their evaluation. Multimedia is not addressed.

Taken together, these shortcomings leave over 65 percent of the essential ELA content missing from the standards, earning North Carolina three points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, North Carolina's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Tar Heel State has in place today.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

North Carolina • Mathematics

DOCUMENTS REVIEWED

North Carolina Essential Standards—Mathematics. 2009.
Documents supplied to Fordham[1]

Overview

North Carolina's standards are well presented and easy to read. However, they are often poorly phrased and difficult to interpret. In the K-8 material, arithmetic is moderately prioritized, but the development is inadequate. The high school content is sometimes strong, sometimes not.

Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(Common Core Grade: A-)	

General Organization

The K-8 standards are grouped into five strands, such as Number and Operations and Measurement. Each strand is divided into "Essential Standards," and then subdivided into grade-specific "Clarifying Objectives." For the purposes of this review, we refer to both—the Essential Standards and Clarifying Objectives—as standards.

The high school standards follow a similar organization, with two important distinctions. First, standards are presented by course, such as Math A and Math BC, rather than by grade. Second, an additional strand focused on "Discrete Mathematics" is included.

Clarity and Specificity

The standards are well presented and easy to read. Statements are generally concise and some are clear, such as:

> Use formulas to determine the area and circumference of circles (grade 6)

However, despite the initial impression of readability, the North Carolina math standards contain numerous clarity problems. Some are just poorly stated, with no attention to grammatical conventions, such as:

> Understand counting by 10's and 100's on and off the decade (grade 2)
> Understand patterns to translate it into new forms (grade 3)
> Use various phrases to read time (quarter 'til, noon, etc.) (grade 3)
> Use order of operations (grade 4)
> Apply multiplication and division to non-negative fractions (grade 6)

Many others are too broadly stated to interpret, such as:

> Identify patterns and trends to make decisions using data (grade 2)
> Represent situations as algebraic equations (grade 5)
> Understand misuses of surveys, sampling, graphs and statistics (grade 8)
> Use critical path analysis and weighted digraphs to optimally schedule large projects that are comprised of many smaller tasks (high school, Math A)
> Infer conclusions from given information (high school, Math BC)

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Many standards also have distinctive problems. For example, there is no relationship between perimeter and area, so this standard is confusing:

> Understand the relationship between area and perimeter of composite rectangular figures (grade 4)

Additionally, triangles are not used to categorize polygons, but rather are a type of polygon, so the following standard is confusing:

> Use triangles to categorize polygons by the sums of the measures of interior angles (grade 5)

Because there are no arithmetic algorithms that simplify rational expressions in general, this standard is mysterious:

> Use arithmetic algorithms to simplify rational expressions (high school, Math BC)

In high school, besides problems with the statements themselves, the presentation of specific topics is often incoherent. Standards on specific topics, such as quadratic equations, may be scattered across various strands rather than appearing together.

Although seemingly easy to read and well organized, North Carolina's standards include many poorly stated and/or difficult-to-interpret standards. They "offer limited guidance to users" and receive a Clarity and Specificity score of one point out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

North Carolina does not provide explicit guidance as to priorities. Implicitly, however, arithmetic is moderately prioritized with about 40 percent of the standards in appropriate grades devoted to its development.

Content Strengths

The standards include some content that is often overlooked. Conversion between measurement systems is included:

> Use given conversion factors to convert measures given in either customary or metric units to the other system (grade 7)

High school geometry is strong in places. Proof and postulates are both explicitly required, as in:

> Summarize the structure and relationships between undefined terms, defined terms, axioms/postulates, methods of reasoning and theorems (high school, Math BC)
> Construct arguments to prove the Pythagorean Theorem and its converse in multiple ways (high school, Math BC)

Content Weaknesses

The development of arithmetic has many weaknesses. While addition and subtraction facts are covered, no appropriate standard states that students must memorize the basic facts for multiplication and division. In addition, no clear standard states that they must understand and use the inverse nature of multiplication and division.

Standard methods and procedures are also missing. Instead, unspecified "strategies" are to be used. The following standards, which trace the development of whole-number addition and subtraction, illustrate this:

> Use multiple strategies to solve multi-digit, single-step and multi-step addition and subtraction problems (grade 3)
> Use strategies to develop fluency in solving problems using up to four-digit addition and subtraction (larger number with calculator) (grade 4)
> Use strategies to develop fluency in whole-number addition and subtraction to solve multi-step problems in context (grade 5)

Such standards do not ensure that students master the standard algorithms for whole-number addition and subtraction. The use of "strategies" and lack of specificity as to method continues:

KSDE002227

> Use a variety of strategies to solve problems involving addition and subtraction of fractions with unlike denominators (grade 5)
> Use a variety of strategies to solve problems involving addition and subtraction of decimals (grade 5)

North Carolina's standards fail to mention common denominators.

They also display weaknesses in the development of area. Formulae for the area of rectangles or triangles are not provided. Nor is the area of a triangle developed, although one assumes it is meant to be included in the following standard:

> Calculate the area of polygons (grade 6)

In high school, there are some weaknesses in coverage. Quadratic equations are not studied thoroughly. Missing content includes completing the square and max/min problems using quadratics.

The STEM-ready content does not include inverse trigonometric functions.

Taken together, these amount to serious problems that result in a Content and Rigor score of three points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, North Carolina's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Tar Heel State has in place today.

1 While these 2009 standards are North Carolina's most recently adopted mathematics standards, they have not yet been put into use. Students and teachers are still responsible to the previous, 2003 version of the standards. When North Carolina adopted the Common Core standards (in June 2010), they removed these 2009 standards from the website to replace them with the Common Core. The North Carolina State Department of Education supplied Fordham with a copy of the 2009 standards (as they are the most recently adopted) for review.

KSDE002228

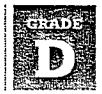
North Dakota • English Language Arts

DOCUMENTS REVIEWED[1]

North Dakota English Language Arts Content and Achievement Standards: Grades K-12. April 2005.
Accessed from: http://www.dpi.state.nd.us/standard/content/ELA/ELA.pdf

Overview

While the organization of the North Dakota ELA standards is fairly clear and straightforward, the expectations themselves are vague, and what limited rigorous content exists is buried deep among distracting and unnecessary standard-specific rubrics.



Clarity and Specificity:	1/3
Content and Rigor:	2/7
Total State Score:	**3/10**

(*Common Core Grade: B+*)

General Organization

The K-12 North Dakota ELA standards are organized first into six content standards, which are common across all grade levels and provide "a [very broad] description of what students should know and be able to do within English language arts," including:

- Standard 1: Students engage in the research process
- Standard 2: Students engage in the reading process
- Standard 3: Students engage in the writing process
- Standard 4: Students engage in the speaking and listening process
- Standard 5: Students understand media
- Standard 6: Students understand and use principles of language

These six standards are divided into topics, then into grade-level "benchmark expectations."

The state also provides "achievement standards" for each benchmark expectation. These are essentially rubrics describing four levels of proficiency for each benchmark expectation—advanced proficient, proficient, partially proficient, and novice.

Clarity and Specificity

While North Dakota has striven to define grade-specific expectations for ELA, there is little to crow about in this framework.

On the positive side, the standards are presented clearly and in easy-to-read format. Some provide examples and lists to clarify expectations, such as the following third-grade writing and sixth-grade reading standards:

> Organize and develop paragraphs with topic sentences, indentation, punctuation, and capitalization (grade 3)
> Identify literary elements, including plot, setting, characters, conflict, resolution, dialogue, and flashback (grade 6)
> Identify figurative language, including personification, simile, metaphor (grade 6)

The early-reading benchmarks dealing with phonics and phonemic awareness are also reasonably specific, though several need additional detail to further clarify expectations for teachers and students.

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Unfortunately, the few adequately detailed benchmark expectations are dwarfed by the sheer number of vaguely worded expectations that leave far too much room for interpretation. Take, for example, the following sixth-grade writing benchmark expectation:

> Use strategies to write for different audiences and purposes (grade 6)

By failing to define the audiences or purposes for writing, this standard is essentially meaningless.

In addition, the rigor of benchmark expectations is neither well developed nor aligned from grade to grade. For example, the standards expect students to write persuasive essays in the upper elementary grades, but aren't expected to "identify persuasive texts" until ninth grade. Similarly, the standards ask the students to "use and interpret the meaning of similes, metaphors, alliteration, onomatopoeia, and idioms" at grade 4, but are asked only to identify these elements of figurative language at grade 6.

Finally, the "achievement standards" represent a missed opportunity to clarify expectations. Rather than provide explicit standard- and grade-specific guidance, these rubrics often include generic statements that make empty distinctions between achievement levels. Take, for example, the following achievement standards for the second-grade reading standard "Relate [sic] text-to-self, text-to-text, and text-to-world connections":

Advanced Proficient:	Students make insightful text-to-self, text-to-text, and text-to-world connections.
Proficient:	Students consistently make text-to-self, text-to-text, and text-to-world connections.
Partially Proficient:	Students sometimes make text-to-self, text-to-text, and text-to-world connections.
Novice:	Students rarely make text-to-self, text-to-text, and text-to-world connections.

Such explanations do nothing to clarify what, precisely, students should know and be able to do.

Such critical shortcomings leave North Dakota with a score of one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The research standard is perhaps the strongest of the North Dakota content strands, with benchmarks that show a clear progression of skills from grade to grade and clearly require students to learn all the essential elements of the research process.

Standards for English language conventions are reasonably strong, covering nearly all the essential grammar content that students must master to be college- and career-ready. The early-reading standards also demonstrate a clear focus on essential phonics and phonemic awareness skills.

Finally, North Dakota makes some attempts to prioritize essential content across the grades. For example, narrative writing drops out in high school so the focus there is clearly where it should be, on informational and persuasive writing.

Content Weaknesses

Unfortunately, many of the benchmark expectations fail to specify the critical content that students must master to be college- and career-ready.

Vocabulary standards do not address etymology and mention learning Greek and Latin roots only in passing. Connotation and denotation are not explicitly mentioned until ninth grade, and there are *no* vocabulary standards for tenth grade.

The reading standards for middle and high school are often general. In grades 5–8, the state fails to articulate meaningful expectations around the analysis of informational texts, and the high school standards are not sufficiently rigorous. For example, one ninth-grade benchmark requires students to:

> Identify the organizational features of fiction, drama, and poetry, i.e., stanza, act, scene, chapter, verse, and article (grade 9)

In high school, students should be doing much more sophisticated literary analysis.

Across all grade levels, the standards also fail even to mention American literature and provide no guidance about the quality or number of texts that students should be reading from grade to grade.

The standards addressing media are muddled, as they define media as any mass media—newspapers, magazines, books—and therefore fail to distinguish multimedia from print as a genre.

Finally, the K-12 standards are riddled with unnecessary, distracting, and unmeasurable benchmarks, such as:

> Read to develop life-long reading skills and habits (grade 6)
>
> Use graphic organizers and summarizing to enhance comprehension (grade 6)
>
> Apply universal themes to real-life situations (grade 10)

Such benchmarks add no value, and North Dakota would do well to delete them to leave room for more detailed, content-driven benchmark expectations in every grade.

What's more, the majority of North Dakota's standards document is devoted to the "achievement standards," which, as mentioned above, add little value. For each benchmark expectation, four proficiency descriptors are provided in the achievement standards rubrics, but these proficiency descriptors make meaningless distinctions between levels. Given that such statements make up 80 percent of the text on each page of the standards, their lack of utility and applicability is a serious failing.

Taken together, the combination of vaguely worded standards that leave as much as 65 percent of the essential K-12 ELA content missing and the inclusion of repetitive, vacuous achievement standards that put a disproportionate emphasis on unnecessary (and unhelpful) content earn the state a score of two points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, North Dakota's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Peace Garden State has in place today.

1 North Dakota's academic content standards have not changed since Fordham's last evaluation, the *State of State English Standards 2005*. However, in 2005, we also reviewed supplementary material for North Dakota's benchmark assessments. Moreover, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Through this new lens, North Dakota's ELA grade changed from a C to a D. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=337&pubsubid=1061%1061.

North Dakota • Mathematics

DOCUMENTS REVIEWED[1]

North Dakota Mathematics Content and Achievement Standards: Grades K-12. April 2005. Accessed from: http://www.dpi.state.nd.us/standard/content/math/math.pdf

Overview

North Dakota's standards are well organized and easy to read and understand. Arithmetic is prioritized in the elementary grades and is covered reasonably well. However, the high school material is weaker and much essential content is not covered.

Clarity and Specificity:	2/3
Content and Rigor:	4/7
Total State Score:	**6/10**
(Common Core Grade: A-)	

General Organization

The K-8 standards are organized by five content strands, such as Number and Operations1 and Geometry. Each strand is further subdivided by topic, and then into grade-level standards. Note that while topics are common across all grade levels, not all topics have standards in every grade.

The high school standards follow the same organizational structure, except that standards are presented by grade band (9-10 and 11-12) rather than for each grade level.

Clarity and Specificity

The standards are well presented and generally easy to read and understand. Many are straightforward and clear:

> Add and subtract simple fractions with like denominators, e.g., 1/4 + 2/4 = 3/4 (grade 3)
>
> Order and compare using symbols, i.e., >, <, =, whole numbers (0 to 100,000) and decimals to hundredths (grade 4)
>
> Identify place value from hundred thousands through the hundredths place (grade 4)
>
> Explain and demonstrate the relationship between exponential notation and repeated multiplication, e.g., $32 = 3 \times 3$ (grade 5)
>
> Draw circles using a compass, and identify the components, i.e., radius, chord, diameter, center, and circumference (grade 5)
>
> Use formulas to determine the circumference and area of circles and the perimeter and area of triangles and parallelograms (grade 6)

However, some standards are too broadly stated to interpret or measure, such as:

> Use patterns to solve problems (grade 3)
>
> Explain the effects of arithmetic operations on fractions, decimals, and integers (grade 7)
>
> Develop algebraic expressions, equations, or inequalities involving one or two variables to represent relationships (e.g., given a verbal statement, write an equivalent algebraic expression or equation) found in various contexts (e.g., time and distance problems, mixture problems) (grades 9-10)

It is not clear from these standards what students are expected to know or what kinds of problems they should be able to solve.

KSDE002232

In high school, the standards are generally less clear. The organization by strand is confusing, as standards about specific topics, such as quadratics, may be scattered throughout the various strands. Moreover, as illustrated in the above example, standards tend to be very broadly stated and to combine different topics into single standards, such as:

> Solve linear equations and inequalities, systems of two linear equations or inequalities, and quadratic equations having rational solutions, e.g., factoring, quadratic formula (grades 9-10)
>
> Determine and write an equation for a function (i.e., linear, quadratic, polynomial, absolute value, and exponential) that models a mathematical relationship (grades 11-12)

North Dakota's standards are generally clear and easy to understand. However, there are some standards that are not detailed enough to interpret, particularly in the high school material. They "do not quite provide a complete guide to users" (see *Common Grading Metric*, Appendix A) and receive a Clarity and Specificity score of two points out of three.

Content and Rigor

Content Priorities

North Dakota does not provide explicit guidance on the relative importance of the content. However, sound priorities are set implicitly; almost 50 percent of standards in crucial early grades are devoted to the development of arithmetic.

Content Strengths

The standards cover the structure of arithmetic such as commutativity, associativity, and distributivity as well as the inverse nature of addition and subtraction and of multiplication and division. Arithmetic expectations are stated clearly, though, as noted below, they are missing both fluency and standard methods.

Conversion between measurement systems is also covered, as demonstrated below:

> Given a conversion factor, convert between standard and metric measurements (grades 9-10)

Content Weaknesses

Though recall of number facts is required, instant recall is not. Thus, the standards do not adequately specify that students have automaticity, or quick recall, of basic number facts. These are the basic building blocks for future mathematics; students who are still struggling with basic facts are not prepared to move on to the next level of mathematics.

The development of whole-number arithmetic is straightforward and includes some desirable standards. However, neither fluency nor standard methods and procedures are mentioned, as in:

> Add and subtract whole numbers between 0 and 10,000 (grade 3)
>
> Add and subtract whole numbers between 0 and 100,000 (grade 4)
>
> Multiply two- and three-digit numbers by a single-digit number (grade 3)
>
> Multiply multi-digit numbers by two-digit numbers (grade 4)
>
> Multiply multi-digit numbers by three-digit numbers (grade 5)

These are clear, well-sequenced standards that would be strengthened by specifying fluency and methods. In addition, calculators are introduced in third grade, which may undermine students' mastery of basic arithmetic.

The arithmetic standards continue in this straightforward way. Fraction arithmetic is expected with:

> Add, subtract, multiply, and divide fractions (grade 6)

However, neither methods nor common denominators are mentioned.

High school geometry is weak. Most of the classical theorems of geometry are not specifically included. Proof is mentioned, but foundations are not covered, and such basic theorems as the Pythagorean Theorem are not proven. Congruence and similarity are covered only by the following vague standard:

> Determine congruence and similarity among geometric objects (grades 9-10)

KSDE002233

The development of quadratic equations is incomplete. There are very few standards specifically about quadratics, which is illustrated by the standard quoted in "Clarity and Specificity" above. It mentions the quadratic formula but is as much about linear equations as about quadratics. Missing content includes completing the square and solving max/min problems.

Other high school weaknesses include coverage of trigonometry and the arithmetic of polynomial and rational functions. Polynomial arithmetic is not mentioned explicitly, though there is:

> Perform the operations of addition, subtraction, multiplication, and division on algebraic functions, e.g., given f(x) = 2x and g(x) = 5x – 7, find f(x) + g(x) (grades 9-10)

In addition, some STEM-ready content is not covered, including inverse trigonometric functions and polar coordinates.

North Dakota's standards in K-8 are often strong. Arithmetic is a priority in elementary school and, though it misses some details, it is developed in a straightforward way. The shortcomings in the K-8 standards, coupled with the weak coverage of essential high school content, result in a Content and Rigor score of four points out of seven. (see *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, North Dakota's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Peace Garden State has in place today.

1 Fordham's 2005 *State of State Math Standards* reviewed the January 2004 draft version of North Dakota's math standards. For this evaluation in 2010, we reviewed the updated and finalized version (from April 2005). Along with this slight change in material reviewed, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Even through this new lens, and with this finalized standards document, North Dakota's math grade remained a C. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=338&pubsubid=1176#1176.

KSDE002234

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

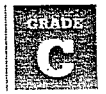
Ohio • English Language Arts

DOCUMENTS REVIEWED[1]

Ohio Academic Content Standards: English Language Arts, December 11, 2001.
Accessed from: http://www.ode.state.oh.us/GD/Templates/Pages/ODE/ODEDetail.aspx?page=3&TopicRelationID=1699&ContentID=489&Content=67593

Overview

The Ohio standards are a mixed bag. With the minor exception of media, expectations addressing all of the essential ELA content are included. Unfortunately, much of this content is covered superficially, and some content is missing altogether. Further, the failure to clearly prioritize content and the inclusion of vaguely worded standards makes expectations difficult to understand and not too helpful to teachers.



Clarity and Specificity:	2/3
Content and Rigor:	4/7
Total State Score:	**6/10**

(*Common Core Grade: B+*)

General Organization

Ohio's ELA expectations are divided into ten "standards" that are common to all grades, K-12. The standards are then divided by grade band into benchmarks and then benchmarks into grade-level indicators.

Clarity and Specificity

The Ohio standards are well organized and presented. In fact, the state presents them in two ways: by standard, which allows the reader to track the progression of content across grade levels, and by grade so that the reader can understand what students need to master within each grade to be ready for the next. This presentation makes the standards easily accessible to different audiences.

While some standards are clearly written, many are too vaguely worded to provide sufficient guidance. Take, for example, the following vocabulary and convention standards:

> Use multiple resources to enhance comprehension of vocabulary (grades 4-7)
> Use quotation marks (grade 2)

Other standards are tautological, as in:

> Apply knowledge of connotation and denotation to determine the meaning of words (grade 6)

Taken together, these shortcomings leave teachers in the Buckeye State without the clear guidance they need to drive curriculum, instruction, and assessment. Consequently, the standards earn two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

In early reading, Ohio includes expectations that delineate explicit and systematic expectations in phonemic awareness, phonics, and fluency. The vocabulary standards are good, addressing systematic vocabulary development, despite vague language in spots.

KSDE002235

Standards addressing the comprehension and analysis of literary and non-literary text are generally strong, including:

> Compare and contrast motivations and reactions of literary characters confronting similar conflicts (e.g., individual vs. nature, freedom vs. responsibility, individual vs. society), using specific examples of characters' thoughts, words and actions (grade 11)
>
> Distinguish between valid and invalid inferences and provide evidence to support the findings, noting instances of unsupported inferences, fallacious reasoning, propaganda techniques, bias and stereotyping (grade 11)

The writing standards are divided into "process" and "applications." While the process standards are somewhat repetitive and heavy-handed, the applications standards are generally good, outlining specific expectations for various grade-appropriate writing genres. (It would be more helpful, though, if the standards included samples of exemplary writing so that teachers and students could clearly understand the writing expectations.)

The standards for research are generally strong, outlining specific expectations for research papers and the proper use and citation of sources. Specific expectations for oral presentations, such as the following standard in grade 6, are also included:

> Deliver informational presentations (e.g., expository, research) that:
> - demonstrate an understanding of the topic and present events or ideas in a logical sequence;
> - support the controlling idea or thesis with relevant facts, details, examples, quotations, statistics, stories and anecdotes;
> - include an effective introduction and conclusion and use a consistent organizational structure (e.g., cause-effect, compare-contrast);
> - use appropriate visual materials (e.g., diagrams, charts, illustrations) and available technology; and
> - draw from multiple sources and identify sources used (grade 6)

Content Weaknesses

While many of the early reading standards are strong, the definition of a phoneme is loose. Rather than noting that a phoneme is the smallest phonetic unit of sound that is capable of conveying meaning, it is defined simply as a "sound."

In addition, while vocabulary standards are generally strong, the state places disproportionate emphasis on the use of context clues to determine the meaning of a word; subsequently, decoding skills receive less emphasis. Similarly, the reading standards overemphasize comprehension strategies and this overshadows some of the more essential reading content.

Although rigorous standards addressing the comprehension and analysis of literary and non-literary text are provided, these fail to describe the amount, quality, and complexity of texts to be studied. As noted in Fordham's 2005 review of these standards, "distinctions need to be made through the grades among the three major categories of imaginative literature (fiction, poetry, and dramatic literature) with respect to their distinctive elements and devices." Doing so would provide much better guidance to teachers about the literature the students should be reading and what characteristics of it are important to know. No lists (authors and/or titles), sample passages, or commentary are included, either, making it impossible to gauge the level of rigor expected. Finally, the reading standards fail to specify expectations for the study of outstanding American literature. In fact, the lone reference (in grade 12) to America's literary heritage is not only conflated with all literature ever written, it is so vague that it is ultimately meaningless:

> Compare and contrast varying characteristics of American, British, world and multi-cultural literature (grade 12)

Standards for language conventions are sporadic at best. In many cases, they direct students simply to "use" certain conventions, without addressing all essential content. For example, the vague standard cited above requiring students to "use quotation marks" doesn't specify if students are to apply such use in titles, dialogue, or otherwise. Further, the "writing process" strand includes several expectations about students "improving conventions," which makes no sense and is instructionally meaningless.

KSDE002236

The standards also frequently demonstrate a problematic progression of rigor from grade to grade. In a number of places, more rigorous standards appear to come first. For example:

> Explain the influence of setting on the selection (grade 5)
>
> Identify the features of setting and explain their importance in literary text (grade 6)

Identifying the features of setting is a simpler task than explaining its influence.

Finally, when technology and media are addressed in the standards, their treatment is vague. The standards simply ask students to use technology, rather than learn deliberately about creating and analyzing multimedia products.

These shortcomings leave more than 35 percent of the critical content missing from the Ohio standards, thus earning the state four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Ohio's ELA standards are mediocre. Those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Buckeye State has in place today.

1 Ohio's academic content standards have not changed since Fordham's last evaluation, the *State of State English Standards 2005*. However, in 2005, we also reviewed supplementary material for Ohio's benchmark indicators. Moreover, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Even through this new lens, Ohio's ELA grade remained a C. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=337&pubsubid=1062%1062.

KSDE002237

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Ohio • Mathematics

DOCUMENTS REVIEWED[1]

Academic Content Standards: K-12 Mathematics, December 11, 2001.
Accessed from: http://www.ode.state.oh.us/GD/DocumentManagement/DocumentDownload.aspx?DocumentID=791

Overview

Ohio's standards are well presented and often provide a detailed description of content to be learned. However, there are far too many standards and important content is not distinguished, so the standards are unfocused and seem haphazard. The most crucial failing of these standards is in the inadequate development of arithmetic and the failure to make it a priority.

Clarity and Specificity:	2/3
Content and Rigor:	3/7
Total State Score:	**5/10**
(Common Core Grade: A-)	

General Organization

Ohio's K-12 standards are organized by content strands such as Number, Number Sense and Operations. These are further subdivided by topics, and then into grade-band benchmarks, which are meant to provide "key checkpoints to monitor progress." Then benchmarks are divided into "grade-level indicators," which we refer to in this review as "standards."

The standards also include a separate strand devoted to process standards that is designed to be "incorporated within instruction and assessment."

Clarity and Specificity

The standards are well presented, and many of them are easy to read and understand. Some include examples that clarify the meaning of the statements, an excellent feature. Many individual standards are both clear and specific such as:

> Make simple unit conversions within a measurement system; e.g., inches to feet, kilograms to grams, quarts to gallons (grade 4)
>
> Prove theorems involving triangle similarity and congruence (grade 10)

However, there are also many broad statements that are not specific or measurable. For example, students are expected to:

> Use patterns to make predictions, identify relationships, and solve problems (grade 3)

The meaning of this standard is unclear. Similarly, students are expected to:

> Examine statements and decisions involving risk; e.g., insurance rates and medical decisions (grade 12)

It is obvious that twelfth-graders cannot be expected to do expert-level statistical analysis, so what exactly is meant by this statement, or how it could be measured, is not clear.

While the standards' use of examples is exemplary, they are not consistently used throughout, and there are a significant number of standards that are subject to interpretation on the part of the reader. The "insufficient detail" and "unclear language" result in a Clarity and Specificity score of two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Ohio's standards do not prioritize the content. The number of standards in each grade is excessive, and the benchmarks, which could distinguish the most important content, do not perform this function. For example, there are forty-seven standards in fourth grade, and there are fifty-eight benchmarks for the grade 3-4 band. In the fourth grade, the number of arithmetic standards is about equal to the number of data analysis, statistics, and probability (DASP) standards, so the reader could conclude that they are of equal importance. Only about 30 percent of the standards in the crucial grades are about the development of arithmetic, which is completely inadequate.

Content Strengths

High school content is generally well covered. Geometry includes proofs of major theorems and trigonometry is nicely covered, including basic identities for trigonometric functions. STEM-ready topics are included, such as polar coordinates, exponential functions, and logarithms.

Content Weaknesses

The development of whole-number arithmetic is the most crucial content in early elementary school. Ohio has many developmental and supporting standards for students learning how to add, subtract, multiply, and divide whole numbers. However, they fail to culminate with computational fluency with the standard algorithms.

Consider the following sequence of standards on whole-number multiplication starting with:

> Demonstrate fluency in multiplication facts through 10 and corresponding division facts (grade 3)

This is ambiguous. It could mean to demonstrate computational fluency, or it could mean to demonstrate fluency with memory recall. Students who cannot quickly recall single-digit multiplication facts are not prepared to continue learning multiplication. The next two standards are the apparent culmination of whole-number multiplication:

> Use a variety of methods and appropriate tools for computing with whole numbers; e.g., mental math, paper and pencil, and calculator (grade 4)
>
> Demonstrate fluency in adding and subtracting whole numbers and in multiplying and dividing whole numbers by 1- and 2-digit numbers and multiples of ten (grade 4)

This thread, taken as a whole, is inadequate. While the second standard requires fluency in multiplication, it does not specify fluency with the standard algorithm. The previous standard seems to imply that any method at all will serve, including the use of a calculator. Taken together, these standards undermine this important arithmetic goal.

The development of fraction and decimal arithmetic is similarly inadequate. In this standard, for example, the development of the arithmetic of fractions seems ultimately to be left up to the student:

> Develop and analyze algorithms for computing with fractions and decimals, and demonstrate fluency in their use (grade 6)

In high school, the coverage of quadratic equations is missing the technique of completing the square to solve quadratic equations so that the quadratic formula cannot be derived coherently and the graphs of quadratic equations cannot be analyzed properly.

There are mathematical errors in the standards, for example, the fifth-grade statement "the ratio of the circumference of a circle to its diameter is an approximation of π." This ratio is not an approximation of π, it is the definition of π. Another egregious example is:

> Describe differences between rational and irrational numbers; e.g., use technology to show that some numbers (rational) can be expressed as terminating or repeating decimals and others (irrational) as non-terminating and non-repeating decimals (grade 7)

This standard is nonsensical since technology cannot do what is claimed. More generally, the insertion of calculators, starting in the third grade, is unnecessary and artificial.

There are serious problems in the Ohio standards. Most critical is the treatment of arithmetic, which is not prioritized or well developed. More generally, the number of the standards is excessive and distracts from the essential content so that the standards lack focus. There are inappropriate standards including ones with calculators and some containing errors. Ohio receives three points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Ohio's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Buckeye State has in place today.

1 Ohio's academic content standards have not changed since Fordham's last evaluation, the *State of State Math Standards 2005*. However, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Through this new lens, Ohio's math grade went from a D to a C. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=338&pubsubid=1177#1177.

KSDE002240

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

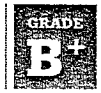
Oklahoma • English Language Arts

DOCUMENTS REVIEWED[1]

Priority Academic Student Skills: Language Arts. Reading strands updated March 2007. Writing, Grammar, Usage and Mechanics strands updated 2003. Accessed from:http://sde.state.ok.us/Curriculum/PASS/Subject/langarts.pdf

Overview

The Oklahoma ELA standards are well written and thorough, clearly outlining expectations for most of the essential K-12 content needed to drive rigorous curriculum development, instruction, and assessment.



Clarity and Specificity:	3/3
Content and Rigor:	5/7
Total State Score:	**8/10**
(*Common Core Grade: B+*)	

General Organization

Oklahoma's standards are divided into four strands: Reading/Literature, Writing/Grammar/Usage and Mechanics, Oral Language/Listening/Speaking, and Visual Literacy.

Each strand is divided into two to eight standards, then into grade-level objectives for grades 1-12. (Kindergarten standards are not provided.) The state also frequently provides standard-specific examples designed to clarify expectations.

Clarity and Specificity

Oklahoma's standards are well organized and clearly presented. The objectives are generally free of jargon, describe measurable expectations, and clearly illustrate the growth and progression of rigor expected through the grades.

The use of examples to help clarify expectations adds significant value by specifying precisely what students should know and be able to do. Take, for example, these first- and ninth-grade objectives:

> Use blends, digraphs, and diphthongs.
> - Example: Blends—fl, tr, sl, sm, sn, bl, gr, and str
> - Example: Digraphs—sh, th, wh
> - Example: Diphthongs—oi, oy, ou, ow (grade 1)
>
> Apply a knowledge of Greek (e.g., tele/phone, micro/phone), Latin (e.g., flex/ible), and Anglo-Saxon (e.g., un/friend/ly) roots, prefixes, and suffixes to determine word meanings (grade 9)

The biggest drawback of the standards is their failure to delineate any expectations for Kindergarten, let alone Pre-K (though Oklahoma famously has a "universal" Pre-K program attached to its public schools). Despite this, the combination of the sound organization and clearly-written, grade-specific objectives easily merits three points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The strengths of Oklahoma's ELA standards are considerable. While they should be improved by providing standards for Kindergarten, the early reading standards are excellent. The objectives clearly outline expectations for phonics and phonemic awareness, and sequence the essential content well for grades 1-4; for example:

KSDE002241

> Standard 2: Phonological/Phonemic Awareness—The student will develop and demonstrate knowledge of phonological/phonemic awareness...
>
> 3. Distinguish onset (beginning sound) and rime in one-syllable words.
>
> • Examples: onset: /b/ in bat; rime: at in bat...
>
> 5. Isolate phonemes within words by identifying the beginning, middle, and ending sounds in one-syllable words.
>
> • Example: the beginning sound of dog is /d/, the middle sound in can is /a/ (grade 1)
>
> Standard 3: Phonics/Decoding – The student will apply sound-symbol relationships to decode unknown words.
>
> 1. Phonetic Analysis—Apply phonics knowledge to decode one-syllable words.
>
> a. Use short and long vowel patterns.
>
> Example: CVC = mad, hid, cut
>
> Example: CVCV (final e) = made, hide, cute
>
> Example: CV = he, me, so (grade 1)

The development of vocabulary through the grades is equally strong and includes objectives that appropriately emphasize using both context and outside resources (including dictionaries and thesauruses) to confirm the meaning of unfamiliar words. In addition, they require mastery of Greek and Latin roots, etymology, and shades of meaning.

In reading, while they could include more genre-specific objectives (discussed in greater detail below), the standards admirably avoid the common pitfall of prioritizing reading comprehension strategies over analysis and understanding of genre, text structure, and literary techniques. In addition, the treatment of stylistic devices and literary elements is strong, as demonstrated by these fifth- and sixth-grade standards:

> Describe elements of character development in written works (e.g., differences between main and minor characters; changes that characters undergo; the importance of a character's actions, motives, stereotypes, and appearance to plot and theme) (grade 5)
>
> Make inferences or draw conclusions about characters' qualities and actions (e.g., based on knowledge of plot, setting, characters' motives, characters' appearances, stereotypes and other characters' responses to a character) (grade 5)
>
> Identify and describe the function and effect of common literary devices, such as imagery and symbolism.
>
> • Imagery: the use of language to create vivid pictures in the reader's mind
>
> • Symbolism: the use of an object to represent something else; for example, a dove might symbolize peace (grade 6)

The standards also delineate very clear and rigorous expectations for the mastery of English language conventions and spelling, including:

> Grammar/Usage: Students are expected to recognize and use nouns, pronouns, verbs, adjectives, adverbs, and conjunctions correctly in their writing.
>
> a. Singular and plural forms of nouns
>
> b. Singular and plural possessive nouns
>
> c. Subject, object, reflexive, and possessive pronouns
>
> d. Subject, direct object, and object of prepositions
>
> e. Present, past, future, and present perfect verbs tense
>
> f. Regular, irregular, and helping verbs
>
> g. Subject-verb agreement
>
> h. Descriptive, comparative, superlative, and demonstrative adjectives
>
> i. Time, place, and manner adverbs
>
> j. Comparative forms of adverbs (grade 4)

Oklahoma provides equally specific expectations that address the quality of writing products, including clear, grade-specific objectives that delineate expectations for the organization and focus of writing and for the development of ideas.

In addition, the state effectively prioritizes important genres from grade to grade. In the elementary grades, writing is appropriately focused on narrative and basic informational writing. In fifth grade, persuasive and research writing is introduced and narrative and letter writing is given less attention. By high school, students are expected to write significant persuasive, argument, and response to literature papers. These standards could certainly be enhanced by the inclusion of rubrics and examples of student work to clarify expectations further, but the standards do outline expectations that demonstrate a clear progression of rigor through the grades.

Finally, the state includes clear expectations for listening and speaking, as well as for delivering formal oral presentations and media.

Content Weaknesses

While the reading standards are strong in the ways noted above, they fall short in four areas. First, few objectives are devoted to informational texts. Instead, such texts are listed as one of many genres to be studied, and so standards fail to delineate genre-specific expectations for the study of informational text.

Second, while much content is included for the study of literary texts (as mentioned above), the state provides little guidance regarding the genre-specific content that students must master to become proficient readers, as demonstrated by the following eighth-grade standard:

> Analyze the characteristics of genres, including short story, novel, drama, lyric poetry, nonfiction, historical fiction, and informational texts (grade 8)

Merely asking students to "analyze the characteristics" of a long list of genres without providing substantive details about what characteristics students should master from grade to grade provides scant little guidance.

Third, the reading and literature standards fail to provide guidance about the quality and complexity of reading that students should be doing from grade to grade. And, while the high school standards give a perfunctory nod to reading important works of American literature, the standards for grades 1-8 fail to do even that.

Fourth, while some standards delineate expectations for formal oral presentations and for the quality of writing products expected, the state fails to include specific criteria that would further clarify these expectations.

In sum, while the Oklahoma standards include much of the essential K-12 content, the shortcomings described above omit more than 5 percent of that content, thus earning the standards five points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

Oklahoma's standards are better organized and more clearly presented than Common Core. The objectives are generally free of jargon, describe measurable expectations, and clearly illustrate the growth and progression of rigor expected through the grades. Oklahoma uses more standard-specific examples to help clarify expectations and treats literary genres and their characteristics in more detail. The Oklahoma standards also prioritize essential writing genres by grade spans, which Common Core does not.

On the other hand, Oklahoma fails to include any expectations for Kindergarten, while those presented in the Common Core are generally strong. In addition, the Common Core addresses the analysis of informational text in more detail than the Oklahoma standards. Common Core also includes a list specifying the quality and complexity of student reading as well as sample student writing. Such enhancements would significantly improve Oklahoma's standards.

1 The Reading and Literature strands of Oklahoma's PASS ELA standards were last revised and adopted in March 2007. The Writing/Grammar/Usage and Mechanics (WGUM) section was last revised and adopted in June 2009. This updated WGUM section became available on the Oklahoma Department of Education website at the beginning of July 2010, and was not available for review. Instead, experts reviewed the available 2003 version of the WGUM standards.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Oklahoma • Mathematics

DOCUMENTS REVIEWED

Priority Academic Student Skills: Math Content Standards. Spring 2009.
Accessed from: http://sde.state.ok.us/Curriculum/PASS/Subject/math.pdf

Overview

Oklahoma's standards are generally strong. They are well written, and K-8 grades are introduced with a section that focuses and clarifies the standards by providing explicit guidance on priorities. The standards are not rigorous enough in places, however, and some important content is missing.

Clarity and Specificity:	3/3
Content and Rigor:	5/7
Total State Score:	**8/10**

(Common Core Grade: A-)

General Organization

Oklahoma organizes its K-8 standards into five content standards that are common across grade levels: Algebraic Reasoning, Number Sense and Operations, Geometry, Measurement, and Data Analysis. Each strand is then divided into grade-specific standards.

In addition, Oklahoma introduces its K-8 standards with three "major concepts," which are the three most important topics students must master in each grade. For example:

- Develop quick recall of multiplication facts and related division facts (fact families) and fluency with whole-number multiplication.
- Develop an understanding of decimals and their connection to fractions.
- Develop an understanding of area and acquire strategies for finding area of two-dimensional shapes (grade 4)

The high school standards are organized similarly, with two important differences. First, the content is divided into three courses, rather than five content strands. Second, each course is introduced with a list of "major concepts" (which should be taught in depth) and "maintenance concepts" (which have been taught previously and are prerequisites).

Clarity and Specificity

The standards are generally clear and easy to read. They make frequent and excellent use of examples to clarify the meaning of the statements. For example, the parenthetical examples in this standard serve to make it clear exactly what students are supposed to be able to do:

> Identify, describe, and analyze functional relationships (linear and nonlinear) between two variables (e.g., as the value of x increases on a table, do the values of y increase or decrease, identify a positive rate of change on a graph and compare it to a negative rate of change) (grade 7)

Similarly, the example further clarifies this standard:

> Write and solve one-step equations with one variable using number sense, the properties of operations, and the properties of equality (e.g., -2x+4=-2) (grade 7)

KSDE002244

The clarity is also greatly enhanced by the inclusion of the major concepts, explained above, which specify the topics that should be taught in depth. These provide the standards with focus and are clear and explicit. Taken together, these earn Oklahoma a score of three points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

In grades K-8, Oklahoma has set priorities in an exemplary way. The major concepts introducing each grade are stated as the major goals for the year and specified as concepts that "...should be taught in depth." They are explicit and clear. For example, major concepts for the fourth grade are:

> Develop quick recall of multiplication facts and related division facts (fact families) and fluency with whole-number multiplication (grade 4)
>
> Develop an understanding of decimals and their connection to fractions (grade 4)
>
> Develop an understanding of area and acquire strategies for finding area of two- dimensional shapes (grade 4)

These effectively and appropriately set priorities. Standards on less important topics, such as tessellations, will not be misinterpreted as important content.

In each grade, 1-6, two out of three of the major concepts deal with numbers and computations, giving mastery of arithmetic appropriate priority.

Content Strengths

Some of the development of arithmetic is very strong. For example, the following standard explicitly requires memorization of basic facts:

> Demonstrate fluency (memorize and apply) with basic multiplication facts up to 10 x 10 and the associated division facts (e.g., 5 x 6 = 30 and 30 ÷ 6 = 5) (grade 3)

Other strengths include explicit mention of common denominators and the rigor of the high school Geometry course.

Content Weaknesses

There are some problems with the development of arithmetic. The major concepts clearly state that fluency with whole-number addition, subtraction, multiplication, and division is required. However, the standards themselves do not adequately support such fluency. A rigorous treatment of computational fluency requires the standard algorithms, but the standards never specify that students know them and are able to compute with them. For example, the capstone standard for multiplication, which has fluency with multiplication as a major concept, is:

> Estimate and find the product of up to three-digit by three-digit using a variety of strategies to solve application problems (grade 4)

As the capstone standard for multiplication, this lacks the rigor required for true fluency with multiplication. Worse, by allowing students to use "a variety of strategies," rather than requiring mastery of the standard algorithms, this standard may actually undermine such fluency by allowing students to rely on inefficient techniques.

The development of the arithmetic of fractions similarly fails to specify standard methods for computation and instead requires a "variety of strategies."

There are some other weaknesses in the standards. Calculators, while not prevalent until high school, are a "suggested material" beginning in first grade. The inverse nature of addition and subtraction and of multiplication and division are not mentioned. Other missing content includes work with rates and rational numbers as repeating decimals (though this is mentioned in the glossary).

In high school, the standards for the Algebra courses become noticeably less clear, and there is a tendency to rely on graphing calculators. This is illustrated by the following standard:

KSDE002245

> Graph a quadratic function and identify the x- and y-intercepts and maximum or minimum value, using various methods and tools which may include a graphing calculator (Algebra II)

In addition, standards are provided for only three high school courses and some STEM-ready material is missing, particularly trigonometry beyond the basic definitions. However, the standards state explicitly that "students planning to continue their mathematics education should study additional advanced mathematics topics such as trigonometry..."

Oklahoma's standards cover most of the essential content well, and they set priorities beautifully. There are some weaknesses in the areas of arithmetic, the study of rates, and the inclusion of STEM-ready material. These shortcomings result in a Content and Rigor score of five points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

Oklahoma's standards are generally clear and well presented. Standards are briefly stated and frequently include examples, making them easier to read and follow than Common Core. In addition, the high school content is organized so that standards addressing specific topics, such as quadratic functions, are grouped together in a mathematically coherent way. The organization of the Common Core is more difficult to navigate, in part because standards dealing with related topics sometimes appear separately rather than together.

While Oklahoma's standards provide well-organized high school courses, they are missing some of the advanced content for high school that is covered in Common Core. In addition, the coverage of arithmetic displays some serious weaknesses. Common Core explicitly requires standard methods and procedures, and the inclusion of these important details would enhance Oklahoma's standards.

Oregon • English Language Arts

DOCUMENTS REVIEWED

Oregon English Language Arts Standards: Standards by Design K-3. June 2002
Accessed from: http://www.ode.state.or.us/teachlearn/real/standards/sbd.aspx

Oregon English Language Arts Standards: Standards by Design 4-12. January 2003.
Accessed from: http://www.ode.state.or.us/teachlearn/real/standards/sbd.aspx

Writing Work Samples. September 3, 2009.
Accessed from: http://www.ode.state.or.us/search/page/?id=524

Speaking Work Samples. September 29, 2006.
Accessed from: http://www.ode.state.or.us/search/page/?id=639

Overview

Oregon's standards are generally clearly written and presented and they include much essential ELA content. Unfortunately, the failure to provide any standards for grades 11 or 12, the inclusion of unnecessary and distracting standards that focus more on pedagogy than on content, and the omission of some critical reading and literature content leave Oregon teachers without the clear guidance they need to drive rigorous curriculum and assessment development and instruction.

Clarity and Specificity:	2/3
Content and Rigor:	4/7
Total State Score:	**6/10**
(Common Core Grade: B+)	

General Organization

The Oregon ELA standards are divided into broad strands, four of which are common to all grade levels: Reading, Literature, Writing, and Speaking and Listening. Additional strands, such as "Concepts of Print," are provided for certain grade levels, but do not include expectations across all grades.

At the high school level, standards follow the same organizational structure, but are provided only for grades 9 and 10.

Clarity and Specificity

Oregon's standards are well organized and well presented. They are generally written in precise language that is free from unnecessary jargon. In addition, the standards often include helpful examples that clarify expectations, such as:

> Correctly use:
> - apostrophes to show possession (Troy's shoe, the cat's food)
> - apostrophes in contractions (can't, didn't, won't) (grade 1)
>
> Orally segment single-syllable spoken words into their components (e.g., cat=/c/a/t; splat=/s/p/l/a/t; rich=/r/i/ch) (grade 1)

Some standards, however, lack both precise language and examples, such as:

> Understand technical vocabulary in subject-area reading (high school)
> Recognize and analyze characteristics of persuasive text (grade 5)

The failure to give examples of the kinds of "technical vocabulary" or text "characteristics" that students should master prevents these standards from providing the guidance needed.

The high school standards are particularly inadequate both because they fail to provide grade-specific standards and because they provide no guidance whatsoever regarding what students should know and be able to do in grades 11 and 12.

These shortcomings detract from the overall strength of the K-8 standards' clarity and rigor, and make it difficult to determine the scope and sequence of material, particularly in high school. Oregon earns two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

Oregon's early-reading standards are clear and include expectations for mastery of essential phonics and phonemic awareness content and skills, including:

> Orally blend two to four spoken phonemes (sounds) into recognizable words (e.g., /c/a/t/=cat; /f/l/a/t/=flat) (grade 1)
>
> Add, delete, or change target sounds to change words (e.g., change cow to how; pan to an) (grade 1)

K-8 vocabulary standards delineate appropriate expectations, including a focus on etymology, synonyms, antonyms, prefixes, suffixes, roots, and, at the high school level, connotation and denotation. In addition, the standards include an appropriate focus on using both context clues and reference sources, such as dictionaries and thesauruses, to clarify the meaning of words.

The standards outline expectations for the analysis of both literary and non-literary texts, including a focus—in high school, in particular—on important text features and literary elements, such as:

> Analyze interactions between characters in a literary text (e.g., internal and external conflicts, motivations, relationships, influences) and how these interactions affect the plot (high school)
>
> Identify themes in literary works, and provide support for interpretations from the text (high school)
>
> Analyze an author's development of time and sequence, including the use of complex literary devices, such as foreshadowing or flashbacks (high school)

The high school standards also admirably delineate expectations that ask students to judge the truth and validity of arguments, as demonstrated by the following:

> Evaluate if and how the author uses authoritative sources to establish credibility for arguments, proposed actions, or policies (high school)
>
> Make reasoned assertions about an author's arguments by using elements of the text to defend and clarify interpretations (high school)
>
> Evaluate an author's argument or defense of a claim by evaluating the relationship between generalizations and evidence, the comprehensiveness of evidence, and the way in which the author's intent or bias affects the structure and tone of the text (e.g., in professional journals, sports journals, editorials, political speeches, primary source material) (high school)

The state provides explicit guidelines for the minimum amount of reading that students should do at each grade level.

In Writing, standards that outline the quality of writing expected across grade levels are included, such as:

> Write multi-paragraph compositions—descriptions, explanations, comparison-and-contrast papers, problem-and-solution essays—that:
> - State the thesis or purpose
> - Explain the situation

> - Organize the composition clearly, following an organizational pattern appropriate to the type of composition—comparison and contrast; organization by categories; and arrangement by spatial order, order of importance, or climactic order
> - Provide evidence to support arguments and conclusions (grade 7)

Oregon also provides annotated examples of student writing that further clarify expectations for teachers and students.

Expectations for genre-specific writing are clearly defined, including standards focused specifically on research. The standards for English language conventions are also generally strong and demonstrate a clear progression of rigor, particularly for grades K-8.

Finally, the state includes standards focused on speaking and listening, including expectations for delivering formal oral presentations, and, in grades 5-10, for media and viewing.

Content Weaknesses

In several areas, Oregon's standards miss the mark. For starters, across all grade levels, the state provides two types of standards: assessed standards and "classroom" standards. Unfortunately, this distinction obfuscates more than it clarifies because the classroom standards are frequently focused more on pedagogy than on student outcomes. For example:

> Take part in creative response to text, such as dramatizations and oral presentations (grade 3)

Such "standards" do nothing more than suggest instructional activities that are not clearly focused on student mastery of anything in particular and that could take away valuable time from more purposeful, outcomes-driven instruction. Such suggestions may have value as part of a larger unit plan or curriculum map, but they add little value in a document that is designed to describe essential student learning outcomes.

In addition, while they do include expectations for the analysis of literary and non-literary texts (described above), Oregon's standards lack the genre-specific detail necessary to ensure that students become proficient readers. For example:

> Differentiate among various imaginative forms of literature (e.g., fantasies, fables, myths, and fairy tales) (grade 4)
>
> Understand and analyze the differences in structure and purpose between various categories of informational text, including textbooks, newspapers, instructional manuals, essays, editorials, biographies, and autobiographies (grade 7)

While both standards list genres that students should read, gives neither sufficient detail nor examples to clarify the important differences among the genres that students should learn.

In addition, aside from a passing mention of the importance of reading historically or culturally significant works of literature that enhance the study of other subjects, the standards fail to prioritize important works of American literature that reflect our common heritage. And while the state provides clear guidance regarding the minimum *quantity* of reading that students should do each year, no guidance is provided about the *quality* and *complexity* of that reading.

Taken together, the inclusion of standards that infuse unnecessary and distracting pedagogy, coupled with the omission of some essential ELA content (and the last two years of high school), earn Oregon four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Oregon's ELA standards are mediocre. Those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Beaver State has in place today.

1 The Oregon ELA standards have not changed since our last evaluation, the *State of State English Standards 2005*. The samples of student work, however, have been updated. Along with these minor changes, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) These alterations contributed to a change in Oregon's final ELA grade: from a B to a C. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=337&pubsubid=1064#1064.

Oregon • Mathematics

DOCUMENTS REVIEWED

Standards by Design: Mathematics K-8 (2007) and High School (2009). 2007 and 2009.
Accessed from: http://www.ode.state.or.us/teachlearn/real/standards/sbd.aspx

Standards by Design: Mathematics Advanced Knowledge & Skills (AK&S). 2009.
Accessed from: http://www.ode.state.or.us/teachlearn/real/standards/sbd.aspx

Overview

Oregon's standards are exceptionally well presented and easy to read and understand. They cover much of the essential content with both depth and rigor, particularly in high school. Their main weakness is in the coverage of arithmetic. Though it is well prioritized, some of the development is feeble.

Clarity and Specificity:	3/3
Content and Rigor:	5/7
Total State Score:	**8/10**
(Common Core Grade: A-)	

General Organization

Oregon divides its K-8 standards into topics, which vary by grade, and then into grade-specific standards. In addition, the state provides a short introductory paragraph for each grade that broadly describes the content covered.

The high school material is organized similarly, except that standards are grouped together for grades 9-12. In addition, the state provides standards for advanced mathematics topics, such as advanced algebra, discrete mathematics, and advanced statistics.

Clarity and Specificity

Oregon's standards are well presented and easy to read. Students learn different things in different grades, so the variation of topics across the grades is appropriate and results in a clear and focused set of standards. For example, there are no standards about probability in the early grades, which allows teachers to prioritize more essential and grade-appropriate content.

The standards are generally succinct, straightforward, and clear, such as:

> Demonstrate an understanding of time and use of time relationships (e.g., how many minutes in an hour, days in a week, and months in a year) (grade 2)
>
> Represent money amounts to $10.00 in dollars and cents, and apply to situations involving purchasing ability and making change (grade 4)

A few standards, however, are subject to interpretation by the reader, for example:

> Identify and represent equivalent expressions (e.g., different ways to see a pattern) (grade 6)

It is unclear what kind of problems a student is expected to be able to solve.

Oregon's standards are extremely well presented and easy to read. They are admirably focused, and most are clear and specific. They receive a Clarity and Specificity score of three points out of three. (See *Common Grading Metric*, Appendix A.)

KSDE002250

Content and Rigor

Content Priorities

Implicitly, the standards demonstrate clear and appropriate priorities. There are only a few topics covered in each grade, and these are appropriately focused on the most important mathematics. For example, fourth grade has three topics:

> Number and Operations and Algebra: Develop fluency with multiplication facts and related division facts, and with multi-digit whole-number multiplication (grade 4)
>
> Number and Operations: Develop an understanding of decimals, including the connections between fractions and decimals (grade 4)
>
> Measurement: Develop an understanding of area and determine the areas of two-dimensional shapes (grade 4)

This implicit focus on arithmetic is exemplary. More generally, over half of the standards in appropriate grades are about the development of arithmetic.

Content Strengths

The standards develop and use the number line early and often, as in:

> Represent whole numbers on a number line, demonstrating an understanding of the sequential order of the counting numbers and their relative magnitudes (grade 1)
>
> Represent common fractions (e.g., halves, thirds, fourths, tenths) as equal parts of a whole, parts of a set, or points or distances on a number line (grade 3)

The development of area is strong and detailed:

> Recognize a square that is one unit on a side as the standard unit for measuring area (grade 4)
>
> Connect area measure to the area model used to represent multiplication and use this to justify the formula for area of a rectangle (grade 4)
>
> Find and justify relationships among the formulas for the areas of triangles and parallelograms (grade 5)

In high school, the coverage of quadratic equations is often strong. It includes important, rarely seen analysis such as:

> Given a quadratic equation of the form $x^2 + bx + c = 0$ with integral roots, determine and interpret the roots, the vertex of the parabola that is the graph of $y = x^2 + bx + c$, and an equation of its axis of symmetry graphically and algebraically (high school)
>
> Derive the quadratic formula (high school—advanced algebra)

In addition, much of the STEM-ready content is included.

Content Weaknesses

As illustrated by the fourth-grade topics above, arithmetic is a strong focus in Oregon's standards, and fluency with arithmetic operations is clearly stated as a goal. Unfortunately, the standards themselves do not adequately support such fluency. Instant recall of the number facts is replaced with the less stringent:

> Apply, with fluency, sums to 20 and related subtraction facts (grade 2)
> Apply with fluency multiplication facts to 10 times 10 and related division facts (grade 4)

In the continued development of arithmetic, standard procedures are not mentioned; instead, the use of multiple "efficient strategies" is specified. For example, the capstone standards for whole-number multiplication are:

> Develop and use accurate, efficient, and generalizable methods to multiply multi-digit whole numbers (grade 4)
>
> Develop fluency with efficient procedures for multiplying multi-digit whole numbers and justify why the procedures work on the basis of place value and number properties (grade 4)

KSDE002251

Students who have developed their own methods rather than mastering standard algorithms may be unprepared to continue on to more difficult mathematics.

This approach continues with the arithmetic of fractions and decimals, such as:

> Develop fluency with efficient procedures for adding and subtracting fractions and decimals and justify why the procedures work (grade 5)

In addition, common denominators are not mentioned.

In high school, there are a few issues with the content. Linear equations, though well covered, are missing point-slope form. In geometry, the coverage is not as strong. Constructions are not covered, and major theorems are not proven, but are "used" or "applied" as in:

> Apply theorems, properties, and definitions to determine, identify, and justify congruency or similarity of triangles and to classify quadrilaterals (high school)

Standards on important algebra skills with rational functions are not quite strong enough to ensure that students have facility with all the operations:

> Perform operations on rational expressions (high school—advanced algebra)

Oregon's high school standards have a few weaknesses, particularly in geometry, but are generally strong and include much of the STEM-ready content. In the elementary grades, arithmetic is well prioritized, but the standards fail to culminate with appropriate capstone standards. These few "shortcomings" result in a Content and Rigor score of five points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

Oregon's standards are generally clear and well presented. Standards are briefly stated and usually clear so that they are easier to read and follow than Common Core. In addition, the high school content is organized so that the standards about various topics, such as quadratic functions, are generally grouped together in a mathematically coherent way. The organization of the Common Core is more difficult to navigate, in part because standards on related topics appear separately rather than together.

While Oregon's standards provide well-organized high school courses, they are missing some of the essential content that is covered in Common Core. In addition, the coverage of arithmetic displays some serious weaknesses. Common Core provides admirable focus and explicitly requires standard methods and procedures, enhancements that would benefit Oregon's standards.

KSDE002252

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Pennsylvania • English Language Arts

DOCUMENTS REVIEWED[1]

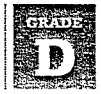
Academic Standards for Reading, Writing, Speaking, and Listening: Pre-K-3. Revised May 18, 2010. Accessed from: http://www.pdesas.org/Standard/StandardsDownloads

Academic Standards for Reading, Writing, Speaking, and Listening: Elementary (Grades 3-8). June 1, 2009. Accessed from: http://www.pdesas.org/Standard/StandardsDownloads

Academic Standards for Reading, Writing, Speaking, and Listening: Secondary (Grades 8-12). January 29, 2010. Accessed from: http://www.pdesas.org/Standard/StandardsDownloads

Overview

The Pennsylvania standards are generally well organized but laced with vaguely worded and repetitive standards that frequently fail to outline a clear progression of rigor from grade to grade. In addition, much essential content is missing, leaving teachers in the Keystone State without the guidance they need to drive rigorous curriculum and assessment development or instruction.



Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(Common Core Grade: B+)	

General Organization

The Pennsylvania standards include four strands—Reading, Writing, Listening, and Speaking—each of which is divided into two to six substrands. Both the strands and sub-strands are the same for all grades, Pre-K–12. Grade-specific indicators are then provided for each sub-strand.

For grades 8-12, the state also provides two sets of standards: grade-specific indicators, and indicators for "literature and composition," which are not tied to any particular grade. Unfortunately, Pennsylvania provides no guidance about how these literature and composition standards are meant to be integrated (if at all) with the grade-specific ELA standards.

Clarity and Specificity

The Pennsylvania ELA standards are generally clearly organized and written in concise, jargon-free language. In addition, some standards are clear and specific, such as:

> Identify the differences between facts and opinions in a text (grade 1)

Unfortunately, a majority of standards are so vague that they provide little guidance about what students should know and be able to do. For example:

> Reveal contrasts in major themes, styles, and trends in the respective historical periods (grades 11-12)

Like many of the grade-specific indicators, this example provides too few details about the content that teachers should include and that students must master and leaves little confidence that students across the state will be held to equally rigorous standards.

Many standards are also repeated verbatim—or nearly verbatim—across grade levels, making it difficult to discern an instructionally meaningful progression from grade to grade.

KSDE002253

Finally, and perhaps most confusingly, the state presents high school standards (grades 8-12) in two ways. First, grade-specific indicators are provided for each sub-strand. In addition, specific indicators for literature and composition are also provided. In many cases, the literature and composition standards merely repeat content that already appears among the grade-specific indicators, as demonstrated below:

> Demonstrate comprehension/understanding before reading, during reading, and after reading on a variety of grade-level texts to support understanding of a variety of literary works from different cultures and literary movements (grade 12)
>
> Demonstrate comprehension before reading, during reading, and after reading on grade-level texts to support understanding of a variety of literary works from different cultures and literary movements (high school literature)

In other cases, new standards are introduced in literature or composition, without any reference to the grade-specific standards, such as:

> Analyze the ways in which a text's organizational structure supports or confounds its meaning or purpose (high school literature)

While this standard is useful, because the state never explains how or at what grade these literature and composition standards are meant to be integrated, there is reason to doubt whether they will be thoughtfully incorporated into any course at any grade level.

The combination of repetitive and vaguely worded standards with the confusing literature and composition standards at the high school level leaves teachers in the Keystone State without a clear sense of either the scope or the sequence of the essential content that all students must master. As such, the standards earn one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

Standards delineate expectations for both literary and non-literary texts, and those provided for literary texts, in particular, are generally strong, for example:

> Identify literary devices in selected readings (e.g., personification, simile, alliteration) (grade 3)
>
> Compare the literary elements within and among texts used by an author, including characterization, setting, plot, theme, and point of view (grade 6)

The literary elements substrand is particularly helpful and details most of the essential content that students must learn as well as a clear progression of that content from grade to grade.

Similarly, the writing standards are generally good and include both the genres that students should study at each grade, as well as some general characteristics of quality writing expected at each grade.

Standards also delineate expectations for listening and speaking, as well as for media, and the state includes an entire strand devoted to research (albeit with some vague language and jargon noted below).

Content Weaknesses

To its credit, Pennsylvania specifies in the introduction to its ELA standards that:

> Students do not read "reading" they read about history, science, mathematics and other content areas as well as about topics for their interest and entertainment. Similarly, students do not write "writing" they use written words to express their knowledge and ideas and to inform or entertain others.

This suggests that the state understands and prioritizes the importance of specific content knowledge over vague reading skills and strategies. Unfortunately, this implication is not well supported by the standards themselves. Instead, a majority of standards are focused on delineating expectations for skills and strategies, rather than outlining the essential content that students must master to be proficient readers. This is particularly true of the standards devoted to non-literary texts, which are generally devoid of content. For example, the following standard appears almost verbatim for every grade, 3-9, then with slight variations in grades 10-12:

> Read, understand, and respond to essential content of text and documents in all academic areas (grades 3-9)

This standard does little to clarify expectations for reading in academic areas, and similarly vague and content-empty standards can be found throughout.

What's more, the state focuses an entire strand for grades Pre-K-12 on identifying bias and propaganda in reading, as demonstrated with the following:

> Distinguish between essential and nonessential information across a text to a variety of media; identify bias and propaganda where present (grade 8)

By providing no further guidance about how to analyze the truth or validity of argument, this standard could easily lead to politically charged lessons, rather than purposeful, outcomes-driven instruction.

The standards devoted to vocabulary development, to phonics and phonemic awareness, and to English-language conventions are too vague to provide meaningful guidance to teachers, as in:

> Demonstrate phonological awareness through phoneme manipulation (grade 1)
>
> Use meaning and knowledge of words (e.g., synonyms, antonyms) across content areas to develop a speaking and reading vocabulary (grade 2)
>
> Punctuate correctly (grade 3)
>
> Use correct grammar and sentence formation (grade 3)

The state also fails to provide adequate guidance about the quality, complexity, or number of texts that students should read, nor does it provide rubrics or exemplar student work that would clarify writing expectations across grades.

While Pennsylvania does delineate expectations for the writing genres students should study each year, the standards fail to adequately prioritize the content from grade to grade. Instead, standards for new genres are simply added as the years progress. For example, while persuasive writing doesn't appear until fifth grade, the state continues to focus on narrative writing through the end of high school.

As mentioned above, the state does include a strand specifically dedicated to research. Unfortunately, it features vague and jargon-filled language that distracts from what little content is provided. For example:

> Follow an inquiry-based process in seeking knowledge (grade 3)
>
> Conduct inquiry and research on self-selected or assigned topics using specified sources and strategies (grade 3)

The research standards also fail to outline a clear progression of rigor from grade to grade. For instance, while third-grade students are asked to follow an "inquiry-based process" in seeking knowledge, seventh-graders are inexplicably asked to do this only "with assistance."

Finally, no standards are provided for the delivery or evaluation of formal oral presentations.

Taken together, these shortcomings leave more than 50 percent of the essential content missing from the Keystone State standards, thus earning them three out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, Pennsylvania's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Keystone State has in place today.

1 Pennsylvania's ELA standards' grade bands (Pre-K, elementary, and secondary) overlap in third and eighth grade. Each grade's standards, however, are the same in both the documents in which they appear.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Pennsylvania • Mathematics

DOCUMENTS REVIEWED

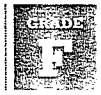
Academic Standards for Mathematics Pre-K-3. Revised May 18, 2010.
Accessed from: http://www.pdesas.org/Standard/StandardsDownloads

Academic Standards for Mathematics Elementary Standards, Grades 3-8. June 1, 2009.
Accessed from: http://www.pdesas.org/Standard/StandardsDownloads

Academic Standards for Mathematics Secondary. January 29, 2010.
Accessed from: http://www.pdesas.org/Standard/StandardsDownloads

Overview

Pennsylvania's standards are confusingly organized and difficult to read. In K-8, arithmetic is developed in a straightforward way but not given suitable priority. The high school material is lacking in specificity and content.



Clarity and Specificity:	1/3
Content and Rigor:	1/7
Total State Score:	**2/10**
(Common Core Grade: A-)	

General Organization

The K-8 grade-level standards are organized into eleven strands such as Geometry and Algebra and Functions. (Two of the eleven strands are focused on process, such as problem solving, rather than content.) Each strand is divided into topics, and not all strands or topics appear in each grade.

The high school standards follow a similar organizational structure, except that standards are presented in four categories: grade 11 standards, Algebra I, Algebra II, and Geometry.

Clarity and Specificity

The strand organization is overly complicated, and it is absurd to include some of the strands in every grade level, such as "Trigonometry" or "Concepts of Calculus." Some standards are clearly ludicrous, such as this:

> Determine the probability of an event occurring (grades K-1)

There are inane classifications, such as these standards listed under the strands Concepts of Calculus and Trigonometry, respectively:

> Order whole numbers, 0 to 100, with least to greatest value (grade 1)
> Identify right angles in the environment (grade 3)

Another example from the Concepts of Calculus strand is the poorly worded:

> Describe the relationship between rates of change and another variable (e.g., time, temperature) (grade 5)

"Rates of change" is a relationship between two variables, so the meaning of "another variable" is not clear.

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In addition to the poor organization, many of the standards are far too vague to interpret the intent:

> Use concrete objects or combinations of symbols and numbers to represent expressions, equations, and inequalities that model mathematical situations (grade 3)
>
> Gather data from a variety of appropriate sources (grade 6)
>
> Name, describe and apply geometric relations for 1-dimensional shapes and 2-dimensional shapes and 3-dimensional solids (grade 8)
>
> Identify and use properties and relations of geometric figures; create justifications for arguments related to geometric relations (Geometry)
>
> Model and compare values of complex numbers (Algebra II)

It is not clear from these standards what students are expected to know or what kinds of problems they are expected to be able to solve. The last standard ("Model and compare values of complex numbers") is particularly ill stated. Complex numbers are not ordered, so how students are intended to "compare values" is not clear.

The Geometry standard above, which is completely lacking in specific content, illustrates a general problem with the high school standards: They tend to be very broadly stated. In addition to the lack of clarity of the individual statements, it is difficult to track the development of some topics because the standards are scattered throughout the various strands rather than presented together.

The standards are poorly organized and often difficult to interpret. They provide limited guidance and receive a Clarity and Specificity score of one point out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Fewer than 30 percent of the standards in the early elementary grades are devoted to the development of arithmetic. This does not sufficiently prioritize arithmetic. There are, for example, more standards for statistics and probability in grades 3-5 than for arithmetic.

Content Strengths

The standards cover the inverse nature of addition and subtraction and of multiplication and division. They also cover the properties of arithmetic such as the associative property.

Content Weaknesses

The standards do not adequately specify that students have automaticity, or quick recall, of basic number facts. These are the basic building blocks for future mathematics; students who are still struggling with basic facts are not prepared to move on to the next level of mathematics. The following example shows that instant recall of basic number facts is not specified because fluency with using the facts is not the same thing as instant recall.

> Develop fluency in the use of basic facts for addition and subtraction (grade 2)

The development of arithmetic is straightforward, but is missing both fluency and standard procedures. The arithmetic thread is nicely sequenced and culminates with the desirable standard:

> Add, subtract, multiply, and divide whole numbers, decimals, fractions, and mixed numbers (grade 6)

Common denominators are not included.

The development of area in the standards is weak. Rectangles are not mentioned in the standards (K-12) and triangles only appear as right triangles. Standards on area are included, but only in general terms: "[U]se models to illustrate the meaning," and "use appropriate units to measure." So, for example, formulas for the area of rectangles and triangles do not appear.

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High school content is lacking in specifics. The statements are often too broad and vague to interpret the meaning. For example, the following standard could be interpreted at many levels of rigor:

> Evaluate and simplify algebraic expressions, for example: products/quotients of polynomials, logarithmic expressions and complex fractions; and solve and graph quadratic, exponential, and logarithmic equations; and solve and graph systems of equations and inequalities (Algebra II)

The coverage of linear equations is weak. Slope, for example, is mentioned specifically only once. Missing content includes slope-intercept form, point-slope form, and finding the equation of a line from two points. Linear equations are included in the following inexplicable standard, which also serves to illustrate the difficulty in interpreting the standards' respective intent:

> Evaluate and simplify not understood algebraic expressions, for example: sums of polynomials, products/quotients of exponential terms and product of a binomial times a trinomial; and solve and graph linear equations and inequalities (Algebra I)

The Geometry course is particularly weak. There is no foundation for geometry in the form of axioms or postulates. Standard theorems about triangles and circles and their proofs are not covered.

The development of quadratic equations is poor. Missing content includes completing the square and using the quadratic formula.

The arithmetic of polynomials and rational expressions is not covered.

Much STEM-ready material is also missing, including most of trigonometry and polar coordinates.

Arithmetic is covered incompletely and is not prioritized. Much high school content is missing as well, including specific mention of basic material on linear and quadratic equations as well as much of the STEM-ready content. These "shortcomings" result in a Content and Rigor score of one point out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of F, Pennsylvania's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Keystone State has in place today.

KSDE002258

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Rhode Island • English Language Arts

DOCUMENTS REVIEWED

NECAP and Local Reading GLEs. Adopted June 10, 2004; Revised April 2007. Accessed from: http://www.ride.ri.gov/Instruction/gle.aspx

NECAP and Local Written and Oral GLEs. Adopted June 10, 2004; Revised April 2007. Accessed from: http://www.ride.ri.gov/Instruction/gle.aspx

Overview

Rhode Island's standards address some important content in the areas of analyzing literary texts, and listening and speaking, but overall the standards are too repetitive and not specific enough to communicate clear priorities and rigorous content.

Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(Common Core Grade: B+)	

General Organization

Rhode Island's standards are organized into two strands, Reading, and Written and Oral Communication. Each strand is divided into several sub-strands. These are divided into grade by grade standards for Kindergarten through eighth grade. At the high school level, standards are offered for tenth and twelfth grades (but not ninth or eleventh).

The standards document specifies which standards are to be assessed locally and which will be assessed through the New England Common Assessment Program (NECAP), a multi-state common assessment consortium.

Clarity and Specificity

Although Rhode Island offers grade-by-grade standards, many of these are repeated across grades, sowing confusion about what students are expected to master at each grade level. For example, "Identifying possible motives of main characters" is a literary text standard in both grades 2 and 3. At grades 4 and 5, it becomes "Identifying causes or effects, including possible motives of characters," which does not change the fundamental expectation, nor make clear what other kinds of causes and effects the standards developers might have in mind.

Many standards are repeated nearly verbatim across multiple grades, such as this "personal response" standard, which appears essentially unchanged from Kindergarten through grade 5:

> Comparing stories or other texts to related personal experience, prior knowledge, or to other texts (grades K-5)

The following writing standard is also repeated across grades 5-12:

> Demonstrates the habit of writing by:
> - Writing with frequency, including in-school, out-of-school, and during the summer
> - Sharing thoughts, observations, or impressions
> - Generating topics for writing
> - Writing in a variety of genres (grades 5-12)

The excessive repetition of vague standards such as these makes the scope and sequence very difficult to glean, thus earning Rhode Island one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

KSDE002259

Content and Rigor

Content Strengths

Rhode Island's standards for analyzing literary texts do a fair job of covering much necessary content, as in this eighth-grade standard:

> Examining characterization (e.g., stereotype, antagonist, protagonist), motivation, or interactions (including relationships), citing thoughts, words, or actions that reveal character traits, motivations, or changes over time (grade 8)

It would be better if the state had tried to communicate the quality and complexity of reading that students should be doing when undertaking this literary analysis, but at least most literary genres and elements are mentioned, either in standards or in examples.

Rhode Island also does a decent job of outlining expectations for listening and speaking, including active listening, effective speaking, and productive group discussions. The state also includes standards for oral presentations, as in this grade 10 standard:

> Includ[e] smooth transitions, support thesis with well-chosen details, and provid[e] a coherent conclusion.
>
> EXAMPLES (of support and elaboration): Us[e] anecdotes, analogies, illustrations, visuals, detailed descriptions, restatements, paraphrases, examples, comparisons, artifacts (grade 10)

Evaluation criteria for oral presentations are not included, but detailed examples are included of expected characteristics of presentations.

Content Weaknesses

Rhode Island's early reading standards appear to cover the right content, but ultimately fall short in defining a complete sequence of phonological awareness, phonics, and comprehension skills. Consider, for example, the following grade 2 "Word Identification Skills and Strategies" standard:

> Read regularly spelled one- or two-syllable words using knowledge of sounds and letter patterns (grade 2)

In general, the standards for phonemic awareness and phonics are similarly thin. Two sets of reading strategies are included, as is a category called "Breadth of Reading," which contains several sub-categories of expectations about reading habits. Unfortunately, the expectations delineated in these sections are not measurable. Fluency standards are perfunctory, as are the vocabulary standards, which often remain unchanged throughout the grades. One red flag is that the vocabulary standards include multiple strategies for "unlocking meaning," so that word analysis is only one among many strategies (which also include using context clues like illustrations and diagrams). Etymology is not mentioned until twelfth grade.

Rhode Island includes a section called "Suggested Print and Non-Print Informational and Literary Texts—for Instruction and Assessment," yet it does not actually suggest any texts, only categories of texts, as in this fifth-grade statement:

> Poetry, plays, fairytales, fantasy, fables, realistic fiction, folktales, historical fiction, mysteries, etc. (grade 5)

Nowhere is the quality and complexity of reading material ever described, nor is there any mention of the study of American literature.

Informational text is treated cursorily, with an emphasis on "reference" and "practical/functional" documents. Even in high school, only one standard addresses arguments (and it is repeated in both grades 10 and 12):

> Evaluating the clarity and accuracy of information (e.g., consistency, effectiveness of organizational pattern, or logic of arguments) (grades 10 and 12)

Rhode Island's writing standards omit much important content. A single writing process standard is repeated across grades, and "habits of writing" standards, which include unmeasurable tasks such as "generating topics for writing," are also repeated across grades. A "Structures of Language" category touches only lightly on sentence and paragraph

KSDE002260

structures. Where one might expect to see the characteristics of good writing described by genre, the standards focus chiefly on such generic writing skills as "stating and maintaining a focus." Categories nominally address "narrative" and "informational" writing of all kinds, but the standards continue to focus on generic skills, such as "writing about observations and experiences" or "providing a concluding statement."

At the high school level, many standards are devoted to narrative writing, poetry, and reflective essays, but few are devoted to the structure and characteristics of good arguments or persuasive writing.

Standards for "Applying Rules of Grammar, Usage and Mechanics" do not address any specific content in grades K-5, except to say that students should be "identify[ing] grammatical errors when given examples" or "apply[ing] basic capitalization rules." In high school, a bit more content is included in the examples, but again that content is largely repeated across grades.

The research sub-category includes only minimalistic standards. For example, the research process is not detailed thoroughly, nor do these standards address the characteristics of final research products, such as proper citation of sources.

In a very few places, the Rhode Island standards include specific content, but in a form that is not necessarily useful to teachers. Long lists (for example, of literary devices) are included, but the same lists are repeated at multiple grade levels, and although the specificity is welcome, it is hard to determine what the priorities are for students at each grade level. The end result is a document that is not particularly rigorous.

Such omissions leave more than 50 percent of the critical K-12 ELA content missing, thus earning Rhode Island three points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, Rhode Island's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Ocean State has in place today.

KSDE002261

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Rhode Island • Mathematics

DOCUMENTS REVIEWED

Rhode Island K-8 Mathematics Grade-Level Expectations. June 2006; updated August 2, 2007. Accessed from: http://www.ride.ri.gov/Instruction/DOCS/gle/GLE%20pdf/FINAL/RI_Math_K-8_GLEs_Final_Version_PDF.pdf

Rhode Island High School Grade-Span Expectations. May 2006; updated August 2, 2007. Accessed from: http://www.ride.ri.gov/Instruction/DOCS/gle/GLE%20pdf/FINAL/RI_Math_High_School_GSEs_Final_Version_PDF.pdf

Overview

Rhode Island's standards are poorly organized and extremely difficult to read. In the elementary grades, arithmetic is neither prioritized nor well developed. The high school standards contain some rigorous content, but it is not presented coherently and its coverage is incomplete.

Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(Common Core Grade: A-)	

General Organization

The K-8 standards are organized into four content strands such as Number and Operations and Functions and Algebra. Each content strand is divided into topics, and the topics are common across several grades. In addition, standards within a topic begin with the same stem phrase across grades. For example, the following stem phrase is used to begin standards in the Number and Operations strand:

> Demonstrates conceptual understanding of mathematical operations through investigations involving...(grades K-3)

High school is organized similarly except the grades are combined into 9-10, 11-12, and "Advanced Mathematics."

Finally, the state provides process standards, such as "problem solving" and "reasoning and proof," which are meant to be integrated into instruction.

Clarity and Specificity

The use of the same stem phrase (bolded below) for all grades is poorly implemented and makes the standards difficult to read. For example, the following standard about using simple comparisons is bizarrely stated as a standard about data trends:

> **Analyzes patterns, trends, or distributions in data in a variety of contexts by determining or using** more, less, or equal (grades K-2) (emphasis original)

Many standards suffer from excessive length and complexity, such as:

> **Demonstrates understanding of the relative magnitude of numbers** from 0 to 199 by ordering whole numbers; by comparing whole numbers to each other or to benchmark whole numbers (10, 25, 50, 75, 100, 125, 150, or 175); by demonstrating an understanding of the relation of inequality when comparing whole numbers by using "1 more," "1 less," "10 more," "10 less," "100 more," or "100 less"; or by connecting number words and numerals to the quantities they represent using models, number lines, or explanations (grade 2) (emphasis original)

> **Identifies and extends to specific cases a variety of patterns** (linear and nonlinear) represented in models, tables, sequences, graphs, or in problem situations; and generalizes a linear relationship using words and symbols; **generalizes a linear relationship to find a specific case;** or writes an expression or equation using words or symbols to express the generalization of a nonlinear relationship (grade 7) (emphasis original)

Besides the overall lack of clarity, the phrase "generalizes a linear relationship to find a specific case" is mathematically backwards.

Some clearly stated content expectations are buried within the overly long standards. For example, the following standard is packed with good content:

> **Demonstrates conceptual understanding of algebraic expressions** by manipulating, evaluating, and simplifying algebraic and numerical expressions; adding, subtracting, multiplying and dividing polynomials; adding, subtracting, multiplying and dividing rational expressions; simplifying complex fractions; factoring quadratic and higher degree polynomials, including difference of squares; applying properties of logarithms (e.g., $\log_b i^n = n\log_b i$, $a^{\log_a b} = b$) and converting between logarithmic and exponential forms; manipulating, evaluating, and simplifying expressions involving rational exponents and radicals and converting between expressions with rational exponents and expressions with radicals (grades 11-12) (emphasis original)

Another problem with the high school standards is that material on related topics such as quadratics or exponentials is scattered incoherently across various strands.

The standards are difficult to read and interpret and rarely clear. They offer "limited guidance to users" and receive a Clarity and Specificity score of one point out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Rhode Island does not provide specific guidance about content priorities. That said, priorities can be gleaned by evaluating the number of standards devoted to a particular content area. Essential arithmetic content comprises fewer than 30 percent of the standards in the crucial elementary grades, which inadequately prioritizes this essential content.

What's more, while attention to arithmetic is minimal, the standards focus attention on less important topics such as geometric reflections in grades 3-7 and 9-12.

Content Strengths

The standards cover the structure of arithmetic such as commutativity, associativity, and distributivity as well as the inverse nature of addition and subtraction and of multiplication and division. The number line is used throughout.

In high school, the standards include some rigorous content despite the poor organization. For example, they cover completing the square for quadratic equations and the arithmetic of polynomials and rational expressions.

Content Weaknesses

The development of arithmetic is weak. The introduction to the Number strand states,

> Having students know basic facts and having students compute fluently (i.e., accurately and efficiently) continues to be an important goal in mathematics education

However, knowing basic facts and having computational fluency is not supported in the standards themselves.

> Mentally adds and subtracts whole-number facts through 20; multiplies whole-number facts to a product of 100 (grade 4)

Mentally computing is not instant recall. The standards do not adequately specify that students have automaticity, or quick recall, of basic number facts. These are the basic building blocks for future mathematics; students who are still struggling with basic facts are not prepared to move on to the next level of mathematics. For addition and subtraction, the capstone standard is as follows:

> Accurately solves problems involving addition and subtraction with regrouping; the concept of multiplication; and addition or subtraction of decimals (in the context of money) (grade 3)

Although a desirable standard, it does not mention fluency or the use of standard algorithms.

Similarly for multiplication, only a parenthetical remark appears:

> Accurately solves problems involving multiple operations on whole numbers or the use of the properties of factors and multiples; and addition or subtraction of decimals and positive proper fractions with like denominators. (Multiplication limited to 2 digits by 2 digits, and division limited to 1 digit divisors.) (grade 4)

High school content is missing basic material on some important topics. The material on linear equations omits point-slope form and finding the equation for a line given two points. The various forms of quadratic equations and finding the vertex are not explicitly presented.

In the elementary grades, arithmetic is neither prioritized nor well developed. High school coverage is better, but is still missing some essential content. These serious problems result in a Content and Rigor score of three points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, Rhode Island's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Ocean State has in place today.

KSDE002264

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

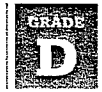
South Carolina • English Language Arts

DOCUMENTS REVIEWED

South Carolina Academic Content Standards for English Language Arts. 2008.
Accessed from: http://ed.sc.gov/agency/Standards-and-Learning/Academic-Standards/old/cso/index.html

Overview

The South Carolina standards are woefully vague and repetitive, despite some good content, such as the treatment of early reading, and some aspects of literary and informational texts.



Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(Common Core Grade: B+)	

General Organization

The South Carolina standards are divided into three strands: Reading, Writing, and Researching.

Each grade level contains six "standards" (three for Reading, two for Writing, and one for Researching), and a number of "indicators" are listed for each standard. Introductory material states that "all of the six standards and their indicators carry equal weight and should be taught in an integrated manner." Standards for high school are divided into courses, English 1, 2, 3, and 4.

Clarity and Specificity

South Carolina's essential problem is that far too many of its indicators are repeated across grades, even though some of them are rigorous. Overall, the indicators are far too repetitive to be helpful for grade-level curriculum planning, instruction, or assessment.

Consider the following indicator for literary text response, repeated in grades 6-12:

> Create responses to literary texts through a variety of methods (for example, written works, oral and auditory presentations, discussions, media productions, and the visual and performing arts) (grades 6-12)

In some cases, the indicators are both unmeasurable and repetitive, as in this example, repeated in grades 1-12:

> Read independently for extended periods of time for pleasure (grades 1-12)

Excessive repetition of vague indicators casts a pall over the document and earns South Carolina one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

South Carolina's indicators for early reading are systematic and thorough, as in the following first-grade phonics set:

> Use onsets and rimes to decode and generate words
>
> Use knowledge of letter names and their corresponding sounds to spell words independently
>
> Organize a series of words by alphabetizing to the first letter

KSDE002265

> Identify beginning, middle, and ending sounds in single-syllable words
>
> Classify words by categories (for example, beginning and ending sounds)
>
> Use blending to read
>
> Spell three- and four-letter short-vowel words and high-frequency words correctly (See Instructional Appendix: High-Frequency Words.)
>
> Use known words to spell new words (grade 1)

All of the early reading criteria are addressed (see *ELA Content Specific Criteria*, Appendix A) and often with examples. Appendices list the high-frequency words that students are to learn, as well as the roots, prefixes, and suffixes that they should know at each grade level. Vocabulary is addressed at every grade level, with a focus on word analysis. Spelling is also addressed within vocabulary.

From Kindergarten onward, literary and informational text are treated separately, with specific indicators outlined in each area, progressing in rigor across the grades, despite repetition in a number of places. Consider the following progression—on "point of view"—in grades 2-7:

> - Analyze the text to determine the narrator (grade 2)
> - Analyze the text to determine first-person point of view (grade 3)
> - Distinguish between first-person and third-person points of view (grade 4)
> - Differentiate among the first-person, limited-omniscient (third person), and omniscient (third person) points of view (grade 5)
> - Differentiate among the first-person, limited-omniscient (third person), and omniscient (third person) points of view (grade 6)
> - Explain the effect of point of view on a given narrative text (grade 7)

With respect to informational text, some repetition also exists, but rigorous progression is evident in a number of places, as in this grade 5-8 sequence dealing with bias and propaganda:

> - Analyze a given text to detect author bias (for example, unsupported opinions) (grade 5)
> - Summarize author bias based on the omission of relevant facts and statements of unsupported opinions (grade 6)
> - Identify propaganda techniques (including testimonials and bandwagon) in informational texts (grade 6)
> - Identify author bias (for example, word choice and the exclusion and inclusion of particular information) (grade 7)
> - Identify the use of propaganda techniques (including glittering generalities and name calling) in informational texts (grade 7)
> - Analyze informational texts for author bias (for example, word choice and the exclusion and inclusion of particular information) (grade 8)
> - Identify the use of propaganda techniques (including card stacking, plain folks, and transfer) in informational texts (grade 8)

To illustrate the quality and complexity of reading that students should master, South Carolina appends a suggested reading list organized by grade spans and genres. The titles represent a thoughtful selection of literary and informational texts. Although American literature is not required for study, a number of important works from American literature are included on the list.

The indicators for oral and written conventions are fairly well delineated across grades 1-6. They are somewhat repetitive in grades 7-12, but generally go farther than many state standards in defining specific objectives for grammar and usage.

Content Weaknesses

The South Carolina indicators for writing are woefully repetitive, with many repeated verbatim across multiple grades in multiple instances. They focus mostly on process and do not describe specific expectations for products by genre in a way

that is helpful to teachers. For example, in "informational writing," some version of the following indicator is repeated across grades 4-10:

> Create informational pieces (for example, reports and letters of request, inquiry, or complaint) that use language appropriate for the specific audience (grades 4-10)

Even indicators for persuasive writing in high school mention only that essays should have a thesis statement and "use support." It would be more helpful to describe key aspects of persuasive writing such as anticipating and addressing potential counterclaims and the use of rhetorical strategies.

South Carolina's indicators include none that address listening and speaking. Some "Oral Communication and Vocabulary" indicators are included, such as this high school indicator, but it is repeated verbatim in all four years:

> Create written works, oral and auditory presentations, and visual presentations that are designed for a specific audience and purpose (grades 9-12)

Although it includes a Research strand, South Carolina's indicators in this domain are thin. For example, "clarify and refine a research topic" is an indicator in all grades 4-12. The equally thin "use a variety of print and electronic reference materials" appears in grades 6-12. Paraphrasing and summarizing information is addressed, as is documenting sources, but these indicators are perfunctory and repetitive, as in this grade 6-12 indicator:

> Use a standardized system of documentation (for example, a list of sources with full publication information and the use of in-text citations) to properly credit the work of others (grades 6-12)

Nowhere are specific characteristics for research products fully defined, such as essays that reflect the evaluation of primary and secondary sources or the synthesis of information.

Multimedia indicators are addressed only occasionally. For example, consider this indicator, which appears under "Visual Aids in Presentations." It repeats almost unchanged in grades 4-12:

> Select appropriate graphics, in print or electronic form, to support written works and oral and visual presentations (grades 4-12)

Students should be expected not only to select graphics, but to analyze and produce multimedia products in order to be college- and career-ready.

Despite notable areas of rigorous content, such as early reading, South Carolina fails to define a systematically rigorous set of student expectations. Weaknesses in the areas of writing, listening and speaking, research, and media mean that South Carolina is missing close to 50 percent of necessary content and earns three points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, South Carolina's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Palmetto State has in place today.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

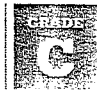
South Carolina • Mathematics

DOCUMENTS REVIEWED

South Carolina Academic Standards for Mathematics, June 12, 2007.
Accessed from: http://ed.sc.gov/agency/Standards-and-Learning/Academic-Standards/old/cso/standards/math/documents/2007MathematicsStandards.doc

Overview

South Carolina's standards are often strong. Many are clear and easy to read, and the high school content contains some mathematically rich material. Unfortunately, the standards neither prioritize nor support the arithmetic skills that students need and therefore fail to provide the kind of guidance K-12 teachers need to truly prepare students for college mathematics.



Clarity and Specificity:	2/3
Content and Rigor:	3/7
Total State Score:	**5/10**
(Common Core Grade: A-)	

General Organization

South Carolina's K-8 standards are organized by strands including Measurement, Number and Operations, and Algebra. These are subdivided by topic and then into grade-specific "indicators." It is these indicators that are referred to as "standards" and examined below. The high school standards are organized by course rather than grade, but otherwise follow the same structure.

Clarity and Specificity

In general, South Carolina's standards are well organized and not difficult to read. There are a reasonable number of standards in each grade; they are easy to find and stated succinctly. Some are simple and easily understood, such as the following standards:

> Classify angles as right, acute, or obtuse (grade 3)
> Represent with ordered pairs of integers the location of points in a coordinate grid (grade 6)

Some standards, however, are subject to wide interpretation in terms of the mathematical skill that students are expected to master. For example:

> Represent numeric, algebraic, and geometric patterns in words, symbols, algebraic expressions, and algebraic equations (grade 5)

Without further clarification, it is not clear from this statement what students are expected to be able to do.

In the elementary grades, the standards contain many statements that include the phrase "generate strategies to..." such as:

> Generate strategies to add and subtract without regrouping through two-digit numbers (grade 1)

There is an attempt in the introduction to explain the phrase, but it is not specific enough to make these standards clear or measurable:

> An indicator beginning with the phrase "Generate strategies" addresses a concept that is being formally introduced for the first time, and students must therefore be given experiences that foster conceptual understanding.

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Other standards begin with equally vague phrases, including "apply an algorithm" and "apply strategies and procedures." Unfortunately, the accompanying clarification statements provided in the introduction are similarly ambiguous.

Most of the standards are explicit and clear. But enough of them suffer from such vague language that, taken together, the standards do not quite provide a complete guide to users. This results in a Clarity and Specificity score of two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Aside from the number of standards devoted to each content area, South Carolina does not offer explicit guidance as to which content is most important. In the elementary grades, the arithmetic standards comprise only about one-third of the standards—an insufficient proportion that does not properly prioritize the role of arithmetic in the early grades.

Content Strengths

The high school standards are generally good and cover the advanced material needed for STEM-ready students.

Content Weaknesses

The primary weakness of South Carolina's standards is with the development of arithmetic. While fluency is stated as a goal, the development of the standards does not support true mastery of arithmetic skills that students need to continue to more advanced topics. For example, the arithmetic standards on whole-number addition and subtraction are the following:

> Recall basic addition facts through 9 + 9 and corresponding subtraction facts (grade 1)
> Generate strategies to add and subtract pairs of two-digit whole numbers with regrouping (grade 2)
> Apply an algorithm to add and subtract whole numbers fluently (grade 3)

Note that the last standard does not specify that the standard algorithms are the ones to be applied in solving addition and subtraction problems. The guidance in the introduction for the phrase "apply an algorithm" states that standards beginning with this phrase address "a concept that has been introduced in a previous grade." In the above, various strategies may have been generated to add and subtract, and the "algorithm" chosen to apply to achieve the desired fluency may be one that is inefficient or otherwise inadequate.

The development of whole-number multiplication and division and of fraction and decimal arithmetic follows a similar pattern. Students first "generate strategies" and then "apply an algorithm" to achieve arithmetic fluency. The failure to specify the use of standard algorithms and other standard arithmetic procedures has the potential to undermine students' mastery of arithmetic.

Further, the important topics of common denominators and negative numbers are not mentioned in the elementary standards. While negative numbers are never mentioned explicitly, in sixth grade, integers suddenly appear in a standard, which states simply:

> Understand integers (grade 6)

While this is a laudable goal, it is unmeasurable and fails to provide sufficient guidance about what students are expected to know and be able to do.

As stated above, the high school standards are generally strong, but they, too, reveal a few weaknesses. Many begin with "apply a procedure to...," without specifying what procedure ought to be applied. Since graphing calculators are required for all courses, this could result in students relying on them to perform procedures that should be mastered without the use of a calculator.

A few details are also missing in the standards for lines and quadratics. The geometry course is not rigorous. The standards use all of the important theorems to solve problems, but there is no indication that the important theorems themselves should be proven.

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In sum, much of the high school content is covered clearly and well in these standards. They fall short, though, on the topic of arithmetic. Arithmetic is the fundamental prerequisite for advanced mathematics, but its importance is insufficiently supported in South Carolina's standards. This is no less than a "crucial shortcoming" that leads to a Content and Rigor score of three points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, South Carolina's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Palmetto State has in place today.

South Dakota • English Language Arts

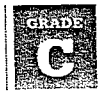
DOCUMENTS REVIEWED

South Dakota Reading Content Standards. March 2007.
Accessed from: http://doe.sd.gov/contentstandards/languagearts/index.asp

South Dakota Writing, Listening and Communication Content Standards. March 2007.
Accessed from: http://doe.sd.gov/contentstandards/languagearts/index.asp

Overview

South Dakota's standards are clearly organized and well presented. Unfortunately, they also include far too many vaguely worded standards and omit much essential content. This leaves teachers in the Mount Rushmore State without the guidance they need to drive instruction and rigorous curriculum and assessment development.



Clarity and Specificity:	2/3
Content and Rigor:	4/7
Total State Score:	**6/10**
(Common Core Grade: B+)	

General Organization

South Dakota's standards are organized in three strands: Reading; Writing; and Listening, Speaking, and Viewing. For each strand, the state provides indicators, common to all grades, which "represent expected outcomes for all students preparing to graduate from South Dakota schools." For example:

> Students can comprehend and fluently read text (reading indicator 2)

Grade-level content standards are then provided to delineate "expected outcomes for students completing each grade level."

In addition, the state provides "performance descriptors," which are rubrics that outline what skills students must have mastered by the end of the year to be considered advanced, proficient, or basic.

Clarity and Specificity

As noted above, the South Dakota standards are well organized and clearly presented. In particular, the state helpfully lists them in two ways: by grade level, so that teachers can clearly see everything their students need to master in a particular year, and by indicator, so that readers can understand the development and progression of content and rigor in a particular strand or indicator from grade to grade.

Some standards are clear and specific, such as:

> Students can edit text for subject-verb agreement (grade 6)

Unfortunately, too many of the grade-specific standards are vague and provide insufficient guidance. For example:

> Students can contribute to group discussions on a topic (Kindergarten)
> Utilize comprehension strategies while constructing meaning (grade 5)
> Students can determine and utilize organizational features of text (grade 3)

Occasionally, the performance descriptors add specificity, but most frequently the grade-level standards are simply repeated verbatim under the "proficient" heading. (Note, though, that by providing some guidance about what students would need to know and be able to do to be considered "advanced," the state admirably demonstrates how teachers can differentiate instruction for more advanced students.)

South Dakota also includes a helpful glossary to define content-specific vocabulary used throughout the standards.

Though clear organization and inclusion of the glossary and performance descriptors partially offset the vagueness of the grade-level standards themselves, overall the standards leave too much room for interpretation and variation and, consequently, earn two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

South Dakota is one of the few states to provide an appendix that is devoted to naming suggested authors (and occasionally texts) that reflect our common literary and cultural heritage. This list is divided by grade band (Pre-K-4, 5-8, and 9-12) and includes important authors and works of literature and poetry, such as Louisa May Alcott, Robert Frost, C. S. Lewis, Shakespeare, Sir Arthur Conan Doyle, Chaucer's *Canterbury Tales*, William Blake, and so on. In addition, South Dakota includes important works of American nonfiction, such as Martin Luther King, Jr.'s *Letter from a Birmingham Jail* and Lincoln's *Gettysburg Address*, as well as a list of suggested authors from "contemporary American literature" that is presented for grades Pre-K-2, 3-4, 5-8, and 9-12.

The standards also include expectations that address the quality and complexity of writing expected at each grade, such as:

> Students can write a thesis statement for an expository or persuasive document (grade 9)
> Students can summarize and paraphrase information from references to compose text (grade 7)
> Students can edit text for verb-tense agreement (grade 7)
> Students can compose narrative, descriptive, expository, and persuasive text of five paragraphs (grade 8)

The standards helpfully address the genres of writing that students should be doing at each grade, as shown in the eighth-grade standard above and the following third-grade standard:

> Students can write a friendly letter, thank-you notes, and invitations (grade 3)

While no rubrics or annotated samples of student writing are provided, the performance descriptors help clarify expectations of the level of writing expected of students at each grade level. For example:

> Third-grade students performing at the advanced level:
> - compose a paragraph with indentation, a topic sentence, supporting details, and a conclusion; incorporate questions, commands, statements and/or exclamations; write friendly letters, thank-you notes, invitations, letter to the editor or principal;
> - capitalize newspapers, magazines, first words in quotations, names, holidays, special events, book and story titles, and titles of people;
> - use commas in dates, city and state, items in a series; and quotation marks in dialogue;
> - write legibly in cursive with proper spacing in a paragraph;
> - write a paragraph using multiple interjections (grade 3, advanced)

The standards also delineate expectations for listening, speaking, and, in grades K-8, for delivering formal oral presentations.

Content Weaknesses

The standards that address phonics and phonemic awareness are generally too vague to provide real guidance to teachers, as demonstrated below:

> Students can read text by decoding word parts (grade 1)
> Students can decode to read and recognize words (grade 1)

Similarly, the vocabulary standards are generally empty, as in:

> Students can apply example clues to extend vocabulary (grade 7)
> Students can analyze word parts to determine meaning and context (grade 9)

While the state admirably includes the appendix listing sample authors and texts, the actual standards that address literary and non-literary texts outline virtually no rigorous or specific content. For example:

> Students can identify and describe literary elements and devices in literature (grade 3)
> Students can interpret text using comprehension strategies (grade 7)
> Students can identify how authors use literary elements to create meaning (grade 7)
> Students can evaluate how style affects the meaning of text (grade 12)

Such standards leave little confidence that students across the state will master the critical content necessary to become proficient readers.

Similarly, while the writing standards address the genres students should be learning at each grade, they do not specify essential genre-specific content. Nor do they clearly outline the grammar content that students must learn each year. Instead, the state includes mostly generic standards, such as:

> Students can identify and incorporate nouns in the writing process (grade 4)

Finally, while the document includes research standards, their expectations are so general as to be meaningless, such as this one from twelfth grade:

> Students can write a research document which will defend a position or recommend a plan of action (grade 12)

Taken together, these shortcomings leave almost 50 percent of the essential K-12 content missing, thus earning South Dakota four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, South Dakota's ELA standards are mediocre. Those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Mount Rushmore State has in place today.

South Dakota • Mathematics

DOCUMENTS REVIEWED

Mathematics Content Standards. May 17, 2004.
Accessed from: http://doe.sd.gov/contentstandards/math/docs/MathStandards–Approved05-17-04.pdf

Overview

South Dakota's standards are beautifully presented. They are well organized and illustrated throughout with examples. Unfortunately, their mathematical content is often incomplete. Arithmetic, though somewhat prioritized, is poorly developed. High school is missing important content.

Clarity and Specificity:	2/3
Content and Rigor:	3/7
Total State Score:	**5/10**
(Common Core Grade: A-)	

General Organization

The K-8 standards are organized by five content strands such as Algebra and Geometry. Each strand is subdivided into topics, and within these topics are the grade-level standards. Associated with each standard are examples and supporting skills.

The high school organization is similar, but the standards are divided not by grade, but into two categories: Core and Advanced.

Clarity and Specificity

The standards are generally very easy to read. They are well organized and the statements are often succinct and clear, such as:

> Students are able to measure length to the nearest 1/2 inch (grade 3)

For standards that are not so clear, the associated examples and supporting skills often serve to clarify. Take the following standard and example:

> Students are able to identify information and apply it to a given formula
>
> Example: Given the formula for distance, D = rt, the troop hiked 12 miles in 4 hours. At what rate did they hike? (grade 5)

Sometimes the supporting skills contain crucial mathematics. In the following standard, recall of number facts is included as a supporting skill rather than as a standard itself:

> Students are able to find the products of two-digit factors and quotient of two natural numbers using a one-digit divisor (grade 4)

The supporting skill is:

> Recall and apply multiplication and division facts through the 12s (grade 4)

The examples are necessary in interpreting the high school standards. For example, for linear equations:

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> Students are able to use graphs, tables, and equations to represent linear functions.
>
> Examples:
> 1. Create a table from the graph or equation of a line.
> 2. Graph a linear equation in the form y=mx+b.
> 3. Write an equation of a line that passes through the points (3, 2) and (-1, 5) (high school—core)

Another example is the following broadly stated standard that, in and of itself, could be interpreted at almost any level of rigor:

> Students are able to apply properties and definitions of trigonometric, exponential, and logarithmic expressions (high school—advanced)

Five examples accompany this standard, and they make clear that the standard expects a high level of rigor, such as:

> $(\sin x - \cos x)^2 = 1 - \sin(2x)$ (high school—advanced)

Not every type of problem appears as an example, however, so the scope of this standard is still unclear.

A similarly vague standard with a high-level example is:

> Students are able to describe characteristics of nonlinear functions and relations
>
> Example: Find the period, amplitude, vertical and horizontal shift of $y = 3\sin2(x + \frac{\pi}{3})-2$ (high school—advanced)

The standards are well presented and easy to read, but they are often overly general, though the use of examples to clarify the intent is an exemplary feature. Even with the examples, however, the standards do not quite provide a complete guide to users. They receive a Clarity and Specificity score of two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

South Dakota does prioritize the development of arithmetic, though not adequately. The introduction states:

> Grades 3 through 5 standards emphasize multiplicative reasoning, equivalence, and computational fluency with whole numbers.

This emphasis is not adequately reflected in the standards themselves where about 40 percent of the standards support the stated emphasis, indicating a moderate priority for arithmetic.

Content Strengths

As mentioned above, the primary strength of South Dakota's standards is their relatively high prioritization of essential arithmetic in the crucial elementary grades. In addition, some of the high school examples indicate a high degree of rigor in coverage. For another important example, although the arithmetic of rational functions is not explicitly required in the standards, there is:

> Students are able to write equivalent forms of rational algebraic expressions using properties of real numbers (high school—advanced)

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This is too broad a statement to discern the level of rigor required, but the examples include problems indicating a high degree of sophistication, such as:

$$\frac{2+\frac{1}{x}}{\frac{1}{x+3}-1}$$ (high school—advanced)

In addition, linear equations are generally well covered.

Content Weaknesses

Though arithmetic is stated as a priority, it is not well developed. Beginning with the foundations of whole-number arithmetic, instant recall of addition and subtraction facts is not mentioned. Automaticity, or quick recall, of basic number facts is the basis for future mathematics; students who are still struggling with basic facts are not prepared to move on to the next level of mathematics. The capstone standards for addition and subtraction are:

> Students are able to solve two-digit addition and subtraction problems written in horizontal and vertical formats using a variety of strategies (grade 2)
>
> Students are able to add and subtract whole numbers up to three digits and multiply two digits by one digit (grade 3)

Fluency and standard algorithms go unmentioned and may be undermined by the "variety of strategies" which are specified. The development of multiplication and division is better, but still not adequate. Neither fluency nor standard algorithms is specified.

The poor development of arithmetic continues with the development of fractions. Few standards even deal with fractions. For example, in fifth grade, we find just two standards about fractions and none of the operations is specified. The coverage of fractions in sixth grade is similarly scant, and the arithmetic of fractions is again not specified. Despite the lack of development, in seventh grade:

> Students are able to add, subtract, multiply, and divide integers and positive fractions (grade 7)

In high school, much essential content is missing. Geometry lacks constructions as well as proofs of basic theorems. Polynomials are mentioned, but the coverage is not complete. There is little development of quadratic equations, and the important skills of factoring and completing the square are not covered. Few standards explicitly deal with trigonometry, although the examples imply high expectations. Much of the STEM-ready content is missing, including inverse trigonometric functions and polar coordinates.

Although arithmetic is somewhat prioritized, it is not well developed. The high school standards are missing much of the essential content, including STEM-ready content. These "serious problems" result in a Content and Rigor score of three points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, South Dakota's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Mount Rushmore State has in place today.

KSDE002276

Tennessee • English Language Arts

DOCUMENTS REVIEWED

Standards, Learning Expectations and Performance Indicators. Effective 2009-2010. Accessed from: http://www.state.tn.us/education/ci/english/index.shtml

Overview

The Tennessee standards cover nearly all of the essential K-12 ELA content rigorously and with sufficient detail. While there is some unnecessary repetition, a few instances of vague language, and an overemphasis on writing "work-related" texts, these Tennessee standards are a vast improvement over earlier iterations.

Clarity and Specificity:	3/3
Content and Rigor:	6/7
Total State Score:	**9/10**
(Common Core Grade: B+)	

General Organization

The Tennessee standards are organized into eight strands:

- Language
- Communication
- Writing
- Research
- Logic
- Informational Text
- Media
- Literature

Within each strand are grade-level expectations (GLEs) (and "course-level expectations" for high school), which, according to the state, "are the overarching goals for student learning." "Checks for Understanding"—which appear directly below the GLEs—offer guidance about potential formative and summative assessments, and "State Performance Indicators" convey what will be assessed by the state. The standards are grade by grade, K-12.

Clarity and Specificity

The grade-level and course-level expectations tend to be broad in scope, and not always measurable, but the Checks for Understanding and the State Performance Indicators are much more specific—and read like standards as well. All four (GLEs, course-level expectations, Checks for Understanding, and State Performance Indicators) are referred to as standards in this review, though Checks for Understanding is the primary focus.

Most of the standards are clear and specific, as illustrated by these grade 5 and grade 8 expectations:

> Identify the correct use of adjectives (i.e., common/proper, comparative forms, predicate adjectives) and adverbs (i.e., comparative forms, negatives) within context (grade 5)
>
> Identify the thesis of a speech in which the main idea may be explicitly or implicitly stated, concepts may be more abstract, and extended metaphors may be used; determine the essential elements that elaborate it (grade 8)

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A small number of unmeasurable standards do make their way into the document, such as:

> Write poems, stories, and essays based upon thoughts, feelings, and experiences (grade 3)
>
> Derive meaning while reading (e.g., use metacognitive and self-monitoring reading strategies to improve comprehension (reread, ask for help, self-questioning, draw on earlier reading) (grade 5)

Such standards are rare, however.

Repetition across grades is sometimes a problem, hut for the most part meaningful distinctions are made. For example, lists of frequently confused words and foreign words and phrases are offered with some repetition at each grade level, but new words are also added every year at the end of each list, implying that teachers are responsible for the new additions at that grade level.

In short, Tennessee's standards are very clear and specific. They leave little doubt about student expectations and therefore earn three points out of three for Clarity and Specificity. (See *Common Grading Metric*. Appendix A.)

Content and Rigor

Content Strengths

Tennessee's early reading standards are rigorous. The following phonics standard from grade 1 is typical in its rigor:

> Apply phonics generalizations in order to decode words.
> - name all uppercase/lowercase letters of the alphabet
> - understand that the sequence of letters in a written word represents the sequence of sounds in a word
> - use letter-sound matches and structural analysis to decode grade-level words
> - use parts of words (e.g., root/base words, compound words, contractions, prefixes, suffixes) to decode grade-level words
> - apply long and short vowel rules when decoding text
> - use sounding out words; chunking words into smaller parts; and looking for blends, digraphs, word families, etc. as a means of decoding unfamiliar words
> - continue to decode unknown words that are grade-level appropriate (grade 1)

The vocabulary standards are detailed, focus on word analysis and etymology, and do not prioritize the use of context clues over more reliable ways of determining meaning. Standards for spelling, grammar, and usage are also thoroughly treated, as in this example:

> Distinguish between clauses (adjective, adverb, noun) and phrases (adjective, adverb, appositive, infinitive, prepositional, verb, verbal—including gerunds and participles) (grade 7)

Such grade-specific detail makes it easy for the teacher to hold students accountable for correct and progressively sophisticated use of the English language.

Standards for literary and informational text are distinct, and each is treated in detail, despite some repetition across grades. Literary genres, structures, elements, and devices are all well scaffolded. For example, in grade 2, students must simply "identify the characters, plot, and setting of a story," but by grade 7, each of these elements is addressed in detail, as in this example about plot:

> Identify how the author reveals character (i.e., what the author tells us, what the characters say about him or her, what the character does, what the character says, what the character thinks) (grade 7)

Tennessee also includes expectations—at least in eleventh grade—that students will:

> Compare and contrast the elements (e.g., form, language, plot, and characters) of two works representing different literary periods (e.g., *The Scarlet Letter* and *An American Tragedy*) (grade 11)

Although Tennessee does not go farther to describe the quality and complexity of texts that students should read in each grade, the state deserves plaudits for prioritizing the study of American literature.

When it comes to informational text, the structures and various characteristics of informational text are well addressed. Related content concerning the analysis of arguments is also addressed in the logic strand (see below).

Tennessee's communication standards are straightforward and practical, although some are repeated across grades. For the most part, good augmentations are made at appropriate benchmark grades to demonstrate an overall progression of rigor. For example, in the earliest grades, students must "summarize what has been heard" but, by grade 5, they must "recognize common organizational structures of speeches (e.g., sequential, chronological, problem-solution, comparison-contrast, cause-effect)." Recitation and oral presentations are included throughout and these standards detail specific characteristics of effective presentations. Standards for "group work" are surprisingly detailed and useful, noting the specific ways in which "self-directed work teams" may accomplish a particular purpose.

Tennessee's writing standards exhibit many good characteristics. The standards offer explicit direction about aspects of good writing, including the third grade requirement to write a coherent paragraph:

> Using complete sentences, develop a logical, coherent paragraph with a topic sentence, supporting details, and a concluding sentence (grade 3)

Tennessee also requires, at grade 6, that students write a coherent thesis statement.

As early as grade 1, the Writing standards incorporate aspects of research and technology. A good synergy exists between what is expected in writing when it comes to doing research and the content of the Research standards themselves.

The Research standards also maintain explicit and rigorous expectations for students, noting at each grade level, for example, how to distinguish among and evaluate the various types of resources. As early as second grade, students are expected to:

> Write a simple research report that demonstrates a gathering of information (grade 2)

This standard at grade 6 becomes:

> Write a research paper, using primary and secondary sources and technology and graphics, as appropriate (grade 6)

Sixth-graders are also expected, among other things, to:

> Distinguish between primary and secondary sources, defining the characteristics of each and evaluating each for their benefits and limitations (grade 6)
>
> Choose among sources provided and those found independently based on the usefulness, credibility, and reliability of the sources (grade 6)
>
> Identify reasons for choosing one source over another, including those found on websites (grade 6)
>
> Identify the characteristics and limitations of source material (grade 6)

Considering all the research-related standards together, little doubt remains as to what kinds of research products students should be producing.

Tennessee also includes an entire strand devoted to logic. As early as Kindergarten, students must "develop an understanding of sequential events." By grade 6, they must define inductive and deductive reasoning and identify examples of each in texts. In twelfth grade, students analyze common fallacies and:

> Differentiate among evidence, inferences, assumptions, and claims in argumentation (e.g., explain and evaluate opinion editorials, commercials, political cartoons, philosophical arguments) (grade 12)

The emphasis on logic is a welcome addition.

Finally, both the analysis and production of multimedia are required and a rigorous progression across the grades is evident. The standards for writing, research, logic, and media complement each other well.

Content Weaknesses

Despite the many positive features of Tennessee's writing standards, they do not describe by genre the writing products that students must produce. Instead, they maintain a standard (nearly verbatim across most grades) that encompasses all writing types:

> Write in a variety of modes (e.g., a summary; an explanation; a description; a creative expression; a literary analysis, informational, research, or argumentative essay) (grades 3-12)

The odd exception to this perfunctory treatment of genres is the inordinate emphasis, starting in grade 6, on "work-related texts." Based on these standards, students might produce terrific business letters and résumés, but never be able to write a compelling persuasive essay. Samples of student writing to illustrate expected quality are not included.

On balance, the Tennessee standards are very helpful to teachers and other users. They are thorough and exhibit a rigorous progression across grades in almost all areas emphasized in the *ELA Content-Specific Criteria*, despite the over-emphasis on writing "work-related" texts, to the exclusion of other genres, in the writing strand. They therefore earn six points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

Tennessee's standards are generally more straightforward, clear, and specific than the Common Core. They treat both literary and non-literary texts in systematic detail throughout the document, addressing the specific genres, sub-genres, and characteristics of both text types. Tennessee also provides more detailed guidance and clearer expectations regarding the general characteristics of good writing expected throughout the grades, and its standards for logic are more thorough and rigorous.

On the other hand, Common Core includes samples of student writing to clarify grade- and genre-specific writing expectations, as well as a reading list to provide guidance about the quality and complexity of texts that students should be reading each year. In addition, the Common Core includes standards explicitly addressing foundational U.S. documents. Such enhancements would benefit Tennessee's already-strong standards.

KSDE002280

Tennessee • Mathematics

DOCUMENTS REVIEWED

User's Guide to the Tennessee Mathematics Curriculum Framework, PreCalculus and Advanced Algebra and Trigonometry. January 25, 2008. Accessed from: http://www.state.tn.us/education/ci/math/index.shtml

Overview

Tennessee's standards cover much mathematical content with both depth and rigor. The high school standards are strong. The main failure is in the area of arithmetic, which is neither prioritized nor appropriately culminated.

Clarity and Specificity:	2/3
Content and Rigor:	3/7
Total State Score:	**5/10**
(Common Core Grade: A-)	

General Organization

The K-8 standards are organized by five content strands, one of which is a mathematical process strand that focuses on topics such as problem-solving and that is intended to be integrated into the instruction of all content.

Each standard is presented by grade with three components: grade-level expectations, Checks for Understanding, which are suggestions for student learning, and State Performance Indicators, which help clarify how the grade-level expectation is assessed. The three components are interrelated and all are considered to be standards.

The high school standards are organized similarly except that the material is presented by course rather than grade. The courses, however, are still organized by strand so that Algebra I has an algebra strand, as well as strands for geometry and data analysis.

Clarity and Specificity

The standards are generally easy to read and understand. However, the distinction among the three categories is unclear, in particular because you must piece together information from all three to understand what, precisely, students are expected to know and be able to do. In addition, although the mathematical processes strand is described as integrated, it is listed with each grade level and sometimes includes content, such as time-telling in the early grades.

Many standards are clearly stated and easy to understand, including the following:

> Use the prime factorization of two whole numbers to determine the greatest common factor and the least common multiple (grade 5)

But some standards are overly broad, not measurable, or mathematically impossible, for example:

> Find lengths given areas or volumes, and vice versa (grade 6)

This standard is subject to interpretation, particularly since it is not generally possible to find lengths given areas. As mentioned above, the division of the high school courses into strands is peculiar in that "algebra" becomes a strand in the algebra courses. Despite this, the courses are still reasonably accessible.

There are other occasional lapses in clarity, as with the overly broad Algebra I standard:

> Recognize "families" of functions (Algebra I)

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While the standards are somewhat repetitive and occasionally lack specificity, most are clearly stated and easy to understand. The Clarity and Specificity score is two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

The standards do not explicitly prioritize any content, and fewer than 30 percent of the elementary school standards are devoted to arithmetic. This does not adequately prioritize arithmetic.

Content Strengths

The standards have many strong features. The structures of the operations of arithmetic are well covered, and the use of the number line is excellent.

The high school course standards are particularly strong. They include advanced courses such as Pre-Calculus and include some rigorous mathematics. Significant trigonometry is presented, including inverse trigonometric functions. Proofs are woven into high school geometry. Logarithmic and exponential functions are well covered. Solving quadratic equations is done thoroughly, with the standards including:

> Solve quadratic equations by factoring, graphing, completing the square, extracting square roots and using the quadratic formula (Algebra II)

Also strong, and providing students with valuable and oft-neglected insight, is the following Algebra II standard:

> Identify the weaknesses of calculators and other technologies in representing non-linear data, such as graphs approaching vertical asymptotes, and use alternative techniques to identify these issues and correctly solve problems (Algebra II)

Content Weaknesses

The development of whole-number arithmetic is weak. While fluency is stated as a goal, the standards do not mention the standard algorithms that are necessary to the mastery of arithmetic. For example, the capstone for addition and subtraction is this second-grade standard:

> Use efficient and accurate strategies to develop fluency with multi-digit addition and subtraction (grade 2)

Similarly, the culminating standards for whole-number multiplication are these standards:

> Multiply two- and three-digit whole numbers (grade 4)
>
> Understand and use a reliable algorithm for multiplying multi-digit numbers and dividing numbers by a single-digit divisor accurately and efficiently (grade 4)

Again, the standard algorithms are not mentioned, allowing students to use potentially inappropriate methods.

There is no mention of common denominators in preparation for adding and subtracting fractions, and the problems with whole-number arithmetic are extended with these standards:

> Develop fluency with addition and subtraction of proper and improper fractions and mixed numbers; explain and model the algorithm (grade 5)
>
> Develop and analyze algorithms and compute efficiently with integers and rational numbers (grade 7)

These are acceptable pedagogical standards, but they fail to specify the content that students must eventually know. They let students develop their own ways to do arithmetic with rational numbers. They do not specify standard methods and procedures, which students must learn in order to master arithmetic.

High school coverage is generally strong but incomplete. The development of quadratic functions is missing the vertex form and finding the maximum or minimum. Some STEM-ready material is also missing, including polar coordinates.

Tennessee's standards are often strong and have fairly good coverage of high school and STEM-ready material. However, arithmetic is neither prioritized nor sufficiently developed. These serious problems result in a Content and Rigor score of three points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Tennessee's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Volunteer State has in place today.

Texas • English Language Arts

DOCUMENTS REVIEWED

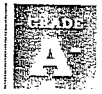
Texas Essential Knowledge and Skills for English Language Arts and Reading (TEKS) for K-5. Updated February 2010. Accessed from: http://ritter.tea.state.tx.us/rules/tac/chapter110/ch110a.pdf

Texas Essential Knowledge and Skills for English Language Arts and Reading (TEKS) for 6-8. Updated February 2010. Accessed from: http://ritter.tea.state.tx.us/rules/tac/chapter110/ch110b.pdf

Texas Essential Knowledge and Skills for English Language Arts and Reading (TEKS) for English I-IV. Updated February 2010. Accessed from: http://ritter.tea.state.tx.us/rules/tac/chapter110/ch110c.pdf

Overview

The Texas ELA standards are clearly organized, specific, and include nearly all of the essential K-12 content. They provide excellent guidance to teachers in the Lone Star State and help ensure that all students will be held to equally rigorous standards.



Clarity and Specificity:	3/3
Content and Rigor:	6/7
Total State Score:	**9/10**
(Common Core Grade: B+)	

General Organization

The Texas K-8 ELA standards are divided into five strands: Reading, Writing, Research, Listening and Speaking, and Oral and Written Conventions. Each strand is further divided into sub-strands, such as vocabulary development and comprehension of literary text, which are common across several grade levels. (Not all sub-strands are included at every grade level, however.) Finally, the state provides grade-specific standards for each sub-strand.

The high school standards are organized similarly, though they are grouped by course, rather than by grade level.

Clarity and Specificity

Texas's ELA standards are clearly written, well presented, and logically organized. Most are clear and specific and leave little room for interpretation, such as:

> Use a dictionary, a glossary, or a thesaurus (printed or electronic) to determine the meanings, syllabication, pronunciations, alternate word choices, and parts of speech of words (grade 6)

In addition, they frequently include examples to help clarify expectations, such as:

> Students understand, make inferences and draw conclusions about the structure and elements of poetry and provide evidence from text to support their understanding. Students are expected to explain how figurative language (e.g., personification, metaphors, similes, hyperbole) contributes to the meaning of a poem (grade 6)

The standards clearly outline what students should know and be able to do from grade to grade and easily merit three points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

KSDE002284

Content and Rigor

Content Strengths

The vast majority of essential K-12 content is covered with depth and rigor. A systematic, detailed progression of expectations for early reading is provided, including rigorous standards devoted to phonics, and phonemic and phonological awareness, including:

> Students are expected to:
>
> a. Orally generate a series of original rhyming words using a variety of phonograms (e.g., -ake, -ant, -ain) and consonant blends (e.g., bl, st, tr);
>
> b. Distinguish between long- and short-vowel sounds in spoken one-syllable words (e.g., bit/bite);
>
> c. Recognize the change in a spoken word when a specified phoneme is added, changed, or removed (e.g., /b/l/o/w/ to/g/l/o/w/);
>
> d. Blend spoken phonemes to form one- and two-syllable words, including consonant blends (e.g., spr);
>
> e. Isolate initial, medial, and final sounds in one-syllable spoken words; and
>
> f. Segment spoken one-syllable words of three to five phonemes into individual phonemes (e.g., splat =/s/p/l/a/t/) (grade 1)

Expectations for vocabulary development are similarly rigorous and include standards devoted to etymology, knowledge of roots and affixes, connotation and denotation, figurative language, appropriate use of context clues, and the use of dictionaries and thesauruses to confirm meaning.

Standards for reading are also strong and include expectations that address the comprehension and analysis of literary and non-literary text, including helpful, detailed standards that outline genre-specific content and rhetorical techniques, such as:

> Describe conventions in myths and epic tales (e.g., extended simile, the quest, the hero's tasks, circle stories) (grade 7)
>
> Analyze the structure of the central argument in contemporary policy speeches (e.g., argument by cause and effect, analogy, authority) and identify the different types of evidence used to support the argument (grade 7)
>
> Analyze contemporary political debates for such rhetorical and logical fallacies as appeals to commonly held opinions, false dilemmas, appeals to pity, and personal attacks (English I)

Additional standards that address the truth and validity of argument, and recognizing and explaining fallacious reasoning, are also included, such as:

> Analyze historical and contemporary political debates for such logical fallacies as non-sequiturs, circular logic, and hasty generalizations (English III)

Writing standards clearly outline the genre-specific content that students should master across grades, and these standards show a clear progression of rigor from one grade to the next, as demonstrated by these examples for writing persuasive pieces:

> Students write persuasive texts to influence the attitudes or actions of a specific audience on specific issues. Students are expected to write persuasive essays for appropriate audiences that establish a position and use supporting details (grade 4)
>
> Students are expected to write persuasive essays for appropriate audiences that establish a position and include sound reasoning, detailed and relevant evidence, and consideration of alternatives (grade 5)
>
> Students are expected to write a persuasive essay to the appropriate audience that:
>
> a. Establishes a clear thesis or position;
>
> b. Considers and responds to the views of others and anticipates and answers reader concerns and counter-arguments; and
>
> c. Includes evidence that is logically organized to support the author's viewpoint and that differentiates between fact and opinion (grade 8)

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In addition, the standards appropriately prioritize writing genres across grades so that more attention is focused on narrative writing in the early grades and on literary analysis and persuasive writing in middle and high school.

Standards delineating expectations for English conventions are also rigorous and demonstrate clear progression from grade to grade. Similarly, the state includes strong expectations that address the research process. What's more, these standards build from year to year so that, by high school, students should have the capacity to write thoughtful and thorough research papers.

Finally, standards for listening and speaking, analyzing media, and delivering multimedia presentations are also included.

Content Weaknesses

While the Reading standards are clear and rigorous, the state fails to define the quality and complexity of texts that students should be reading each year. Similarly, while the high school standards include occasional and perfunctory nods to the importance of reading important works of American literature (shown below), the state makes no reference to American literature in grades K-8.

> Students are expected to relate the characters and text structures of mythic, traditional, and classical literature to 20th and 21st century American novels, plays, or films (English III)
>
> Students understand, make inferences and draw conclusions about the structure and elements of drama and provide evidence from text to support their understanding. Students are expected to analyze the themes and characteristics in different periods of modern American drama (English III)

Texas's clear, rigorous writing standards could be further strengthened by including sample student writing to clarify expectations across grade levels.

On balance, the Texas ELA standards are clear, rigorous, and specific and omit very little essential K-12 content. As such, they earn six points out of seven for Content and Rigor. (See *Common Grading Metric*. Appendix A.)

The Bottom Line

Texas's ELA standards are more clearly written, better presented, and logically organized than the Common Core standards. The Texas standards include expectations that more thoroughly address the comprehension and analysis of literary and non-literary text than Common Core, including helpful, detailed standards that outline genre-specific content and rhetorical techniques. In addition, Texas has prioritized writing genres by grade level.

On the other hand, Common Core appends a list that specifies the quality and complexity of the reading that students should do. In addition, Common Core includes samples of student writing to help clarify writing expectations across grades. Texas would do well to incorporate such guidance into its standards.

KSDE002286

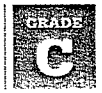
Texas • Mathematics

DOCUMENTS REVIEWED

Texas Essential Knowledge and Skills for Mathematics. August 1, 2006.
Accessed from: http://www.tea.state.tx.us/index4.aspx?id=3449

Overview

Texas's standards are well presented and easy to read, but they are somewhat minimal and lack specificity. They often seem disjointed and do not sufficiently outline a coherent approach to the mathematical content. The development of arithmetic is stated as a priority, but this priority is not supported within the standards. Despite the lack of specificity and coherence, the high school material is fairly complete, and covers much STEM-ready material.



Clarity and Specificity:	2/3
Content and Rigor:	4/7
Total State Score:	**6/10**

(*Common Core Grade: A-*)

General Organization

The K-8 standards are organized into content strands, including Number Operation and Quantitative Reasoning, and Probability and Statistics. Strands are divided into topics, and finally into grade-specific standards.

The high school standards have a similar presentation, but they are organized by course.

Clarity and Specificity

The standards are well presented and easy to read, and some are clear as stated, such as:

> The student is expected to: compare and order two or more containers according to capacity (from holds the most to holds the least) (grade 1)

However, many standards are far too broadly stated, such as:

> The student is expected to: identify and describe patterns in a table of related number pairs based on a meaningful problem and extend the table (grade 3)
>
> The student is expected to: use geometric concepts and properties to solve problems in fields such as art and architecture (grade 7)

These standards give little indication of what types of problems students are expected to be able to solve.

The standards lack coherence. Related material often appears artificially separated within the standards. One example can be seen in the following excellent standard, which introduces students to the number line. However, instead of being included with the standards about whole numbers, it is included in the Geometry strand:

> The student recognizes that a line can be used to represent a set of numbers and its properties. The student is expected to use whole numbers to locate and name points on a number line (grade 2)

Another example is in high school. Factoring and completing the square are both present, but not under the topic of quadratic functions.

KSDE002287

The statements often lack specificity and the sequencing is not clear. They do not quite provide a complete guide to users and receive a Clarity and Specificity score of two points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

The approach that Texas takes to setting priorities is contradictory. They are set out in the introduction to each grade. For example, the following states that arithmetic development is a high priority:

> Within a well-balanced mathematics curriculum, the primary focal points at Grade 3 are multiplying and dividing whole numbers, connecting fraction symbols to fractional quantities, and standardizing language and procedures in geometry and measurement (grade 3)

Unfortunately, this excellent setting of priorities is followed by:

> Throughout mathematics in Grades 3-5, students build a foundation of basic understandings in number, operation, and quantitative reasoning; patterns, relationships, and algebraic thinking; geometry and spatial reasoning; measurement; and probability and statistics (grades 3-5)

Thus, it is not clear if arithmetic is a priority or not. Using a count of the standards to determine priorities, only one-third are devoted to arithmetic. The excellent guidance specified by the focal points is not supported by the subsequent statements or by the standards themselves.

Content Strengths

The standards are not overwhelming in number and some material is covered well. The number line is introduced early and carried throughout.

Linear equations are covered nicely with standards such as:

> The student is expected to graph and write equations of lines given characteristics such as two points, a point and a slope, or a slope and y-intercept (Algebra I)

High school geometry expects students to be aware of axiomatic systems, enough so they can contrast the structures of Euclidean and non-Euclidean geometry.

Much of the important STEM-ready material is included, such as series, exponential functions, logarithmic functions, and some serious trigonometry, including inverse trigonometric functions and the laws of sines and cosines.

Content Weaknesses

Arithmetic is covered with a minimalist approach. The properties of operations such as associativity, and the inverse nature of addition and subtraction and of multiplication and division, are not covered. Although recall of number facts is in the standards, it is not quick or instant. Automaticity with recalling facts is the basis for future mathematics: students who are still struggling with basic facts are not prepared to move on to the next level of mathematics.

Arithmetic is expected, as in the standard:

> The student is expected to use multiplication to solve problems involving whole numbers (no more than three digits times two digits without technology) (grade 5)

Yet, the lack of the standard algorithms and the explicit mention of technology does not support mastery of arithmetic.

The traditional treatment of area is to compute it for rectangles, including finding a formula for the area of a rectangle, and then move on to parallelograms and triangles. However, rectangles are only mentioned in Kindergarten and grade 1 and parallelograms are never mentioned. Triangles are mentioned in Kindergarten and grade 1 and not again until middle school. Despite this missing detail, by grade 5 students are expected to:

> [C]onnect models for perimeter, area, and volume with their respective formulas (grade 5)

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In addition, in high school geometry, the role of proof is not clear. Proofs of the standard results of geometry are not explicitly mentioned.

Texas's standards are strong in places, particularly in high school. But there are also weaknesses, especially in arithmetic, which is only minimally developed. The stated prioritization of arithmetic is undermined within the document. The coverage of basic geometry at the elementary level is not explicit enough. These important shortcomings result in a Content and Rigor score of four points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Texas's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what the Lone Star State has in place today.

KSDE002289

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Utah • English Language Arts

DOCUMENTS REVIEWED

Utah Elementary Core Curriculum K-6. May 9, 2003.
Accessed from: http://www.schools.utah.gov/curr/core/corepdf/LAK-6.pdf

Utah Core Curriculum: Language Arts, 7-12. 2006.
Accessed from: http://www.schools.utah.gov/curr/core/corepdf/LA7-12.pdf

Overview

The Utah standards are clearly organized and generally written in concise, jargon-free language. Unfortunately, many standards are vaguely worded and include unnecessary content more focused on skills and strategies than on essential content, thereby leaving teachers in the Beehive State without the guidance they need to drive rigorous curriculum and assessment development and instruction.

Clarity and Specificity:	2/3
Content and Rigor:	4/7
Total State Score:	**6/10**
(Common Core Grade: B+)	

General Organization

The Utah ELA standards are divided into two groups: K-6 and 7-12. For the elementary grades, eight standards are presented, each of which is meant to represent "one of the essential areas of reading instruction," such as: Oral Language, Concepts of Print, Vocabulary, Comprehension, and Writing. For each standard, the state includes "objectives" that are uniform across grade levels and that provide "more focused descriptions of what students should know and be able to do at each grade level." For example, the following is a comprehension objective:

> Recognize and use features of narrative and informational text (grades K-6)

Grade-specific indicators are provided for most objectives. (For some objectives, such as phonics and phonemic awareness or fluency, grade-level indicators are only provided at select grades.) In addition to the grade-specific indicators, the state includes approximately six overarching "intended learning outcomes" (ILOs) for each grade level. These ILOs describe the "skills and attitudes" that students should embody by the end of each grade level and are focused neither on ELA content nor on reading skills or strategies. For example:

> 1. Demonstrate a Positive Attitude Toward Language Arts Skills and Processes
> a. Develop confidence in the ability to access text.
> b. Enjoy the processes and outcomes of reading and writing.
> c. Develop confidence in the ability to express ideas, emotions, and experiences (grade 7)

The high school standards follow the same organizational structure, except that just three standards (Reading; Writing; and Inquiry, Research, Oral Presentation) are presented for each grade level.

Clarity and Specificity

The Utah ELA standards are clearly organized and presented and written in concise, easy-to-read language. Some are also clear and specific, such as:

KSDE002290

> Identify words with the same medial sounds in a series of words (e.g., long vowel sound: take, late, feet; short vowel sound: top, cat, pan; middle consonant sound: kitten, missing, lesson) (grade 1)
>
> Identify external text features to enhance comprehension (i.e., headings, subheadings, pictures, captions, bolded words, graphs, charts, and tables of contents) (grade 7)

Unfortunately, many indicators are too vague to provide the guidance that teachers need to drive rigorous instruction, as in these examples:

> Edit for spelling of grade level-appropriate words (grade 3)
>
> Learn the meaning [of] and properly use a variety of grade level words (e.g., words from literature, social studies, science, math) (grades 3-6)

What's more, many indicators are repeated nearly verbatim across grades, making it impossible to discern a clear progression of content or rigor. For example:

> Identify specific purpose(s) for listening (e.g., to gain information, to be entertained) (grades K-6)
>
> Visualize words while writing (grades 2-6)

At the high school level, the state insists that its ILOs be included as part of instruction. Unfortunately, these are generally vague, unmeasurable, and distracting statements that add little value.

The combination of repetitive and vaguely worded standards leave teachers in the Beehive State without a complete guide of what students should know and be able to do at each grade. As such, the standards earn two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

Utah devotes an entire standard to phonological and phonemic awareness. While some indicators within that strand are repetitive, many are clear and outline the essential content and skills that students must master. For example:

> Identify words with the same medial sounds in a series of words (e.g., long vowel sound: take, late, feet; short vowel sound: top, cat, pan; middle consonant sound: kitten, missing, lesson) (grade 1)
>
> Blend syllables to make words (e.g., /ta/.../ble/, table) (grade 1)

Standards addressing vocabulary development are occasionally strong, particularly those that outline word origins and roots that students should learn.

Grade-specific indicators delineating expectations for the comprehension and analysis of literary and non-literary texts are included across grade levels, and those provided for grades 7-12 include particularly helpful genre-specific content. For example:

> Comprehend literature using elements of narrative and poetic text.
> a.Identify narrative plot structure (e.g., exposition, rising action, climax, falling action, resolution).
> b. Describe a character's traits as revealed by the narrator (e.g., thoughts, words, speech patterns, and actions).
> c. Distinguish topic from theme in literature.
> d. Identify descriptive details and imagery that establish setting.
> e. Identify figurative language (i.e., simile and metaphor) (grade 7)
>
> Analyze the use of simile, metaphor, pun, irony, symbolism, allusion and personification (grade 10)
>
> Identify an author's implicit and stated assumptions about a subject based on the evidence in the text (grade 12)

KSDE002291

While some standards themselves are vague, the state provides indicators that often specify the quality and characteristics of writing that students should produce at each grade. For example:

> Evaluate and revise for:
> - Ideas: Anticipation of and answers to readers' questions.
> - Organization: Inviting leads and satisfying conclusions.
> - Voice: A variety of voices for different audiences and purposes.
> - Word Choice: Carefully chosen vocabulary to achieve voice and purpose.
> - Sentence Fluency: Varied sentence structure (i.e., include complex and compound sentences) (grade 9)

In addition, the state includes some student writing samples and rubrics (produced by the Northwest Regional Education Laboratory) to help clarify expectations.

Standards addressing the research process are included for grades 5-12, as are indicators delineating expectations for speaking and listening, media, and formal oral presentations.

Content Weaknesses

While some standards addressing vocabulary development (mentioned above) are strong, many fail to outline the essential content that students must master. Consider the following standard, which is repeated verbatim for six consecutive years:

> Determine word meaning through word parts, definitions, and context clues (grades 7-12)

By failing to more clearly define "word parts," or to scaffold any content and skills across grade levels, this standard is too vague to be instructionally meaningful. Still other indicators display an inappropriate level of rigor. For example, the grades 7-12 standards include indicators that require students to distinguish between commonly confused words, including the following:

> Distinguish between commonly confused words (i.e., affect/effect; between/among; either/neither; fewer/less; good/well; irregardless/regardless; waste/waist) (grade 10)

By tenth grade, students should not be confusing good and well or either and neither. What's more, while many people use "irregardless," it is not actually a word and should not appear in this context.

Like many states, Utah fails to provide guidance about the number, quality, or complexity of texts that students should read in different grades. And while some editing standards include vague references to grammar that students should learn, these indicators fail to outline a clear and appropriate progression of content or rigor from grade to grade.

The standards include many indicators that veer into pedagogy and distract attention from the mastery of essential knowledge and skills. Take, for example, the following:

> Use knowledge about spelling to predict the spelling of new words (grades K-6)
>
> Use spelling generalities to assist spelling of new words (grades 1-6)

Standards should clearly define student outcomes. These obscure student outcomes and promote instructional strategies that may actually contribute to the development of poor spelling skills.

Similarly, standard 7 (Comprehension) includes indicators focused on skills and strategies that do not necessarily improve comprehension and that distract attention from mastery of essential genre-specific content. For example:

> Generate questions about text (e.g., factual, inferential, evaluative) (grades 3-6)
>
> Form mental pictures to aid understanding of text (grades 2-6)

While good readers may employ such strategies to aid their own comprehension, they are not outcomes—or true standards—in and of themselves.

KSDE002292

Taken together, these shortcomings lead to the omission of more than 35 percent of the essential K-12 content, thus earning the standards four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Utah's ELA standards are mediocre. Those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Beehive State has in place today.

KSDE002293

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Utah • Mathematics

DOCUMENTS REVIEWED

Utah Elementary Mathematics Core Curriculum. 2007.
Accessed from: http://www.schools.utah.gov/curr/Math/elem/core.htm

Core Curriculum, Secondary Core. 2007.
Accessed from: http://www.schools.utah.gov/curr/Math/Sec/core.htm

Overview

Utah's standards are exceptionally well presented and easy to read and understand. They cover content with both depth and rigor, and provide clear guidance. There are a few weaknesses in whole-number arithmetic. The high school content is exceptionally rigorous.

Clarity and Specificity:	3/3
Content and Rigor:	6/7
Total State Score:	**9/10**
(Common Core Grade: A-)	

General Organization

The K–6 material is organized by grade. Each grade has a different set of content strands that are subdivided into topics and then into "Indicators," referred to below as "standards." There is a short introduction to each grade and there are process standards.

After grade 6, the standards are organized by courses, from Math 7 to Pre-Calculus. The course organization is similar to that for K–6.

Clarity and Specificity

Utah's standards are extremely well presented and easy to read. Students learn different things in different grades, so the variation of the strands and topics in each grade is appropriate and enables a coherent presentation of the standards across grade levels. For example, see the following broad strands which include some of the topics for arithmetic:

> Students will acquire number sense and perform simple operations with whole numbers (grade 1)
> Students will understand the base-ten numeration system, place value concepts, simple fractions and perform operations with whole numbers (grade 3)
> Students will expand number sense to include operations with rational numbers (grade 6)

The standards are well written and explicit, for example:

> Measure angles using a protractor or angle ruler (grade 4)
> Find the prime factorization of composite numbers to 100 (grade 6)

Examples are sometimes included to clarify intent:

> Identify attributes for classifying quadrilaterals (e.g., parallel sides for the parallelogram, right angles for the rectangle, equal sides and right angles for the square) (grade 3)
> Interpret division-with-remainder problems as they apply to the environment (e.g., If there are 53 people, how many vans are needed if each van holds 8 people?) (grade 5)

KSDE002294

Some standards, however, are subject to interpretation:

> Create and extend growing patterns using objects, numbers, and tables (grade 3)

Utah's standards are beautifully presented and generally both clear and specific. They receive three points out of three for Clarity and Specificity (see *Common Grading Metric*, Appendix A).

Content and Rigor

Content Priorities

More than 40 percent of the standards in appropriate grades are about the development of arithmetic. This indicates that arithmetic is a moderate priority.

Content Strengths

Instant recall of number facts is specified:

> Demonstrate quick recall of addition facts (up to 10 + 10) and related subtraction facts (grade 2)
> Demonstrate quick recall of basic multiplication and division facts (grade 4)

The number line is introduced early and included throughout the standards.

The development of fractions is generally strong. Common denominators are introduced explicitly:

> Compare fractions by finding a common denominator (grade 5)

The concepts of geometry are exceptionally well developed. The following fourth-grade sequence on area illustrates this:

> Recognize that a square that is 1 unit on a side is the standard unit for measuring area (grade 4)
> Develop the area formula for a rectangle and connect it with the area model for multiplication (grade 4)
> Develop and use the area formula for a right triangle by comparing with the formula for a rectangle (e.g., two of the same right triangles makes a rectangle) (grade 4)
> Develop, use, and justify the relationships among area formulas of triangles and parallelograms by decomposing and comparing with areas of right triangles and rectangles (grade 4)

In high school, the content is covered with a great deal of rigor. The courses are well sequenced and the content is developed coherently and sensibly.

Linear equations are covered with rare rigor, for example, by showing slope is well defined:

> Define the slope of a line as the ratio of the vertical change to the horizontal change between two points, and show that the slope is constant using similarity of right triangles (Pre-Algebra)

The rigor goes further into developing the foundations for linear equations:

> Recognize that all first order equations produce linear graphs (Pre-Algebra)

The topic of linear equations, in Algebra I, includes slope-intercept form, standard form, and the equation of a line given two points or the slope and a point on the line.

In Algebra II, the level of rigor is also high. Examples include:

> Add, subtract, multiply, and divide rational expressions and solve rational equations (Algebra II)
> Solve quadratic equations of a single variable over the set of complex numbers by factoring, completing the square, and using the quadratic formula (Algebra II)
> Write an equation of a parabola in the form $y=a(x-h)^2+k$ when given a graph or an equation (Algebra II)

KSDE002295

Most trigonometry is covered, including the graphing of inverse trigonometric function and polar coordinates.

High school geometry is, like algebra, exceptionally rigorous. For example:

> Prove congruency and similarity of triangles using postulates and theorems (Geometry)

Content Weaknesses

Though fluency and standard algorithms are mentioned, the algorithms for addition and subtraction are given the same status as other generalizable strategies:

> Demonstrate fluency with two-and three-digit addition and subtraction problems, using efficient, accurate, and generalizable strategies that include standard algorithms and mental arithmetic, and describe why the procedures work (grade 2)

The standards do not ask students to learn multiple ways to multiply and divide, nor do they specify standard procedures:

> Multiply up to a three-digit factor by a two-digit factor with fluency, using efficient procedures (grade 4)

Calculators are introduced unnecessarily early with:

> Use estimation, mental math, paper and pencil, and calculators to perform mathematical calculations and identify when to use each one appropriately (grade 4)

Although the vertex form is developed in Algebra II, it is not used to solve max/min problems.

The standards are generally very strong and cover most of the essential content with both depth and rigor. The high school standards are particularly strong. There are a few weaknesses in the development and prioritization of arithmetic. Some minor problems result in a Content and Rigor score of six points out of seven (see *Common Grading Metric*, Appendix A).

The Bottom Line

With some minor differences, Common Core and Utah both cover the essential content for a rigorous, K-12 mathematics program. Utah's standards are briefly stated and usually clear, making them easier to read and follow than Common Core. In addition, the high school content is organized so that standards addressing specific topics, such as quadratic functions, are grouped together in a mathematically coherent way. The organization of the Common Core is more difficult to navigate, in part because standards dealing with related topics sometimes appear separately rather than together.

The chief weakness in Utah's standards stems from the lack of specific content expectations in the development of arithmetic, and in the failure to make arithmetic a focus in the appropriate grades. Common Core provides admirable focus and explicitly requires standard methods and procedures, enhancements that would benefit Utah's standards.

KSDE002296

Vermont • English Language Arts

DOCUMENTS REVIEWED[1]

Grade Expectations for Vermont's Framework of Standards and Learning Opportunities: Reading and Writing. Spring 2004. Accessed from: http://education.vermont.gov/new/pdfdoc/pubs/grade_expectations/math_reading_writing.pdf

Overview

The content that *is* included in the Vermont standards is generally covered adequately. Unfortunately, large chunks of essential ELA content go unaddressed, much repetition exists across grade levels, and the high school standards only include one level, making it impossible to know how student work should progress from year to year in grades 9-12. The standards could also be much more clear and specific.

Clarity and Specificity:	1/3
Content and Rigor:	2/7
Total State Score:	**3/10**
(*Common Core Grade:* B+)	

General Organization

Vermont identifies standards only for reading and writing. For reading, they are divided into six categories:

- Reading Strategies
- Reading Accuracy
- Reading Comprehension and Responding to Text (Informational)
- Reading Comprehension and Responding to Text (Literary)
- Reading Range of Text
- Reading Range of Text and Literate Community

Writing standards are divided into ten categories:

- Writing Dimensions
- Writing Conventions
- Structures
- Response to Literature, Literary Elements, and Devices and Responding to Text
- Reports and Research
- Narratives and Literary Elements and Devices
- Procedures
- Persuasive Writing
- Personal Essay
- Poetry and Literary Elements and Devices

For grades K-8, each category is divided into grade-level expectations. High school standards are not broken down by grade, however, making it all but impossible to make distinctions between the content and skills expected of ninth-graders versus twelfth-graders.

No standards are provided for listening and speaking, media, or research.

KSDE002297

Clarity and Specificity

Some of Vermont's standards are clear and specific. Generally, however, they suffer from repetition and a confounding organization that makes it extremely difficult to track expectations across grade levels. Some repetition is tolerable in state standards if clear attempts have been made to differentiate expectations at "milestone" grades—and the Vermont standards sometimes do this. More often, however, they are repeated verbatim across many levels, such as this "writing process" standard that is found in *every* grade:

> Students use prewriting, drafting, revising, editing, and critiquing to produce final drafts of written products (grades 1-12)

Some impossible-to-measure standards are also included, such as the "Literate Community" standards, which expect students to:

> Demonstrate participation in a literate community by...
> - Participating in in-depth discussions about text, ideas, and student writing by offering comments and supporting evidence, recommending books and other materials, and responding to the comments and recommendations of peers, librarians, teachers, and others (grades 4-12)

These standards are not only unmeasurable, but also repeat from grade 4-12.

In high school, because no grade-by-grade or even grade-span standards are included, it is very difficult to make sense of comprehensive standards like this one:

> Identify[ing] the characteristics of a variety of types of text (e.g., literary texts: poetry, plays, fairy tales, fantasy, fables, realistic fiction, folktales, historical fiction, mysteries, science fiction, legends, myths, short stories, epics [poems, novels, dramas], adventure myths, comedies, tragedies, satires, parodies) (high school)

Without more grade-level specificity, teachers will not know which types of texts should be addressed at which grades.

The standards would greatly benefit from another round of edits and better organization to ensure appropriate clarity and progression across grades. Thus, The Green Mountain State receives one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

Vermont's standards for early reading are systematic and thorough, as in this "Reading Strategies" standard:

> [Student] [a]pplies word identification/decoding skills and strategies (leading to automaticity) by ...
> - Reading grade-appropriate, high-frequency words (including irregularly spelled words, contractions, etc.)
> - Identifying sound-symbol correspondences: consonants, two-letter blends (e.g., bl, gr), basic consonant and vowel digraphs (e.g., th, ee, ay), short vowels and long vowels affected by silent e (grade 1)

"Context and self-correction strategies" are also delineated, but they do not eclipse the importance of phonemic awareness and phonics in the early grades. Vocabulary is addressed in "reading strategies" and includes "knowledge of word structure" to "unlock meaning." Context clues are mentioned, but not overly emphasized at the expense of word analysis, and, later, etymology.

As we move through the grades, "comprehension strategies" and "monitoring and adjusting strategies" become more frequent, but Vermont is a bit more explicit than other states about what these entail. For example, strategies for understanding literary and informational text include "making connections," but also "using text structure clues (e.g., chronological, cause/effect, compare/contrast, proposition and support, logical/sequential)."

The treatment of literary text is fairly thorough. Some repetition exists across grades, but an attempt has been made to scaffold the content, as illustrated by these standards for analysis and interpretation of literary text—one for fifth grade, the other for sixth:

> Analyze and interpret elements of literary texts, citing evidence where appropriate by...
> - Identifying the narrator (grade 5)
> - Explaining how the narrator's point of view affects the reader's interpretation (grade 6)

Literary genres, elements, and stylistic devices are all addressed, though again with some repetition.

Vermont's "Reading Widely and In Depth" standards are more measurable than most "habits of reading" standards which generally enjoin students to "enjoy reading." These standards note the numbers of books and the range of genres that students should read each year. Vermont also offers descriptions of the quality and complexity of reading that students should encounter at certain grade spans, and offers a handful of sample titles.

Standards for writing in response to literary text are fairly well articulated and include most of the elements of a good argument, as in this standard:

> In response to literary or informational text, students make and support analytical judgments about text by...
> - Stating and maintaining a focus (purpose), a firm judgment, or a point of view when responding to a given question
> - Using specific details and references to text or relevant citations to support focus or judgment
> - Making inferences about the relationship(s) among content, events, characters, setting, theme, or author's craft

> Examples: Style, bias, literary techniques, point of view, or characteristics of literary forms and genres (grade 6)

This writing standard helps to round out general expectations concerning the analysis of literary texts. The writing strand also delineates clear spelling expectations for each grade.

Content Weaknesses

Although the standards include definitions of text complexity and some examples are given, additional suggestions would give a much better sense of the rigor of reading expectations. In high school, for example, the only novel listed is *To Kill a Mockingbird*, along with the nonfiction title *Into Thin Air*, and, finally, *Newsweek* magazine. These few titles hardly suggest the full range of high school reading.

The treatment of informational text is not as thorough as literary text. It appears to focus more on "practical/functional" texts than on the analysis of arguments and other forms of persuasive writing. Consider this standard, for example:

> Demonstrate initial understanding of informational texts (expository and practical texts) by...
> - Identifying the characteristics of a variety of types of text (e.g., **reference:** reports, magazines, textbooks, newspapers, public documents and discourse, technical manuals, Internet Web sites, biographies, autobiographies, essays, articles, thesauruses; and **practical/functional texts:** procedures, instructions, recipes, menus, announcements, invitations, advertisements, pamphlets) (grade 7) (emphasis added)

Such all-encompassing standards imply that cake recipes and biographies carry equal weight and/or demand the same types of reading skills, which of course they do not. Standards are far more illuminating and actionable when priorities are described at various grade levels, characteristics of each genre are elaborated, and, especially in the high school grades, standards for analysis of arguments and persuasive writing are specifically scaffolded.

The quality of Vermont's writing standards is spotty. The standards for writing literary analyses are adequate, as noted above, as are those for persuasive writing, but they fall short when it comes to other kinds of informational writing. Standards for writing "reports" are outlined in the early grades, but serious research products are never included, even in high school. Moreover, undue emphasis (an entire strand across all grades) is placed on "procedural writing." Whole strands are also devoted to "narrative writing," "expressive writing," "reflective essays," and even to "poetry." It is difficult to determine writing priorities at each grade level or span when no samples of acceptable student writing are included.

English language conventions, covered under the writing heading, address mechanics and punctuation only until fifth grade. Grammar is then addressed, but only in the most cursory way, as in this fifth-grade standard:

> In independent writing, students demonstrate command of appropriate English conventions by...
> • Identifying or correcting grammatical errors (grade 5)

Some examples are included, but most are repeated across grades and ultimately not enough are given to comprise a systematic treatment of crucial grammar content.

Vermont fails to include any standards for listening and speaking, research, or media. These significant gaps, coupled with the inappropriate emphasis the state places on unnecessary or less-important content (see *Common Grading Metric*, Appendix A), earn the Green Mountain state two points out of seven for Content and Rigor.

The Bottom Line

With their grade of D, Vermont's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Green Mountain State has in place today.

1 The Vermont reading standards have not changed since our last evaluation, the *State of State Standards 2005*. The writing standards for grades 3-8, however, have changed. In addition, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) These changes contributed to a change in Vermont's final ELA grade: from a C to a D. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=337&pubsubid=1072#1072.

KSDE002300

Vermont • Mathematics

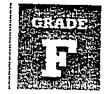
DOCUMENTS REVIEWED[1]

Vermont's Frameworks of Standards and Learning Opportunities. Fall 2000.
Accessed from: http://education.vermont.gov/new/pdfdoc/pubs/framework.pdf

Grade Expectations for Vermont's Framework of Standards and Learning Opportunities. Spring 2004.
Accessed from: http://education.vermont.gov/new/pdfdoc/pubs/grade_expectations/math_reading_writing.pdf

Overview

Vermont's standards are minimal in number, and the organization makes them difficult to read. Arithmetic is neither prioritized nor well developed in the elementary grades; much of high school mathematics is not covered.



Clarity and Specificity:	1/3
Content and Rigor:	1/7
Total State Score:	**2/10**
(Common Core Grade: A-)	

General Organization

The K-8 standards are introduced with a short section called "mathematical understanding," which lists broad mathematical goals by the following grade spans: Pre-K-4, 5-8, and 9-12. The standards are then organized by content strands such as Function and Algebra Concepts. There are also process standards (including such topics as problem-solving and mathematical reasoning) that are meant to be integrated into the instruction of all content.

The content strands are broken into topics. Standards within a particular topic all begin with the same stem phrase. Finally, the topics are broken into grade-level expectations. (It is the grade-level expectations that are referred to as "standards" throughout this review.) Some topics with their associated stem phrase are appropriately not completed in each grade.

High school standards are included in the document but are not separated by grade level.

Clarity and Specificity

The standards are not clear or easy to read. The stem organization of the grade-level material is poorly implemented and has resulted in many standards that are both awkward and unclear. This is illustrated in the following standard, where the stem phrase is in bold:

> **Demonstrates conceptual understanding of rational numbers** with respect to whole numbers from 0 to 100 using place value (a grouping system wherein a digit's place in a number denotes its value; e.g., in 34, 3 represents 3 tens, or 30); by applying the concepts of equivalency in composing or decomposing numbers (e.g., 12 = 7 + 5); and in expanded notation (e.g., 41 = 4 tens + 1 one or 41 = 40 + 1) using models, explanations, or other representations. Shows correct sequence of ordinal and cardinal numbers and compares cardinal numbers [and]
>
> **[P]ositive fractional numbers** (benchmark fractions: a/2, a/3, or a/4 where a is a whole number greater than 0 and less than or equal to the denominator) as part/whole relationships of benchmark fractions with models, diagrams, or written or verbal/scribed response (grade 1) (emphasis original)

The stem phrase unnecessarily inserts rational numbers into a first-grade standard, and the concluding statements are overly complicated and unclear. Much of arithmetic is presented in this same format with the same bolded stem phrases, and all are difficult to read and understand. For example, every grade from one to eight has a standard beginning with:

KSDE002301

> **Demonstrates a conceptual understanding of linear relationships (y = kx) as a constant rate of change by...** (grades 1-8) (emphasis original)

The Mathematical Understanding section of the framework is sometimes clearer than the grade-level material since the statements are not hampered by the use of stem phrases—but because they are presented only for grade bands, they are not much use as grade-level standards.

The standards are difficult to read and many of them are not clear or measurable. They are not a "clear guide for users," resulting in a Clarity and Specificity score of one point out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Vermont has few standards per grade. This could have served to prioritize arithmetic in elementary school. However, standards on arithmetic comprise less than one-third of the standards so that arithmetic is not properly prioritized.

Content Strengths

The standards cover some of the basic properties of arithmetic well, including commutativity, associativity, and distributivity. They also explicitly cover the inverse relationship of addition and subtraction and of multiplication and division.

Content Weaknesses

The list of problems with content that is either missing or covered with inadequate detail is extensive.

The development of arithmetic is weak, in part because instant recall of the basic number facts is not explicitly required.

Fluency and the standard algorithms are not included in the standards. Students are expected to solve arithmetic problems, but the methods to be used are not specified and fluency is not mentioned, as is illustrated by:

> **Accurately solve problems involving** multiple operations on whole numbers or the use of the properties of factors and multiples; and addition or subtraction of decimals and positive proper fractions with like denominators. (Multiplication limited to 2 digits by 2 digits, and division limited to 1 digit divisors) (grade 4) (emphasis original)

This standard does not support mastery of multiplication. The development of fraction arithmetic is similar. Students are required to "accurately solve problems" with fractions but fluency and procedures are not specified. In addition, there is no mention of common denominators.

In high school, which is essentially treated as a single grade, there are only twenty-one standards for the grade-level expectations. Most of the essential content for high school is missing. There is some basic material on linear functions, but quadratics are not mentioned. Also missing in high school are polynomials, factoring, proof in geometry, and most STEM-ready topics.

The *Framework* document offers an additional thirty-one high school standards in the section on Mathematical Understanding. These include some of the content that is missing from the grade-level expectations, such as complex numbers and proofs in geometry. However, the coverage is neither rigorous nor detailed. For example, while the *Framework* mentions quadratic equations, it is only in the broad and general statement:

> Define and use variables, parameters, constants, and unknowns in work with both functions and equations; solve equations both symbolically and graphically, especially linear, quadratic, and exponential equations (high school)

Vermont's standards are missing most of high school mathematics. In addition, arithmetic is neither prioritized nor well developed. These numerous problems result in a score of one point out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

KSDE002302

The Bottom Line

With their grade of F, Vermont's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Green Mountain State has in place today.

1 Vermont's academic content standards have not changed since Fordham's last evaluation, the *State of State Mathematics Standards 2005*. However, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Through this new lens, Vermont's math grade dropped from a D in 2005 to an F in 2010. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=338&pubsubid=1187#1187.

KSDE002303

Virginia • English Language Arts

DOCUMENTS REVIEWED

English Standards of Learning for Virginia Public Schools. 2010.
Accessed from: http://www.doe.virginia.gov/testing/sol/standards_docs/english/review.shtml

Overview

Virginia's standards are straightforward and, despite a few weaknesses, provide solid guidance for a strong K-12 ELA program.

Clarity and Specificity:	2/3
Content and Rigor:	6/7
Total State Score:	**8/10**
(Common Core Grade: B+)	

General Organization

Virginia's K-3 standards are divided into three strands: Oral Language; Reading; and Writing. The 4-12 standards are divided into four strands: Communication; Speaking, Listening, and Media Literacy; Reading; Writing; and Research. Each strand is then divided into grade-specific standards. Finally, the state introduces each grade with an overview that describes the major concepts and skills to be addressed during that year of school.

Clarity and Specificity

The Virginia standards are mostly simple, straightforward, and easy to understand. They generally contain clear and specific language, as in:

> Compare and contrast the characteristics of biographies and autobiographies (grade 3)
>
> Use dictionaries, thesauruses, and glossaries to determine definition, pronunciation, etymology, spelling, and usage of words (grade 8)

In a number of places, however, they are repetitive, vague, or both. For example, the following fiction standard is repeated verbatim in grades 4, 5, 7, and 8:

> Identify cause and effect relationships (grades 4-5, 7-8)

Inexplicably, the sixth-grade version of this standard is somewhat more specific and requires students to:

> Describe cause and effect relationships and their impact on plot (grade 6)

A few other standards are similarly vague and repetitive, such as the following, which is repeated verbatim for grades 3-10:

> Use reading strategies to monitor comprehension throughout the reading process (grades 3-10)

In addition to being repetitive, this standard is unmeasurable.

These problematic standards are not the norm, but enough of them exist to take a point away from Virginia for Clarity and Specificity, earning Old Dominion two points out of three. (See *Common Grading Metric*, Appendix A.)

KSDE002304

Content and Rigor

Content Strengths

Virginia's standards for early reading are strong, addressing phonemic awareness, phonics, fluency, and comprehension. As noted above, Virginia has a standard that addresses the use of reading strategies "to monitor comprehension," which veers into instructional/assessment territory, but such expectations are not emphasized.

The vocabulary standards are systematic and focus on word analysis throughout the grades, despite occasional references to relying on context clues to determine word meaning.

Standards for the study of literary and non-literary texts are thorough. Both are addressed specifically, and expectations progress in rigor throughout the grades. For example, as early as Kindergarten, students are asked to "discuss characters, setting, and events" and "identify text features specific to the topic, such as titles, headings, and pictures." By grade 5, they must "describe the characteristics of free verse, rhymed, and patterned poetry" and "identify cause and effect relationships following transition words signaling the pattern." In grade 9, students must "compare and contrast the use of rhyme, rhythm, sound, imagery, and other literary devices to convey a message and elicit the reader's emotion" and "identify a position/argument to be confirmed, disproved, or modified."

When Virginia students reach grade 11, they are required to study American literature:

> The student will read, comprehend, and analyze relationships among American literature, history, and culture.
>
> a. Describe contributions of different cultures to the development of American literature
>
> b. Compare and contrast the development of American literature in its historical context
>
> c. Discuss American literature as it reflects traditional and contemporary themes, motifs, universal characters, and genres
>
> d. Analyze the social or cultural function of American literature...
>
> i. Read and analyze a variety of American dramatic selections
>
> j. Analyze the use of literary elements and dramatic conventions including verbal, situational and dramatic irony used in American literature...(grade 11)

Although it would be preferable to incorporate American literature in other grades, too, Virginia is to be praised for including these requirements at least once. (British literature is also specifically addressed in grade 12.)

Standards for listening and speaking are commendable. They are straightforward in addressing active listening, effective speaking, participating in group discussions, and completing tasks as a group. The standards for oral presentations are detailed and span all grades.

In writing, Virginia presents somewhat repetitive but detailed expectations describing the characteristics of good writing that are common to all genres, and they progress in rigor from grade to grade. Students must write in cursive and write paragraphs in grade 3. The standards for English language conventions are included in the Writing strand and, while they are focused on editing, they comprise a thorough and straightforward set of important grammar, usage, and mechanics expectations.

Research is included as a separate strand beginning in fourth grade, though research skills appear as early as first grade. For example, first-graders are asked to "use simple reference materials." The expectations build through grade 8 and, in high school, the Research strand details expectations for the research process and for products, including "documented research papers" in twelfth grade.

Starting in grade 4, Virginia's standards also include a welcome emphasis on "media literacy" (within the Communication strand). In grade 4, students must "differentiate between auditory, visual, and written media messages." By grade 12, they "evaluate sources including advertisements, editorials, blogs, Web sites, and other media for relationships between intent, factual content, and opinion." The use of media is also expected in oral presentations.

Content Weaknesses

Although the standards for study of literary and non-literary texts are mostly thorough (as discussed above), some essential content is missing. For example, in a number of places, the standards identify a category of important content without specifying important details, as shown below:

KSDE002305

> Compare and contrast author's use of literary elements within a variety of genres (grade 9)
>
> Use text structures to aid comprehension (grade 7)

Actually specifying the genres, elements, and structures to be addressed would provide valuable guidance to teachers and curriculum developers.

Virginia's standards for writing, while fairly solid with respect to the qualities of good writing in general, do not systematically delineate the characteristics of good writing by genre throughout the grades. Virginia laudably attempts to prioritize writing by type at certain grades (e.g., "exposition and analysis" in grade 10, "persuasion" in grade 11), yet the standards outlined at those grades do not identify the distinctive characteristics of each genre, such as addressing counterclaims or employing rhetorical strategies in persuasive writing. Without doing so, it is difficult to hold students accountable for the production of any genres. Samples of acceptable student writing would also help illuminate expectations.

Taken together, these shortcomings leave more than 5 percent of the essential K-12 content missing, thus earning the standards six points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

Virginia's standards are more clearly organized and easier to follow than the Common Core, in part because essential content is grouped more logically, so that standards addressing inextricably linked characteristics, such as themes in literary texts, can be found together rather than spread across strands. In addition, Virginia's standards for the study of American literature are more detailed.

On the other hand, Common Core more thoroughly addresses the genre-specific content that students must master to become proficient writers, and includes samples of student writing to clarify grade- and genre-specific writing expectations. Such enhancements would further strengthen Virginia's standards.

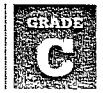
Virginia • Mathematics

DOCUMENTS REVIEWED

Mathematics Standards of Learning for Virginia Public Schools. February 2009.
Accessed from: http://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/review.shtml

Overview

Virginia's standards are well presented and easy to read. In K-8, arithmetic is moderately prioritized, but there are some weaknesses in its development. The high school content is also generally well covered and includes much STEM-ready material.



Clarity and Specificity:	2/3
Content and Rigor:	4/7
Total State Score:	**6/10**
(*Common Core Grade: A-*)	

General Organization

The K-8 standards are organized into six content strands such as Measurement and Geometry. The high school standards are organized by course. An introduction describes the material to be covered for each grade and course.

Clarity and Specificity

Virginia's standards are well organized and easy to read. Many are succinct and clear, such as:

> The student will determine by counting the value of a collection of bills and coins whose total value is $5.00 or less, compare the value of the coins or bills, and make change (grade 3)
>
> The student will classify angles as right, acute, obtuse, or straight (grade 5)

By contrast, other standards are not specific enough to know what kinds of problems students should be able to solve, such as:

> The student will identify and describe congruent and noncongruent plane figures (grade 3)
>
> The student will describe the relationship found in a number pattern and express the relationship (grade 5)
>
> The student will describe orally and in writing the relationships between the subsets of the real number system (grade 8)

While Virginia's standards are generally clear, specific, and easy to read, taken together, the prevalence of vague standards leaves the reader without clear guidance needed and earns the state two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Short grade-specific introductions mention areas of emphasis, but these appear more to synopsize the content for each grade rather than clearly state what material is most important. Implicitly, the standards only slightly prioritize arithmetic—less than 40 percent of the standards in appropriate grades are about its development.

Content Strengths

The structure of arithmetic is well covered, and there are some clear arithmetic expectations.

The high school standards cover some essential content well. For example, Virginia approaches geometry in an interesting way by both doing things in the coordinate plane and using deductive geometry, starting with axioms:

> The student will use the relationships between angles formed by two lines cut by a transversal to
> a) determine whether two lines are parallel;
> b) verify the parallelism, using algebraic and coordinate methods as well as deductive proofs (Geometry)

Geometric constructions are covered thoroughly, for example:

> The student will construct and justify the constructions of
> a) a line segment congruent to a given line segment;
> b) the perpendicular bisector of a line segment;
> c) a perpendicular to a given line from a point not on the line;
> d) a perpendicular to a given line at a given point on the line;
> e) the bisector of a given angle;
> f) an angle congruent to a given angle; and
> g) a line parallel to a given line through a point not on the given line (Geometry)

The high school standards also include important algebraic skills, such as:

> Adding, subtracting, multiplying, and dividing polynomials (Algebra I)
> Add, subtract, multiply, divide, and simplify rational algebraic expressions (Algebra II)

Much STEM-ready content is also included. Trigonometry is covered in some detail, including the graphing of the inverse trigonometric functions.

Content Weaknesses

The coverage of whole-number arithmetic is straightforward but inadequate, in part because automaticity with the basic number facts is not required.

In the continued development of arithmetic, neither standard procedures nor fluency are specified, as is seen in this rather crowded capstone standard for whole-number arithmetic:

> The student will
> a) estimate sums, differences, products, and quotients of whole numbers;
> b) add, subtract, and multiply whole numbers;
> c) divide whole numbers, finding quotients with and without remainders; and
> d) solve single-step and multistep addition, subtraction, and multiplication problems with whole numbers (grade 4)

In the case of adding and subtracting fractions, standard procedures and fluency are not required, nor are common denominators developed. Moreover, denominators are seemingly limited except for "practical problems":

> Add and subtract fractions having like and unlike denominators that are limited to 2, 3, 4, 5, 6, 8, 10, and 12 (grade 4)
> Solve single-step and multistep practical problems involving addition and subtraction with fractions and with decimals (grade 4)

Area is not well covered. It is always done in general terms, such as:

> Find perimeter, area, and volume in standard units of measure (grade 5)

Formulas for the areas of rectangles and triangles are not specifically included.

The high school standards are generally strong, except for quadratics. For example, consider the quadratic part of a standard:

> The student will solve, algebraically and graphically,...
> b) quadratic equations over the set of complex numbers...
> Graphing calculators will be used for solving and for confirming the algebraic solutions (Algebra II)

Completing the square, factoring, and the quadratic formula are omitted. This standard makes the incorrect suggestion that quadratics can be solved over the complex number graphically. Graphing calculators are mentioned too frequently in high school, and it is unclear how much students should be able to do without one.

Taken together, these "shortcomings" result in a Content and Rigor score of four points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Virginia's mathematics standards are mediocre, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are significantly superior to what Old Dominion has in place today.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Washington • English Language Arts

DOCUMENTS REVIEWED

Reading: K-10 Grade Level Expectations: A New Level of Specificity. 2004.
Accessed from: http://www.k12.wa.us/Reading/pubdocs/ReadingEALR-GLE.pdf

Writing: K-10 Grade Level Expectations: A New Level of Specificity. 2005.
Accessed from: http://www.k12.wa.us/Writing/pubdocs/EALRwritingfinal.pdf

Communication: K-10 Grade Level Expectations: A New Level of Specificity. 2005.
Accessed from: http://www.k12.wa.us/CurriculumInstruct/Communications/pubdocs/EALRcommunication.pdf

Overview

Washington's standards for grades K-10 are generally well organized but contain a mixture of precise and vague language that compromises their clarity and their rigor. In addition, the inclusion of nonacademic expectations, including several that incorporate explicit test-prep and career-planning expectations, unnecessarily distracts from mastery of essential academic content.

Clarity and Specificity:	2/3
Content and Rigor:	4/7
Total State Score:	**6/10**

(*Common Core Grade: B+*)

General Organization

The Washington standards for ELA are grouped into four "Essential Academic Learning Requirements" (EALR) in each of three strands: Reading, Writing, and Communication. These EALRs are common to all grades and give broad descriptions of what students should know and be able to do. For example:

- Reading EALR 1: The student understands and uses different skills and strategies to read.
- Writing EALR 1: The student understands and uses a writing process.
- Communication EALR 1: The student uses listening and observation skills to gain understanding.

Each EALR is divided first into "components," such as "use word recognition skills and strategies to read and comprehend text," and finally into grade-level expectations (GLEs) for grades K-10.

Clarity and Specificity

The ELA standards are generally clear and well organized, with a comprehensible grade-by-grade progression of content and skills. Many of the GLEs are specific and include illustrative examples to clarify expectations, such as:

> Avoids dangling modifiers (e.g., "After I stood in line for hours, I discovered the tickets were sold out." Incorrect: "After standing in line for hours, the tickets were sold out." The second sentence makes it appear that the tickets were in line.) (grades 9-10)

At times, however, the language is vague or obscured with jargon, such as:

> Define words and concepts necessary for understanding math, science, social studies, literature, and other content area text (grade 3)
>
> Use text features to verify, support, or clarify meaning (grade 8)
>
> Use literary themes within and across texts to interpret current issues, events, and/or how they relate to self (grades 9-10)

KSDE002310

In places, the state makes somewhat arbitrary distinctions, resulting in inordinately complicated standards laced with unnecessary detail. For example, it's not clear what's intended by distinguishing between "writes for different purposes" and "writes in a variety of forms/genres." While purpose and form are not the same, the GLEs don't make this distinction meaningful despite including roughly fifty specific GLEs per component.

Such general language does little to ensure that districts, schools, and teachers will have comparable levels of understanding and rigor. These shortcomings detract from the overall presentation, earning the standards two points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The GLEs include a clear early-reading focus on phonics and phonemic awareness, including many standards that are detailed and specific, such as:

> Segment and blend multi-syllabic words, including compound words (grade 1)
>
> Add, delete, and/or substitute one phoneme for another in initial, medial, and final positions to make a new word (grade 1)
>
> Segment and blend words orally containing three to five phonemes (grade 1)
>
> Generate words that begin or end with the same sound or different sounds (grade 1)
>
> Blend and segment onset and rime (grade 1)

The state emphasizes learning essential grammar content by including clear, rigorous, and detailed expectations for language conventions, including:

> Uses who vs. whom correctly (grades 9-10)
>
> Uses that vs. which and that vs. who correctly (grades 9-10)
>
> Uses either... or and neither... nor correctly (grades 9-10)
>
> Uses active voice except when passive voice is appropriate (e.g., active voice: "They saw it." vs. passive voice: "It was seen by them.") (grades 9-10)
>
> Uses parallel construction in clauses.
> - parallel: The coach told the players they should get plenty of sleep, they should eat well, and they should do some warm-up exercises.
> - not parallel: The coach told the players they should get plenty of sleep, that they should eat well, and to do some warm up exercises (grades 9-10)

The vocabulary expectations are reasonably clear and emphasize the importance of content knowledge for vocabulary building, particularly in grades 9-10. For example:

> Integrate new vocabulary from informational/expository text and literary/narrative text, including text from a variety of cultures and communities (e.g., salon as a historical reference to political gatherings as opposed to a beauty salon), into written and oral communication (grades 9-10)
>
> Explain the meaning of content-specific vocabulary words (e.g., regeneration, isolationism, emancipation, polarized) (grades 9-10)
>
> Transfer knowledge of vocabulary learned in content areas to comprehend other grade-level informational/expository text and literary/narrative text (e.g., the concept of parallel in mathematics to understand parallelism) (grades 9-10)

The expectations for writing are precise and thorough; they include illustrative examples to clarify intent, and they often helpfully mention mentor texts—grade-appropriate texts that demonstrate specific aspects of writing that students are learning—that can be used across grades. For example:

KSDE002311

> Writes a story in pictures and in words following a pattern from literature (e.g., *Grandfather's Journey* by Allen Say or *The Hungry Caterpillar* by Eric Carle) (Kindergarten)
>
> Uses a variety of transitional words and phrases to make connections between and within paragraphs.
> - chronological (e.g., next, after)
> - spatial (e.g., over, under, next to)
> - ordinal (e.g., first, second, third) (grade 4)
>
> Composes an effective ending/conclusion that is more than a repetition of the introduction (e.g., response to a "so what" question, connection to bigger picture) (grade 8)

The standards include a document devoted to "communication" skills, which include general listening and speaking skills, oral presentations, group interactions, analysis of information in multimedia formats, and self-assessment. Many of these are addressed in detail, with helpful illustrative examples. For example:

> Reaches a group decision through compromise, with teacher guidance for large group solutions (e.g., blending differing points of view to reach a compromise or choosing the quickest or best solution) (grade 4)
>
> Uses techniques to enhance the message (e.g., irony and dialogue to achieve clarity, force, and aesthetic effect; technical language) (grades 9-10)

Content Weaknesses

The GLEs focused on reading are a mixed bag. While they outline some clear expectations for reading literary and non-literary texts, many of the standards are vague and much of the critical content that students must learn to become proficient readers is simply absent. For example, many of the standards for recognizing and interpreting different genres are too vague to guide curriculum, assessment development, or instruction. Here's an example:

> Compare/contrast how recurring themes are treated by diverse authors or in different genres (grades 9-10)

Such standards—found often—lack essential content- and genre-specific detail.

The standards do not refer to any specific works of literature, American or otherwise. For grades 9 and 10, they refer implicitly to American literature only by referring to events in U.S. history:

> Examine the ways in which works of literature are related to the issues and themes of their historical periods (e.g., the Gold Rush, civil rights movement, post-World War II Europe) (grades 9-10)

Until grade 8, the GLEs do not address the quality and complexity of texts, and even then they vaguely reference reading "great literary works," with no criteria or book lists that would help teachers select sufficiently rigorous texts.

The GLEs for research are limited to gathering information; there are no clear expectations regarding the research process.

In addition, the GLEs include unnecessary standards that are focused on test prep rather than mastery of essential content. For example:

> Select, from multiple choices, a prediction, inference, or assumption that could be made from the text (grade 8)

This elevates a test-taking skill and needlessly deflects attention from mastering critical content.

The standards also include an entire component devoted to "reading to perform a task" and another to "writes for career applications." While including a handful of standards focused on such nonacademic reading and writing can add value, the number of standards devoted to such nonacademic reading and writing disproportionately emphasizes less important content and skills.

Similarly, important communications and oral presentation content is buried deep among voluminous standards focused on less critical content, such as assessing your own and your peer's effectiveness in communication and "social interaction skills" (including cultural sensitivity, conflict resolution, etc.).

KSDE002312

Finally, because the Washington standards include GLEs only through grade 10, much important end-of-high-school content is entirely missing from the standards.

Taken together, these shortcomings lead to the loss of as much as 35 percent of the critical content, thus earning Washington's standards four points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of C, Washington's ELA standards are mediocre. Those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are superior to what the Evergreen State has in place today.

KSDE002313

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Washington • Mathematics

DOCUMENTS REVIEWED

Washington State K-12 Mathematics Learning Standards. July 2008.
Accessed from: http://www.k12.wa.us/mathematics/Standards/K-12MathematicsStandards-July2008.pdf

Overview

Washington's standards are easy to read and well organized. They come with extensive explanatory notes and examples. They cover nearly all the essential content with rigor and do an excellent job of limiting and prioritizing the content to be covered. In elementary school, arithmetic is both given priority and developed well. The high school content is generally strong, but a few STEM-ready topics are not included.

Clarity and Specificity:	3/3
Content and Rigor:	7/7
Total State Score:	**10/10**
(Common Core Grade: A-)	

General Organization

Washington presents grade-specific standards—called "performance expectations"—for all grades, K-8. These standards are subdivided by three headings: Core Content, Additional Key Content, and Core Processes. The standards that are meant to be the top priority for a grade level are explicitly labeled with the Core Content heading. Finally, the state provides "Explanatory Comments and Examples" for most standards to help clarify intent.

The high school material is organized similarly, but presented by course.

Clarity and Specificity

The standards are well presented and generally easy to read and understand. Most standards are straightforward and clear, for example:

> Simplify fractions using common factor (grade 4)
> Given two fractions with unlike denominators, rewrite the fractions with a common denominator (grade 5)

When standards are not clear, the explanatory comments and examples serve to clarify:

> Identify rational and irrational numbers
>
> Students should know that rational numbers are numbers that can be represented as the ratio of two integers; that the decimal expansions of rational numbers have repeating patterns, or terminate; and that there are numbers that are not rational (grade 8)

In some cases, the examples are used to be more specific about content, such as with this standard:

> Know, explain, and apply basic postulates and theorems about triangles and the special lines, line segments, and rays associated with a triangle (Geometry)

One of the examples is an important theorem:

> Prove that the sum of the angles of a triangle is 180 degrees (Geometry)

KSDE002314

Still, some standards are far too vague and general, such as:

> Select and justify functions and equations to model and solve problems (Algebra I)

The explanatory comments and examples do serve to clarify this standard, but the examples are numerous and somewhat disparate, so the actual intent of the standard remains subject to interpretation.

The following comment appears with numerous problem-solving standards and appears to be more of an English language requirement than one for mathematics:

> The intent of this expectation is for students to show their work, explain their thinking, and verify that the answer to the problem is reasonable in terms of the original context and the mathematics used to solve the problem. Verifications can include the use of numbers, words, pictures, physical objects, or equations.

Overall, Washington's standards are well presented and usually clear and specific. The use of examples to clarify intent is exemplary, and they receive a Clarity and Specificity score of three points out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Washington does an exemplary job of prioritizing critical content at each grade level. This is done via the core content headings, which are explicitly stated to be the "major mathematical focuses" for each grade.

Arithmetic is unambiguously and effectively prioritized in elementary school. For example, in fourth grade, the core content topics are: "Multi-digit Multiplication," "Fractions, Decimals, and Mixed Numbers," and "Concept of Area." Moreover, over half the standards are about arithmetic.

Content Strengths

The essential content is well covered. The development of arithmetic is strong. Instant recall of the number facts is specified:

> Quickly recall basic addition facts and related subtraction facts for sums through 20 (grade 2)
> Quickly recall multiplication facts through 10 X 10 and the related division facts (grade 4)

The capstone standards for whole-number arithmetic are equally clear:

> Fluently and accurately add and subtract whole numbers using the standard regrouping algorithms (grade 3)
> Fluently and accurately multiply up to a three-digit number by one- and two-digit numbers using the standard multiplication algorithm (grade 4)
> Fluently and accurately divide up to a four-digit number by one- or two-digit divisors using the standard long-division algorithm (grade 5)

The development of arithmetic continues nicely through fractions.

In high school, linear equations are covered thoroughly with standards such as:

> Write and graph an equation for a line given the slope and the y-intercept, the slope and a point on the line, or two points on the line, and translate between forms of linear equations (Algebra I)

Quadratics are also nicely developed with, for example, the following standard with its explanatory comment:

> Solve problems that can be represented by quadratic functions, equations, and inequalities. In addition to solving area and velocity problems by factoring and applying the quadratic formula to the quadratic equation, students use the vertex form of the equation to solve problems about maximums, minimums, and symmetry (Algebra II)

KSDE002315

Similarly:

> Translate between the standard form of a quadratic function, the vertex form, and the factored form; graph and interpret the meaning of each form (Algebra II)

Content Weaknesses

Some STEM-ready material is missing or covered inadequately. Trigonometry is mentioned, but material such as the graphs of the trigonometric functions, major trigonometry identities, and inverse trigonometric functions are missing entirely. Other missing material includes the arithmetic of complex numbers and polar coordinates.

In the elementary grades, the standards do an excellent job of covering arithmetic and setting it as a priority. The high school coverage is strong, except for some STEM-ready material. The Content and Rigor score is seven points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With some minor differences, Common Core and Washington State both cover the essential content for a rigorous, K-12 mathematics program. That said, Washington's standards are exceptionally clear and well presented, and are generally more detailed and explicit than Common Core. In particular, they include "Explanatory Comments and Examples" that provide additional context so that the reader knows exactly what students are expected to know and be able to do. In addition, the high school content is organized so the standards dealing with various topics, such as quadratic functions, are grouped together in a mathematically coherent way. The organization of the Common Core is more difficult to navigate, in part because standards on related topics sometimes appear separately rather than together.

On the other hand, Common Core excels in the development of fractions, and includes important material on trigonometry that is missing from Washington's standards.

KSDE002316

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

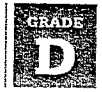
West Virginia • English Language Arts

DOCUMENTS REVIEWED

21st Century Reading and English Language Arts Content Standards and Objectives for West Virginia Schools. September 14, 2009. Accessed from: http://wvde.state.wv.us/policies/csos.html

Overview

Despite a few bright spots, the lack of clarity and specificity in the West Virginia standards impacts not only the document's readability but also, ultimately, the content and rigor of the standards themselves. In far too many places, it is impossible to determine what students must do or produce to ensure mastery of essential content.



Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(Common Core Grade: B+)	

Standards for early reading are good, but for the most part, the standards gloss over important content such as the analysis of literary and non-literary texts, writing characteristics by genre, effective listening and speaking standards, and standards for multimedia analysis and production.

General Organization

West Virginia's standards are presented in three strands: Reading, Writing, and Listening; Speaking; and Media Literacy. For each strand, the state provides content standards that are "broad descriptions" of what students should know and be able to do and that are common to all grades. The content standards are then divided into grade-specific objectives.

In addition, West Virginia supplies grade-specific "performance descriptors," which are essentially rubrics describing "how students demonstrate achievement of content standards." These performance descriptors describe what a student should know and be able to do at five levels: distinguished, above mastery, mastery, partial mastery, and novice.

Clarity and Specificity

Some West Virginia objectives are clear and reasonably specific, such as:

> Students will identify and practice basic elements of phonetic analysis:
> - syllabication
> - diphthongs
> - digraphs
> - variant vowel sounds such as r-controlled (grade 2)

More often, however, objectives are vaguely written, poorly organized, and conflate several concepts, thus making it difficult to discern what, precisely, students should know and be able to do. Consider, for example, this grade 4 reading objective:

> Students will interpret and extend the ideas in literary and informational texts to summarize, determine story elements, skim and scan, determine cause and effect, compare and contrast, visualize, paraphrase, infer, sequence, determine fact and opinion, draw conclusions, analyze, characterize, and provide main idea and support details (grade 4)

This standard packs in too much content generally, as well as content for literary and informational texts together—thus obscuring the most essential content for each. Similarly confusing standards can be found throughout.

KSDE002317

Other standards appear more narrowly focused, but in fact are vague. For example:

> Students will use oral/visual information to research, explore, question and imagine a topic (grade 7)

This standard is typical in its failure to provide adequate guidance about what the state actually expects students to know and be able to do.

The problem of vague and confounding standards is exacerbated by their repetition across grades. Take, for example, the following:

> Students will relate and analyze connections/themes among ideas in literary and informational texts, such as text-to-self, text-to-text, text-to-world connections, and recognize that global awareness promotes understanding, tolerance, and acceptance of ethnic, cultural, religious and personal differences (grades 7-8)

This standard makes it difficult to discern what the state expects of students, and the repetition of the standard across grade levels with no further guidance makes it impossible to scaffold skills or content from grade to grade.

Other standards simply defy comprehension:

> Students will use denotation to understand meaning (grade 5)
>
> Students will identify and understand literary techniques used to interpret literature (e.g., compare/contrast, symbolism) (grade 6)
>
> Students will analyze and evaluate literary styles according to genre:
> - author's use
> - elements
> - expectations (grade 11)

Taken together, these critical shortcomings leave teachers in the Mountain State with scant guidance as to the scope and sequence of important content across the grades, and therefore earn the standards one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

West Virginia's standards for early reading are better than other areas. Objectives here delineate specific expectations for phonemic awareness, phonics, fluency, and comprehension. In first grade, for example:

> Students will use basic elements of phonetic analysis to decode unknown words:
> - sound-symbol relationships
> - beginning/ending consonants
> - short and long vowel sounds
> - blends
> - digraphs
> - diphthongs (grade 1)

While these standards could be strengthened by including examples to clarify expectations, nearly all of the essential content and skills are addressed.

Although the state does not provide a strand devoted exclusively to research, the Writing standards address some important research content. For example, in grade 7, students must:

> Understand how to summarize and use direct quotations in writing, recognize copyright laws/issues, ethical acquisition and use of digital information in citing sources for research/report (grade 7)
>
> Document sources of information using a provided bibliographic format (grade 7)

While the expectations do not specify all of the characteristics of final research products, the essential elements of the research process are well defined.

In addition, while the Reading strand is problematic for many reasons (discussed below), occasional standards can be found there that focus on essential content, such as:

> Students will read, compare and interpret types of poetry (e.g., narrative poems, ballads, lyric, epic) and interpret elements (e.g., lines, stanzas, rhythm, meter or rhyme) to derive meaning of poetry (grade 8)

Content Weaknesses

Vocabulary standards in West Virginia are cursory. Analysis of word parts is not mentioned until grade 5. Until then, expectations are simplistic, such as "apply explicitly taught vocabulary words in oral and written experiences" or "identify and practice appropriate sight words and content vocabulary."

The treatment of literary and non-literary texts is spotty. While some objectives make a perfunctory nod to some of the genre-specific content that students must learn, more often than not the standards include sweeping skills-driven standards that conflate the two text types. For example:

> Students will use literary and informational texts to summarize, determine story elements, determine cause and effect, compare and contrast, paraphrase, infer, predict, sequence, draw conclusions, describe characters, and provide main idea and support details (grade 3)

Standards for the analysis of informational text are especially thin throughout.

In places where the standards do attempt to be specific to text type—literary or non-literary—they nonetheless remain hard to discern, as in this eighth-grade literature standard:

> Students will identify literary technique used to interpret literature:
> - irony
> - satire
> - persuasive language
> - analogies (grade 8)

It is not clear why these "techniques" are presented together, or what the student outcome is, even though specific "literary techniques" are mentioned.

The progression of rigor in the Reading and Writing strands is frequently inadequate. For example, the first standard that addresses persuasive text does not appear until tenth grade:

> Students will critique persuasive language and techniques as found in literary and informational texts and media (grade 10)

Students need a systematic approach to analyzing various types of texts from the early grades onward, and these standards, unfortunately, do not provide it.

While the standards include occasional references to American and even West Virginian literature, these are too broadly worded to be useful:

> Students will increase the amount of independent reading with emphasis on classic American, British and World Literature, and informational texts (grade 11)

The state missed an important opportunity to ensure that all students would be required to explore America's literary heritage in the classroom.

West Virginia's Writing standards are long, disorganized lists that focus primarily on process and address a mish-mash of writing content. For example:

> Students will create an effective response to a task in form, content and language (e.g., letters, poems, brief reports or descriptions, instructions, journals) (grade 4)
>
> Students will use reference skills to identify words (grade 4)
>
> Students will draft analogies, illustrations, examples, or anecdotes to respond to an oral, visual, or written prompt (grade 5)

Unfortunately, it's nearly impossible to discern in these standards what the state expects in terms of student outcomes.

Objectives outlined in the Listening, Speaking, and Media strand are generally devoid of content, such as:

> Students will compare and contrast personal experiences to oral/visual information (grade 5)
>
> Students will create and present an age-appropriate media product that demonstrates format, purpose, and audience (grades 5-8)

Similarly confusing standards plague this strand across grade levels.

While West Virginia's standards touch on some essential content, the objectives rarely cover that content with depth, rigor, or clarity. The combination of unnecessary and confusing standards, coupled with the core content that is missing entirely, earn the standards three points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of D, West Virginia's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Mountain State has in place today.

KSDE002320

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

West Virginia • Mathematics

DOCUMENTS REVIEWED

21st Century Mathematics Content Standards and Objectives for West Virginia Schools. August 20, 2009.
Accessed from: http://wvde.state.wv.us/policies/p2520.2.pdf

Overview

West Virginia's standards are well presented and easy to read. In the early grades, however, arithmetic is not given sufficient emphasis and its development has some weaknesses. The high school content is generally well covered and includes much STEM-ready material.

Clarity and Specificity:	2/3
Content and Rigor:	5/7
Total State Score:	**7/10**
(*Common Core Grade: A-*)	

General Organization

The K-8 grade-specific standards are organized into five content strands such as Measurement and Geometry. The high school standards employ a similar structure though they are presented by course rather than grade and use different content strands. In addition, each grade and course has an introduction describing the material to be covered.

Clarity and Specificity

West Virginia's standards are well organized and easy to read. Many are straightforward, such as:

> Determine the formula the area [sic] of a rectangle and explain reasoning through modeling (grade 3)
> Draw and identify parts of a circle: center point, diameter, and radius (grade 4)

Other standards, however, are too broadly stated to interpret:

> Explain how one variable produces a change in another variable (grade 2)
> Analyze real-world data represented on a graph using grade-appropriate questions (grade 3)

Such nebulous standards fail to make clear what students are expected to know or what kinds of problems they should be able to solve. What's more, the second-grade standard above is both inappropriate and too broad. (It would be a challenging high school standard!) Further, as demonstrated by the third-grade standard above, the standards sometimes make reference to "grade-appropriate" content without further specification.

Other standards are poorly phrased:

> Determine and apply greatest common factor and lowest common multiple to write equivalent fractions and to real-world problem situations [sic] (grade 5)
> Add and subtract polynomials limited to two variables and positive exponents (grade 8)

The first of these contains obvious grammatical issues. For the second, there are no negative exponents in polynomials, so the restriction to positive exponents is confusing.

While the clear and specific standards generally outnumber those that are vague or poorly written, they "do not quite provide a complete guide to users" (see the *Common Grading Metric*, see Appendix A), and receive a Clarity and Specificity score of two points out of three.

KSDE002321

Content and Rigor

Content Priorities

West Virginia does not provide clear guidance as to the relative importance of the content. Short grade-level introductions mention areas of emphasis, but they appear more to synopsize the content for each grade rather than clearly state what material is most important. Arithmetic is only barely prioritized, with less than 40 percent of the standards in appropriate grades dealing with its development.

Content Strengths

The structure of arithmetic is well covered. Quick recall of the number facts is specifically required:

> Demonstrate quick recall of basic addition facts with sums to 18 and corresponding subtraction facts (grade 2)
> Quick recall of basic multiplication facts and corresponding division facts [sic] (grade 4)

Despite weaknesses in development, which are discussed below, the capstone standard for whole-number arithmetic is clear and requires fluency:

> Demonstrate fluency in addition, subtraction, multiplication and division of whole numbers (grade 5)

The number line is introduced early and used often.

In high school, much of the coverage is strong. High school geometry requires proofs and specifies that they should have a foundation in postulates:

> Construct formal and informal proofs by applying definitions, theorems, and postulates related to such topics as
> - complementary,
> - supplementary,
> - vertical angles,
> - angles formed by perpendicular lines, and
> - justify the steps (Geometry)

There is some strong coverage of quadratic equations. The following standard, while too dense and compact, includes strong analytic content:

> Solve quadratic equations over the set of complex numbers: apply the techniques of factoring, completing the square, and the quadratic formula; use the discriminate to determine the number and nature of the roots; identify the maxima and minima; use words, graphs, tables, and equations to generate and analyze solutions to practical problems (Algebra II)

Content Weaknesses

The development of arithmetic shows some weaknesses. The capstone standard for whole-number arithmetic quoted above requires fluency, but the standards fail to adequately develop the standard algorithms.

An example is the development of multiplication. The standard algorithm is mentioned, but it appears along with a "variety of strategies," which may undermine students' mastery of this fundamental skill:

> Solve multi-digit whole-number multiplication problems using a variety of strategies, including the standard algorithm, justify methods used (grade 4)

In the continued development of arithmetic, standard procedures and fluency are omitted, as are common denominators.

Technology, while not overly intrusive within the standards statements themselves, is inappropriately emphasized in the peripheral material. For example, it appears in *Kindergarten*, in the very first sentence of the introduction:

> Kindergarten objectives emphasize the use of manipulatives, concrete materials, and appropriate technology so that students explore and develop ideas fundamental to the study of mathematics...(Kindergarten)

KSDE002322

The use of technology tends not to interfere with the development of arithmetic, but it is still included in dubious ways, as in:

> Kindergarten objectives emphasize the use of manipulatives, concrete materials, and appropriate technology so that students explore and develop ideas fundamental to the study of mathematics...(Kindergarten)

High school content is generally strong, but a few details are missing, including the standard form for linear equations and a proof of the Pythagorean Theorem.

West Virginia's standards cover much of the essential content, particularly in high school. In K-8, there are some weaknesses in the prioritization and development of arithmetic. These shortcomings result in a Content and Rigor score of five points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of B, West Virginia's mathematics standards are decent, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are superior to what the Mountain State has in place today.

KSDE002323

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Wisconsin • English Language Arts

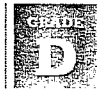
DOCUMENTS REVIEWED[1]

Wisconsin's Model Academic Standards for English Language Arts. January 13, 1998.
Accessed from: http://dpi.wi.gov/standards/elaintro.html

Sample Proficiency Standards. January 13, 1998.
Accessed from: http://dpi.wi.gov/standards/pdf/teched-prof.pdf

Overview

Wisconsin's ELA standards are generally clearly written and presented, and include some rigorous content. Unfortunately, their failure to provide grade-specific expectations creates critical gaps in content that leave teachers without the guidance they need to drive rigorous curriculum, assessment, and instruction.



Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**
(Common Core Grade: B+)	

General Organization

Wisconsin divides its ELA expectations into five "standards" (i.e., strands) that are common across all grade levels: Reading/Literature; Writing; Oral Language; Language, Media and Technology; and Research and Inquiry. These standards are divided into "content standards" that are also common to all grades and include a broad statement about what students should know and be able to do. For example, the Reading/Literature strand is introduced with the following:

> Content Standard: Students in Wisconsin will read and respond to a wide range of writing to build an understanding of written materials, of themselves, and of others.

Each content standard is followed by a two-paragraph explanation of its rationale and purpose.

Finally, the content standards are broken into "performance standards" for three benchmark grades: 4, 8, and 12. No other grade-specific standards or indicators are provided.

Clarity and Specificity

On the positive side, Wisconsin's ELA standards are well organized and presented, and many are reasonably clear and jargon-free. For example:

> Orally communicate information, opinions, and ideas effectively to different audiences for a variety of purposes
> - Identify and discuss criteria for effective oral presentations, including such factors as eye contact, projection, tone, volume, rate, and articulation
> - Read aloud effectively from previously read material
> - Speaking from notes or a brief outline, communicate precise information and accurate instructions in clearly organized and sequenced detail
> - Present autobiographical or fictional stories that recount events effectively to large and small audiences
> - Participate in group readings, such as choral, echo, and shadow reading

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> - Perform dramatic readings and presentations
> - Distinguish between fact and opinion and provide evidence to support opinions (grade 4)

Others are too vaguely worded to provide adequate guidance, such as:

> Write creative pieces (poetry, fiction, and plays) employing basic aesthetic principles appropriate to each genre (grade 4)

By failing to indicate what the "basic aesthetic principles" are, this standard is not instructionally useful.

What's more, because standards are only provided for three grade levels, they do not provide the specificity needed to drive instruction from grade to grade, thus earning them one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

While grade-specific standards are not provided, some essential content is incorporated, such as the comprehension and analysis of literary and non-literary texts:

> Recognize and recall elements and details of story structure, such as sequence of events, character, plot, and setting, in order to reflect on meaning (grade 4)
>
> Identify and use organizational features of texts, such as headings, paragraphs, and format, to improve understanding (grade 8)

In addition, the standards delineate some important genre-specific content, including:

> Apply knowledge of expository structures, such as the deductive or inductive development of an argument, to the comprehension and evaluation of texts (grade 12)

Standards addressing the specific genres that students should learn at each grade level are included, and do show a logical progression of content across grade levels, as demonstrated with the grades 8 and 12 expectations below:

> Write a coherent and complete expository piece, with sufficient detail to fulfill its purpose, sufficient evidence to support its assertions, language appropriate for its intended audience, and organization achieved through clear coordination and subordination of ideas (grade 8)
>
> Write a persuasive piece (such as a letter to a specific person or a script promoting a particular product) that includes a clear position, a discernible tone, and a coherent argument with reliable evidence (grade 8)
>
> Write a coherent argument that takes a position, accurately summarizes an opposing position, refutes that position, and cites persuasive evidence (grade 12)
>
> Compose and publish analytic and reflective writing that conveys knowledge, experience, insights, and opinions to an intended audience (grade 12)

As these standards demonstrate, important and more advanced genre-specific expectations are introduced in the later grades, and there is a clear progression and scaffolding of content and rigor.

Standards addressing the research process are also included and these, too, demonstrate a clear progression of both content and rigor.

The state delineates expectations for listening and speaking, and its standards for media are noteworthy because they distinguish—clearly and rigorously—between the evaluation, creation, understanding, and analysis of media.

Content Weaknesses

While Wisconsin's standards include some clear and rigorous content, their failure to delineate grade-specific expectations leads to the omission of much critical K-12 content, beginning with early reading.

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Only three standards touch on any content related to phonics, phonemic, or phonological awareness:

> Use a variety of strategies and word recognition skills, including rereading, finding context clues, applying their knowledge of letter-sound relationships, and analyzing word structures (grade 4)
>
> Demonstrate phonemic awareness by using letter/sound relationships as aids to pronouncing and understanding unfamiliar words and text (grade 4)
>
> Read aloud with age-appropriate fluency, accuracy, and expression (grade 4)

Vocabulary standards are inadequate and omit such important content as synonyms, antonyms, compound and multiple meaning words, and denotation.

With the exception of the brief and overly broad fourth-grade standard below, the state fails to include any standards that reflect the importance of reading American literature.

> Draw upon a reservoir of reading materials, including fairy tales, fables, and narratives from the United States and cultures worldwide, to understand plots, make predictions, and relate reading to prior knowledge and experience (grade 4)

Nor does Wisconsin provide explicit guidance regarding the amount, quality, or complexity of texts that students should be reading each year, much less any actual titles.

The state fails to include expectations that clarify the characteristics and quality of writing that students should produce in each grade. In addition, standards addressing English language conventions are vaguely worded and omit some essential grade-appropriate content.

Some standards set forth unnecessary or irrelevant expectations, such as:

> Demonstrate the ability to integrate general knowledge about the world and familiarity with literary and nonliterary texts when reflecting upon life's experiences (grade 4)

Asking students to "integrate general knowledge about the world" when "reflecting upon life's experiences" is both vague and unnecessarily distracts from standards outlining critical ELA-specific content.

Finally, too many reading standards focus on habits of mind and reading comprehension strategies, rather than on critical content. For example,

> Establish purposeful reading and writing habits by using texts to find information, gain understanding of diverse viewpoints, make decisions, and enjoy the experience of reading (grade 4)
>
> Comprehend reading by using strategies such as activating prior knowledge, establishing purpose, self-correcting and self-monitoring, rereading, making predictions, finding context clues, developing visual images, applying knowledge of text structures, and adjusting reading rate according to purpose and difficulty (grade 4)

Given that very few standards are presented at all, the inclusion of these expectations unnecessarily distracts from the essential content that is outlined in the standards.

While much important content is included in the Wisconsin ELA standards, the failure to delineate grade-specific expectations leaves critical content gaps that are exacerbated by the inclusion of unnecessary and distracting content. As such, the standards can earn no higher than three points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

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The Bottom Line

With their grade of D, Wisconsin's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Badger State has in place today.

1 Wisconsin's academic standards have not changed since Fordham's last evaluation, the *State of State English Standards 2005*. However, in 2005 we also reviewed supplementary material for Wisconsin's benchmark indicators. Moreover, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Through this new lens, Wisconsin's ELA grade dropped from a C to a D. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=337&pubsubid=1076#1076.

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AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

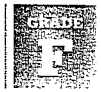
Wisconsin • Mathematics

DOCUMENTS REVIEWED[1]

Wisconsin's Model Academic Standards for Mathematics. January 13, 1998.
Accessed from: http://dpi.wi.gov/standards/matintro.html

Overview

Wisconsin's standards are scant. They are provided only for the end of fourth, eighth, and twelfth grades, and very few standards are provided for each grade band. In some ways, they cover a lot of mathematical content concisely and efficiently. However, much of the essential content is missing and the level of detail for what is covered is insufficient.



Clarity and Specificity:	1/3
Content and Rigor:	1/7
Total State Score:	**2/10**
(Common Core Grade: A-)	

General Organization

The standards cover three grade bands: end of fourth, eighth, and twelfth grades. They are organized into six content strands, including a mathematical process strand.

Clarity and Specificity

The standards are well presented and generally easy to read. They are quite brief, though, with fewer than 100 standards in total for all grade levels.

Some of the standards are clearly stated and easily understood. However, even when stated clearly, the standards often lack specificity. In particular, the lack of grade-specific standards makes it difficult to know at which grade levels students should master specific content. Moreover, frequently, only capstone standards are included, which leaves teachers with inadequate guidance about how to scaffold essential knowledge and skills required to master those standards. For example, there are only two standards on fractions, starting with:

> Add and subtract fractions with like denominators (grade 4)

The continued development of fractions, such as adding and subtracting fractions with unlike denominators, is never specified, but may be included in:

> Perform and explain operations on rational numbers (add, subtract, multiply, divide, raise to a power, extract a root, take opposites and reciprocals, determine absolute value) (grade 8)

The failure to articulate the intermediate standards compromises the clarity and specificity. This lack of detail permeates the Wisconsin standards, and leaves them, on the whole, far too open to interpretation on the part of the reader.

Other examples of standards that are not specific and fail to adequately scaffold material are:

> Use physical materials and motion geometry (such as slides, flips, and turns) to identify properties and relationships, including but not limited to
> - symmetry
> - congruence
> - similarity (grade 4)

KSDE002328

> Recognize, describe, and analyze functional relationships by generalizing a rule that characterizes the pattern of change among variables. These functional relationships include exponential growth and decay (e.g., cell division, depreciation) (grade 8)

These standards are broadly stated and the reader is left with little idea as to what, exactly, students are required to know or what kinds of problems they should be able to solve.

Wisconsin's standards are sometimes admirably efficient, and they do contain some clear statements. However, the limited number and restricted grades of the standards, combined with the lack of clarity in many of the statements, render them "of limited guidance to users." They receive one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Priorities are not made explicit in the Wisconsin standards. Notably, there are only seven standards about arithmetic in the fourth-grade standards, and these seven standards must cover the entire development of numbers and arithmetic for grades K–4. Taken together, these arithmetic standards constitute only about one-fourth of the standards for the end of fourth grade, which does not appropriately prioritize arithmetic in elementary school.

Content Strengths

Despite the small number of standards, there is reasonable coverage of some essential content. The properties of numbers such as commutativity, primes, and the inverse nature of addition and subtraction are covered. Rates, ratios, proportions, and percentages are well represented.

Content Weaknesses

The standards are missing much essential content. Single-digit number facts are to be recalled, but not quickly or instantly. Whole-number arithmetic has basically no development and is missing both fluency and standard methods and procedures. It is covered in a single fourth-grade standard:

> In problem-solving situations involving whole numbers, select and efficiently use appropriate computational procedures such as
> - recalling the basic facts of addition, subtraction, multiplication, and division
> - using mental math (e.g., 37 + 25, 40 x 7)
> - estimation
> - selecting and applying algorithms for addition, subtraction, multiplication, and division
> - using a calculator (grade 4)

This is inadequate. Worse, as a "computational procedure," this standard equates calculators with pencil and paper methods.

In the continued standards on arithmetic in eighth grade, common denominators are not mentioned, and the standard algorithms are undermined with "computational procedures for rational numbers" such as:

> [C]reating, using, and explaining algorithms (grade 8)

This gives alternative algorithms the status that standard methods should have.

Linear equations are covered, but much of the mathematics of them is not made explicit. Basics are missing, such as point slope form and equations from two points.

High-school geometry is particularly sparse: There are only five standards, one of which is devoted to trigonometry and another to coordinates. Of the three remaining, one is not helpful:

> Use geometric models to solve mathematical and real-world problems (grade 12)

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The coverage of quadratic equations is even less robust. Polynomials, factoring, complex numbers, and completing the square are never mentioned. STEM-ready standards are almost completely missing.

Wisconsin's standards are inadequate to cover the necessary material. They do not set arithmetic as a priority in elementary school and miss much of the foundation of both whole-number arithmetic and the arithmetic of fractions. Much of high school mathematics is missing. These "numerous problems" result in a Content and Rigor score of one point out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With their grade of F, Wisconsin's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Badger State has in place today.

1 Wisconsin's model academic standards have not changed since Fordham's last evaluation, the *State of State Math Standards 2005*. However, the evaluation criteria that we used to judge the 2010 standards have been substantially revised and improved since 2005. (See Appendix C for a complete explanation of changes in criteria.) Through this new lens, Wisconsin's math grade dropped from a D to an F. The complete 2005 review can be found here: http://www.edexcellence.net/detail/news.cfm?news_id=338&pubsubid=1191#1191.

KSDE002330

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Wyoming • English Language Arts

DOCUMENTS REVIEWED

Wyoming Language Arts Content and Performance Standards. 2008.
Accessed from: http://www.k12.wy.us/SA/standards.asp

Overview

Wyoming's standards touch on some important content, but overlook much. Vague wording makes it difficult to discern a rigorous progression of content throughout the grades. In addition, high school standards are provided for grade 11 only, thus omitting much content from the grade 9-12 expectations.

Clarity and Specificity:	1/3
Content and Rigor:	3/7
Total State Score:	**4/10**

(Common Core Grade: B+)

General Organization

Wyoming's K-8 ELA expectations are organized into three major standards: Reading, Writing, and Speaking and Listening. The standards are then divided into sub-categories that vary by grade, and finally into grade-specific benchmarks.

The high school standards are similarly organized, except that they exist only for grade 11.

In addition, Wyoming includes "performance-level descriptors" for each grade. These are essentially rubrics that describe what students at four levels—advanced performance, proficient performance, basic performance, and below basic performance—should know and be able to do.

Clarity and Specificity

The Wyoming standards are generally well organized and clearly presented, though the benchmarks themselves are not consistently clear or specific. Some are clear, such as:

> Students organize writing logically, chronologically, and coherently using strong beginnings, supporting sentences, appropriate transitions, and strong conclusions (grade 7)

Unfortunately, many benchmarks are written in vague or awkward language that uses unmeasurable verbs, such as:

> Students make connections with the text (grade 1)
>
> Students are familiar with a variety of information modes, such as news articles, magazines, online information, books by same author [sic], demonstrations, biographies, and autobiographies (grade 5)
>
> Students write and share literary texts (poetry, journals, letters, short stories, plays, essays, personal narratives, short stories, literary responses) using appropriate strategies (grade 8)

Such standards provide scant guidance about what, precisely, students should know and be able to do across grade levels.

Finally, the failure to articulate grade-specific or even grade-band benchmarks for grades 9-12 makes it impossible to discern a clear progression of content or rigor in high school.

Taken together, these shortcomings leave teachers in the Equality State without the guidance they need to drive rigorous curriculum, instruction, and assessment, and therefore earn the standards one point out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

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Content and Rigor

Content Strengths

Wyoming's Speaking and Listening standards are reasonably strong, particularly those for group discussions, which build logically across grades. In grade 5, for example, the standard reads:

> In small group discussion, students ask relevant questions to determine purpose or clarify meaning (grade 5)

By grade 11, students:

> Use strategies to contribute to group discussions by:
> a. Considering others' ideas and opinions before responding;
> b. Determining the purpose of discussions;
> c. Acting as a leader, participant, and moderator; and
> d. Conveying criticism in a constructive way (grade 11)

Some benchmarks delineating expectations for media analysis are also included, as in:

> Students understand and explain techniques used in media such as propaganda and visual symbols (grade 6)

Students are also expected to incorporate media into presentations. Grade 11 standards for the delivery of formal oral presentations are strong, although because the state fails to delineate expectations for grades 9, 10, or 12, a progression of content and rigor is not evident across grades.

Content Weaknesses

Wyoming's standards for early reading are cursory. They do not describe a systematic sequence of phonological awareness, phonics, fluency, and comprehension. Instead they merely touch upon certain important expectations, as in these first-grade standards:

> Students use letter-sound relationships, context, and high-frequency words to decode unknown words and understand text (grade 1)
> Students use sequence to understand text and to make predictions about content (grade 1)
> Students compare information from several sources to understand text (grade 1)
> Students connect prior knowledge to textual information (grade 1)
> Students monitor and self-correct for meaning (grade 1)
> Students read aloud with fluency in a manner that sounds like natural speech (grade 1)
> Students are familiar with a variety of modes such as Big Books, storytelling, magazines, newspapers, and audio and video modes (grade 1)

What's more, these seven benchmarks represent the entirety of the first-grade reading comprehension standards. The second- and third-grade standards are equally sparse and barely touch on essential content. For instance, only a single second-grade standard addresses word analysis, while the rest focus on such unmeasurable reading "strategies" as:

> Students make connections with the text (grade 2)

While standards delineating expectations for the comprehension and analysis of literary and non-literary texts are included, these benchmarks are too general to determine what students would actually be responsible for doing or producing, as in:

> Students make connections within and among texts and themselves (grade 6)

Such content-empty standards impart little confidence that students across the state will be held to equally rigorous standards.

It's a mouthful, but Wyoming does include a single standard on American literature in grade 11:

> Students read a variety of literary genres from American literature and various world cultures, and understand the defining characteristics of these literary texts and the relationship between literature and the historical period, culture, and societal context, such as the influence of literary works on political events (grade 11)

Unfortunately, because the standard does not address American literature exclusively and is so vaguely worded, it fails to provide adequate guidance.

The treatment of informational text is inconsistent. In high school, for example, the sum of students' work with informational text is described in three standards: one that requires students to read "a variety of informational genres"; one that asks them to conduct research "using grade-appropriate sources"; and one prescribing that they "use a process to apply research strategies." While some further detail is offered, such standards don't come close to including the essential content that students must master in high school. Analysis of arguments and persuasive writing, for example, are completely absent.

Writing standards in Wyoming are inconsistent, largely a mix of process and product statements that rarely delineate clear expectations for what student writing products should look like at each grade. In grade 3, for example, students must simply, "write reports using research."

Interestingly, the fourth-grade research standard requires students to:

> Use strategies to write research reports such as evaluating and synthesizing information for use in writing; incorporating notes into a finished product; using appropriate visual aids; including facts, details, explanations, and examples; and using more than one source (grade 4)

While this standard is clear and far more specific, the state has failed to adequately scaffold the skills necessary to prepare students to master this fourth-grade benchmark.

In addition, the Writing standards fail to prioritize writing genres appropriately across grades. For example, narrative writing and literary analyses seem to be emphasized at every grade, but arguments and persuasive writing are largely absent. "Expository essays, technical writing and reports" appear at eighth grade, but not until grade 11 are "persuasive essays" addressed, and then only nominally.

Finally, research and conventions both get short changed. As noted above, research is sometimes addressed in the Writing standards, but sporadically. Conventions are also addressed in Writing, but treated superficially. For example, in grade 2, students are supposed to "use grade-appropriate conventions...such as...use of adjectives." The only other mention of adjectives is in grade 8 where "comparative adjectives" are mentioned, though of course those could be addressed much earlier.

Taken together, these shortcomings leave as much as 65 percent of the essential ELA content missing, thus earning the standards three points out of seven for Content and Rigor. (See Common Grading Metric, Appendix A.)

The Bottom Line

With their grade of D, Wyoming's ELA standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn a solid B-plus. The CCSS ELA standards are significantly superior to what the Equality State has in place today.

AS OF JUNE 20, 2010, THIS STATE HAD ADOPTED THE COMMON CORE STATE STANDARDS.

Wyoming • Mathematics

DOCUMENTS REVIEWED

Wyoming Mathematics Content and Performance Standards, November 19, 2008. Accessed from: http://www.k12.wy.us/SA/standards/Standards 2008 Math.pdf

Overview

Wyoming's standards are minimal. There are fewer than twenty-five of them for each grade and only twenty-three standards for all of high school. Had the state chosen to focus on only the most critical mathematics content, the brevity of the standards could have been a strength. Unfortunately, Wyoming's standards fail to include much of the mathematics content that is essential for a rigorous K-12 program.

Clarity and Specificity:	1/3
Content and Rigor:	1/7
Total State Score:	**2/10**
(Common Core Grade: A-)	

General Organization

Wyoming's K-8 standards are organized by content strands, such as Algebra and Geometry.

Wyoming also includes a sequence of "Performance Descriptors" that accompany the grade-level benchmark standards. These Performance Descriptors are designed to describe student performance levels—from below basic to advanced performance—for each grade-specific standard. These descriptions are written too broadly to help clarify the content that students must master at each level.

At the high school level, standards follow the same organizational structure as the elementary standards, but are only provided for eleventh grade.

Clarity and Specificity

The standards are well presented and easy to read. Some of them are clear and specific, such as:

> Students tell time, using both analog and digital clocks to the nearest half-hour (grade 1)

However, many of the standards are stated so broadly as to be nearly meaningless in terms of conveying what students are supposed to know or be able to do. For example, the following standards are neither clear nor measurable:

> Students select, use, and communicate organizational methods in a problem-solving situation using 2- and 3-dimensional geometric objects (grade 3)
>
> Students apply knowledge of appropriate grade-level patterns when solving problems (grade 4)

Note specifically that the grade 4 standard refers to "grade-level patterns" but that the standards provide no further clarification of what is an appropriate grade-level pattern, so this reference is meaningless. Many other standards make similar references to "grade-level" work without providing clarification.

Many of the high school standards are similarly vague, such as:

> Students connect geometry with other mathematical topics (grade 11)

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While some of the standards are specific and clear, a majority are not. The standards make vague reference to grade-level appropriateness but fail to specify what content is appropriate for a grade. There are many broadly stated standards that are left to interpretation by the reader. This serious lack of detail results in a Clarity and Specificity score of one point out of three. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Wyoming does not offer explicit guidance as to what content is the most important. Moreover, in the elementary grades, the arithmetic standards comprise only about one-third of the standards, which does not properly prioritize the role of arithmetic.

Content Strengths

The standards are admirably brief. The measurement strand is reasonably detailed and well written. The small number of standards keeps geometry and data analysis, statistics, and probability (DASP) from overwhelming the elementary content. In addition, once they are beyond the foundations of arithmetic, goals are sometimes stated very clearly, for example:

> Students multiply and divide fractions and mixed numbers (grade 7)
>
> Students divide decimal numbers by decimal numbers (grade 7)

Content Weaknesses

The list of problems with content that is either missing or covered with inadequate detail is extensive.

The development of arithmetic is weak, in part because the crucial instant recall of number facts is never explicitly required. "Computational fluency" is not sufficient; students must know these facts and not have to stop and compute them each time they see them.

This standard is the capstone standard for whole-number addition and subtraction:

> Students add and subtract to thousands (grade 4)

While this is a desirable standard, a rigorous treatment of addition and subtraction should include fluency with the standard algorithms. This lack of specificity could result in arbitrary computational techniques.

The development of fraction arithmetic is similarly weak despite the standards specifying that students be able to manipulate fractions. Fractions do not appear in the standards until fourth grade, and there, just barely: halves, thirds, and fourths. Common denominators are never mentioned.

Arithmetic properties such as commutativity and associativity are missing. The inverse nature of addition and subtraction and of multiplication and division are both missing.

There are no formulas for area. The standards are very weak regarding ratios and rates.

For high school, much essential content is not mentioned. It is stated in the introduction that students intending to pursue mathematics or science will need to take additional mathematics, but the content for such classes is not included in the standards. The high school standards contain only twenty-three standards and most of the essential content is missing, including STEM-ready content, proofs in geometry, quadratic equations, and polynomials.

Wyoming's standards lack much of the essential content of mathematics. The content that is included is not covered in a rigorous way. Arithmetic is not well developed or prioritized, and much of the content for high school is completely missing. These numerous problems result in a score of one point out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

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The Bottom Line

With their grade of F, Wyoming's mathematics standards are among the worst in the country, while those developed by the Common Core State Standards Initiative earn an impressive A-minus. The CCSS math standards are vastly superior to what the Equality State has in place today.

Appendix A • Grading and Criteria

Grading

Mathematics and English language arts experts devised content-specific criteria (see below) to evaluate the quality of a state's standards.[1] Based on this comparison and using a common grading metric (also below), they assigned a composite score based on how well a given set of standards fared in two categories: "Content and Rigor" and "Clarity and Specificity." States could earn up to seven points for Content and Rigor and up to three points for Clarity and Specificity (for a total of ten possible points). Final scores were then converted into a letter grade according to the following scale:

Table A-1: Grading Scale

Grade	Points
A	10
A-	9
B+	8
B	7
C	5 or 6
D	3 or 4
F	0, 1, or 2

Common Grading Metric

Content and Rigor

7 points: Standards meet all of the following criteria:

- Standards are top-notch in terms of the content chosen. The coverage of the subject is suitable, good decisions have been made about what topics to include, and nothing of importance has been overlooked. (No more than 5 percent of the content outlined in the subject-specific content expectations is missing.)
- Not only is the appropriate content covered by the standards, but it is covered well (i.e., in a high-quality manner).
- Good decisions have also been made about what content should be left out. Excellent standards do not include much superfluous material. (No more than 5 percent of the content in the standards is unnecessary.)
- Standards distinguish between more important and less important content and skills either directly (i.e., by articulating which are more or less important) OR via the number of standards dedicated to particular content and skills (i.e., more important content/skills have more standards while less important content/skills have fewer standards). The standards do not overemphasize topics of little importance or underemphasize topics of great importance.
- The level of rigor is appropriate for the targeted grade level(s). Students are expected to learn the content and skills in a sensible order and an appropriately increasing level of difficulty. The standards, taken as a whole, define a core literacy for all students in the subject under review; at the same time, the standards that run through grade 12 are sufficiently challenging to ensure that students who achieve proficiency by the final year of high school will be ready for college or work and citizenship.
- The standards do not overemphasize the importance of students' life experiences or "real-world" problems. They do not embrace fads, suggest political bias, or teach moral dogma. They do not imply that all interpretations are equally

valid (regardless of logic or the adequacy of supporting evidence). The standards also avoid other major subject-specific problems identified by the reviewers. While the standards are not perfect, any defects are marginal.

6 points: Standards fall short in one or more of the following ways:

- Some crucial content (as specified in the content-specific criteria) is missing (at least 5 percent and up to 20 percent).
- The content is covered satisfactorily but not in a high-quality manner.
- Some of the content in the standards is unnecessary (at least 5 percent and up to 20 percent).
- Standards do not fully distinguish between more- and less-important content and skills (i.e., importance is neither expressly articulated nor conveyed via the number of standards dedicated to particular topics). In other words, the standards overemphasize no more than one or two topics of little importance or underemphasize no more than one or two topics of great importance.
- Standards at particular grade levels are not quite as rigorous as they could be, or are too rigorous (i.e., expectations are slightly too high or too low).
- There are minor problems or shortcomings (e.g., one or more of the problems listed in the last paragraph under the 7-point score affects the standards in a small way, or there are other minor subject-specific problems).

5 points: Standards fall short in one or more of the following ways:

- Some crucial content is missing (at least 20 percent and up to 35 percent).
- While most of the appropriate content is covered by the standards, the content is nonetheless covered in a manner that is not satisfactory (i.e., the standards cover the right material but do not cover that material robustly; thus, the material is shortchanged in some way).
- Some of the content in the standards is unnecessary (at least 20 percent and up to 35 percent).
- Standards do not distinguish between more- and less-important content and skills (i.e., importance is not articulated or conveyed in any way). The standards often overemphasize topics of little importance or underemphasize topics of great importance.
- Standards generally need to be more or less rigorous than they are at certain grade levels (i.e., expectations are too high or too low).
- There is an important shortcoming (perhaps one of the problems listed in the last paragraph of the 7-point score, or there are other subject-specific problems).

4 points: Standards fall short in one or more of the following ways:

- At least 35 and up to 50 percent of crucial content is missing.
- Some of the content in the standards is unnecessary (at least 35 percent, and up to 50 percent).
- There are a few critical shortcomings (as listed above) although the standards contain no serious errors.

3 points: Standards fall short in one or more of the following ways:

- At least 50 and up to 65 percent of crucial content is missing.
- At least 50 percent and up to 65 percent of the content in the standards is unnecessary.
- There are serious problems, shortcomings, or errors in the standards, although the standards have some redeeming qualities and there is some evidence of rigor.

2 points: Standards fall short in one or more of the following ways:

- At least 65 and up to 80 percent of crucial content is missing.
- At least 65 percent and up to 80 percent of the content in the standards is unnecessary.
- There are several serious problems, shortcomings, or errors (as listed above).

1 point: Standards fall short in one or more of the following ways:

- At least 80 percent of crucial content is missing.
- At least 80 percent of the content in the standards is unnecessary.
- There are numerous problems, shortcomings, or errors (as listed above).

0 points: Standards fall short in one or more of the following ways:

- The content of the standards does not address or barely addresses the subject-specific content expectations.
- The content is poorly chosen and fails to provide the level of rigor appropriate for the targeted grade level(s).
- Content is full of problems, shortcomings, and errors (as listed above).

Clarity and Specificity

3 points: Standards are coherent, clear, and well organized.

The scope and sequence of the material is apparent and sensible. They provide solid guidance to users (students, teachers, curriculum directors, test developers, textbook writers, etc.) about the content knowledge and skills required to do well on the exam. The right level of detail is provided.

The document(s) are written in prose that the general public can understand and are mostly free from jargon. The standards describe things that are measurable (i.e., can lead to observable, comparable results across students and schools). The standards as a whole clearly illustrate the growth expected through the grades.

2 points: The standards are somewhat lacking in coherence, clarity, or organization.

The scope and sequence of the material is not completely apparent or sensible. The standards do not quite provide a complete guide to users as to the content knowledge and skills required to do well on the exam (i.e., as a guide for users, there are shortcomings that were not already addressed by the Content and Rigor score). The standards provide insufficient detail. The prose is generally comprehensible but there is some jargon and some vague or unclear language. Some standards are not measurable.

1 point: The standards are somewhat coherent, clear, and organized.

They offer limited guidance to users (students, teachers, curriculum directors, textbook writers, etc.) about the content knowledge and skills required to do well on the exam, but there are significant shortcomings (as a guide for users) that were not already addressed by the content and rigor score. The standards are seriously lacking in detail, and much of their language is vague enough to leave unclear what is being asked of students and teachers.

0: The standards are incoherent and/or disorganized.

They are not helpful to users. The standards are sorely lacking in detail. Scope and sequence is a mystery.

English Language Arts Content-Specific Criteria

Overview

These criteria contain many examples to clarify the type (and level) of concepts and skills that are expected in quality standards at the designated grade spans. The criteria and examples for each grade should be understood to include, cumulatively, the criteria and examples for the grades that precede them.

Elementary School (Grades K-4)

Reading

1. The standards delineate explicit and systematic expectations in phonemic awareness, phonics, fluency, and comprehension skills.
2. The standards address systematic vocabulary development (e.g., basic prefixes and suffixes; common synonyms, antonyms, and compound words; multiple meaning words; and dictionary use).
3. The standards outline specific expectations for reading and analyzing literary and non-literary texts (e.g., recognizing and interpreting genres; structures; literary elements; and stylistic devices).
4. The standards reflect the importance of reading grade-appropriate works of outstanding American literature that reflect our common heritage.
5. The standards describe the amount, quality, and complexity of both literary and non-literary texts to be studied through the use of lists (authors and/or titles), sample passages, and/or commentary.

Writing

6. The standards delineate expectations for writing that address the characteristics and quality of writing products appropriate to the grade level (e.g., organization of ideas and focus; introduction, body, and conclusion; elements of a paragraph; and evaluation and revision skills).
7. The standards require students to recognize, explain, and produce writing that reflects the defining characteristics of various grade-appropriate writing genres (e.g., narration and exposition).
8. The standards describe or reference the use of specific criteria for evaluating writing (e.g., logically organized and detailed genre- or prompt-specific rubrics) that include examples regarding the quality of writing expected.

Listening and Speaking

9. The standards clearly address active listening and effective speaking skills (e.g., summarizing information presented orally; asking and answering relevant questions).
10. The standards address the ability to make formal oral presentations (e.g., recitation; story retelling; and sequencing).
11. The standards describe or reference the use of specific criteria for evaluating oral presentations (e.g., content; organization; and presentation style).
12. The standards include specific expectations for participation in group discussions (e.g., turn-taking; and applying agreed-upon rules for decision making).

Oral and Written Language Conventions

13. The standards specify expectations for the correct use of Standard English, describing a grade-appropriate facility with the parts of speech, sentence structure, usage, and mechanics appropriate to the grade level (e.g., nouns, verbs, adjectives, adverbs, conjunctions, prepositions, and nominative/objective/interrogative pronouns; sentence types; complete/incomplete sentences; subject/verb (S/V) agreement; initial, internal, and ending punctuation; and basic spelling rules, such as plurals, contractions, and inflections).

KSDE002340

Research

14. The standards require students to learn the research process, outlining specific expectations for the essential components of the process (e.g., identifying or finalizing a research question; locating information; evaluating and compiling information; presenting findings; and acknowledging sources using a standard format).

Media

15. The standards require students to analyze and evaluate information presented in multimedia formats (e.g., the effect of various visual and aural techniques; how information presented in print is different from that which is presented through the use of multimedia).
16. The standards require that students learn about multimedia techniques for presenting information.

Middle School (Grades 5-8)

Reading

1. The standards address vocabulary development (e.g., knowledge of roots and affixes; connotation and denotation; figurative language; and use of the dictionary for clarifying multiple meanings, etymology, and pronunciation).
2. The standards specify strategies/skills for reading and analyzing both literary and non-literary texts (e.g., analysis of genres, structures, literary elements, rhetorical techniques, and stylistic devices; strategies for comprehension and interpretation).
3. The standards reflect the importance of reading grade-appropriate works of outstanding American literature that reflect our common heritage.
4. The standards describe the amount, quality, and complexity of both literary and non-literary texts to be studied through the use of lists (authors and/or titles), sample passages, and/or commentary.

Writing

5. The standards delineate expectations for writing that address the characteristics and quality of writing products appropriate to the grade level (e.g., increasingly sophisticated understanding of audience and purpose; clear organization and consistent focus; development of ideas through multi-paragraph essays; use of transitions; reflective peer review and revision processes).
6. The standards require students to interpret and produce writing that reflects the defining characteristics of various grade-appropriate writing genres (e.g., argument).
7. The standards describe or reference the use of specific criteria for evaluating writing (e.g., logically organized and detailed genre- or prompt-specific rubrics) that include examples regarding the quality of writing expected.

Listening and Speaking

8. The standards clearly address active listening and effective speaking skills (e.g., give, restate, and execute multi-step directions; convey ideas orally and interpret spoken ideas; make inferences from spoken information; ask and answer clarifying questions).
9. The standards address the ability to make formal oral presentations (e.g., recitation; informative and persuasive presentations that offer supporting details and evidence; and address anticipated counterclaims and include a call to action when appropriate).
10. The standards describe or reference the use of detailed criteria for evaluating formal oral presentations.
11. The standards include specific expectations for participation in group discussions (e.g., designation of roles; and eliciting and considering suggestions).

KSDE002341

Oral and Written Language Conventions

12. The standards specify expectations for the correct use of Standard English, describing a grade-appropriate facility with the parts of speech, sentence structure, usage, and mechanics appropriate to the grade level (e.g., parts of the verb; interjections, possessive/demonstrative/relative/indefinite pronouns; tenses; analysis of sentence structure; types of phrases and clauses; fragments and run-on sentences; and facility with mechanics grounded in understanding of sentence structure).

Research

13. The standards require students to employ the research process, outlining specific expectations for the essential components of the process (e.g., identifying and refining a research question; locating information; evaluating the quality of information/sources; selecting information that supports a thesis; presenting findings; citing sources correctly using standard guidelines; and avoiding plagiarism).

Media

14. The standards require students to analyze and evaluate information presented in multimedia formats (e.g., how information presented in print is different from that which is presented through the use of multimedia; noting what is conveyed through the use of various visual and aural techniques, such as bias and propaganda).

15. The standards require that students know how to use multimedia techniques to present information.

High School (Grades 9-12)

Reading

1. The standards address vocabulary development and skills for building content-area vocabulary (e.g., applying knowledge of roots and affixes to help determine meanings of words; tracing etymology; and determining shades of meaning).

2. The standards describe specific expectations for reading and analyzing both literary and non-literary texts (e.g., analyzing the clarity of structures, the development of literary elements, the effectiveness of rhetorical techniques, and the manipulation of stylistic devices; describing the truth and/or validity of an argument; and recognizing and explaining the presence of fallacious reasoning).

3. The standards reflect the importance of reading grade-appropriate works of outstanding American literature that reflect our common literary heritage.

4. The standards describe the amount, quality, and complexity of both literary and non-literary texts to be studied through the use of lists (authors and/or titles), sample passages, and/or commentary.

Writing

5. The standards delineate expectations for writing that address the characteristics and quality of writing products appropriate to the grade level (e.g., strong organization and development of ideas; facility with selection and blending of genres appropriate to audience and purpose; and the use of sophisticated transitions, active rather than passive voice, and other stylistic elements for rhetorical effect).

6. The standards require students to analyze and produce writing that reflects the defining characteristics of various grade-appropriate writing genres (e.g., persuasion).

7. The standards describe or reference the use of specific criteria for evaluating writing (e.g., logically organized and detailed genre- or prompt-specific rubrics) that include examples regarding the quality of writing expected.

Listening and Speaking

8. The standards clearly address active listening and effective speaking skills (e.g., interpret complex information and ideas presented orally; and convey complex information or ideas orally).

9. The standards address the ability to make formal oral presentations (e.g., recitation; and complex informative or persuasive oral presentations that require a logical structure, well-chosen supporting evidence/details, skillful rhetorical techniques, and a strong presentation style).

10. The standards describe or reference the use of detailed criteria for evaluating formal oral presentations.

11. The standards include specific expectations for participation in group discussions (e.g., tolerating ambiguity; building on the ideas of others; and reaching consensus).

Oral and Written Language Conventions

12. The standards specify expectations for the correct use of Standard English, describing a grade-appropriate facility with the parts of speech, sentence structure, usage, and mechanics (e.g., demonstrate control of sentence structure, usage, and mechanics).

Research

13. The standards require students to conduct the research process, outlining specific expectations for the essential components of the process (e.g., identifying and refining a research question; locating information; evaluating the quality of information/sources; selecting information that supports a thesis; excluding extraneous information; presenting findings in a format appropriate for the audience and purpose; citing sources correctly in a standard format; and avoiding plagiarism).

Media

14. The standards require students to analyze and evaluate information presented in multimedia formats (e.g., noting instances of manipulation, bias, propaganda, and potential fallacies).

15. The standards require that students use multimedia techniques to present information when possible.

Mathematics Content-Specific Criteria

Arithmetic

Arithmetic should include standards for number sense as well as developmental and precursor standards for the essential capstone expectations, such as counting, comparing, place value, and common denominators.

In elementary and early middle school (high-priority grade levels for arithmetic), students must demonstrate:

- Clear understanding and instant recall of the single-digit addition and multiplication facts and the corresponding subtraction and division facts.
- Clear understanding of the properties of arithmetic, such as the inverse nature of addition and subtraction as well as the inverse nature of multiplication and division.
- Clear understanding of fractions as parts of a set, parts of a whole, and as numbers (e.g., the number line).

While we do not hold K-12 standards accountable to coverage at particular grade levels, we do expect all of them to include the following capstone standards (though not necessarily verbatim):

Students must understand and be fluent with the standard algorithms for whole-number addition, subtraction, multiplication, and division, and students must understand and be fluent with the standard procedures for the four arithmetic operations with fractions and decimals.

Other topics that should be covered, most frequently in late-middle and high school, include negative numbers, rational exponents, scientific notation, estimation, radicals, rational numbers as repeating decimals, and the arithmetic of complex numbers.

Measurement

In elementary or middle school, students should:

- Be able to measure lengths in centimeters and inches.
- Know and understand the formulas for the area of a rectangle and a triangle.
- Know how to convert within and between measurement systems.
- Be familiar with other types of measurement such as time, perimeter, angles, weight, volume, etc.

Ratios

Students should understand and be able to use rates, ratios, proportions, and percentages.

Algebra

In order to ensure college- and career-readiness, rigorous K-12 standards must include algebra standards that cover the following essential content.

Standards covering linear equations should ensure that students:

- Are able to solve equations and inequalities that are linear or involve the absolute value and know how to graph them.
- Know about slope and the various forms of linear equations and be able to write equations given different types of information, such as for a line through a given point with a given slope, a line through two points, or a line through a given point that is perpendicular to a given line.
- Are able to solve a system of two linear equations in two unknowns. Students should be fluent with the four arithmetic operations with polynomials and elementary factoring.
- Standards covering quadratic equations should ensure that students:
- Are able to graph quadratic equations and solve them by factoring, completing the square, and using the quadratic formula, including complex solutions.
- Are able to transform a quadratic equation into vertex form, find its vertex, its maximum or minimum, and its line of symmetry.

KSDE002344

Finally, students should understand logarithmic and exponential functions as well as basic trigonometry and trigonometric functions.

Geometry

Geometry should be given a solid logical foundation that is made clear in the standards; for example, a Euclid-style axiomatic approach. As part of the study of high school geometry, students should understand:

Proofs of standard results about angles of triangles and angles associated with lines crossing parallel lines, including perpendicular lines.

- Proofs of the standard theorems about congruence and similarity of triangles as well as deeper results on triangles, including the Pythagorean Theorem and its converse.
- Proofs of the standard theorems about circles, chords, tangents, and angles.
- How to do standard geometric constructions.

In addition, students should be introduced to various aspects of geometry in K-8, especially basic vocabulary, as long as it does not interfere with the important K-8 arithmetic priorities.

Data Analysis, Statistics, and Probability (DASP)

Students should be able to read, analyze, and make various kinds of graphs and tables, and they should know basic statistics and probability, particularly the counting arguments involving combinations and permutations. More DASP material is acceptable as long as it does not disturb the priorities of arithmetic, algebra, and geometry.

STEM-Ready Standards

The material needed by students pursuing mathematics-intensive (STEM) majors in college should be outlined in K-12 standards documents (though not every student should be required to take advanced math to graduate from high school). While most such content—such as arithmetic, algebra, and geometry—is already included in typical college-ready standards, some advanced topics might not be included.

These advanced standards include:

- The binomial theorem, geometric series, polar coordinates, and the arithmetic operations on rational expressions.
- More trigonometry, including the inverse trigonometric functions, the laws of sines and cosines, and angle sum identities.

Problem Solving

Across all grade levels, students should be able to use the essential material outlined in these criteria to solve complex multi-step exercises and word problems appropriate for each grade level.

1 Five experts participated in the development of the content-specific criteria: Sheila Byrd Carmichael and Carol Jago for ELA, and W. Stephen Wilson, Gabrielle Martino, and Richard Askey for mathematics.

KSDE002345

Appendix B • Detailed Grades

Table B-1: Detailed English Language Arts Grades; Jurisdiction in Rank Order

Jurisdiction	Grade	Content and Rigor Score	Clarity and Specificity Score
California	A	7	3
District of Columbia	A	7	3
Indiana	A	7	3
Massachusetts	A-	7	2
Tennessee	A-	6	3
Texas	A-	6	3
Common Core	B+	6	2
Colorado	B+	6	2
Georgia	B+	6	2
Louisiana	B+	6	2
Oklahoma	B+	5	3
Virginia	B+	6	2
Alabama	B	6	1
Arizona	B	5	2
Florida	B	5	2
Hawaii	C	4	1
Idaho	C	4	1
Kansas	C	4	1
Maine	C	4	2
Maryland	C	4	2
Minnesota	C	4	2
Nevada	C	4	1
New Hampshire	C	4	2
New Jersey	C	4	2
New Mexico	C	4	1
New York	C	4	2
Ohio	C	4	2
Oregon	C	4	2
South Dakota	C	4	2
Utah	C	4	2
Washington	C	4	2
Arkansas	D	3	1
Connecticut	D	2	1
Illinois	D	3	1
Kentucky	D	3	1
Michigan	D	2	1
Mississippi	D	3	1

KSDE002346

Jurisdiction	Grade	Content and Rigor Score	Clarity and Specificity Score
Missouri	D	3	1
North Carolina	D	3	0
North Dakota	D	2	1
Pennsylvania	D	3	1
Rhode Island	D	3	1
South Carolina	D	3	1
Vermont	D	2	1
West Virginia	D	3	1
Wisconsin	D	3	1
Wyoming	D	3	1
Alaska	F	1	1
Delaware	F	2	0
Iowa	F	1	0
Montana	F	2	0
Nebraska	F	1	1

Table B-2: Detailed Mathematics Grades; Jurisdiction in Rank Order

Jurisdiction	Grade	Content and Rigor Score	Clarity and Specificity Score
California	A	7	3
District of Columbia	A	7	3
Florida	A	7	3
Indiana	A	7	3
Washington	A	7	3
Common Core	A-	7	2
Georgia	A-	6	3
Michigan	A-	6	3
Utah	A-	6	3
Alabama	B+	5	3
Massachusetts	B+	6	2
Oklahoma	B+	5	3
Oregon	B+	5	3
Arizona	B	4	3
Delaware	B	5	2
Idaho	B	5	2
Minnesota	B	5	2
New York	B	5	2
West Virginia	B	5	2
Arkansas	C	3	2
Colorado	C	3	2
Hawaii	C	3	3
Iowa	C	3	2
Louisiana	C	3	2
Maine	C	3	2
Mississippi	C	4	2
Nebraska	C	3	2

KSDE002347

Jurisdiction	Grade	Content and Rigor Score	Clarity and Quality Score
Nevada	C	4	2
New Jersey	C	4	1
New Mexico	C	4	1
North Dakota	C	4	2
Ohio	C	3	2
South Carolina	C	3	2
South Dakota	C	3	2
Tennessee	C	3	2
Texas	C	4	2
Virginia	C	4	2
Alaska	D	3	1
Connecticut	D	3	1
Illinois	D	1	2
Kentucky	D	2	1
Maryland	D	3	1
Missouri	D	2	1
New Hampshire	D	2	1
North Carolina	D	3	1
Rhode Island	D	3	1
Kansas	F	1	1
Montana	F	0	1
Pennsylvania	F	1	1
Vermont	F	1	1
Wisconsin	F	1	1
Wyoming	F	1	1

Appendix C • 2005 to 2010 Comparisons

The criteria and grading scale used to judge ELA and math standards in this analysis differ from those used in our last round of state standards reviews, published in 2005.

First, there was no "common grading metric" in 2005, which made it more difficult to compare grades across subjects.

In addition, several changes have been made to the subject-specific criteria. Below is a summary of the criteria and grading scales used for the 2005 analyses.

2005 ELA Criteria and Grading Scale

In 2005, ELA scores were analyzed against criteria in five areas:

- **Purpose and expectations:** Standards were judged on whether American literature was mentioned, whether they specifically required students to become literate American citizens, whether they adequately cover early reading content, and whether state assessments were based on the standards, with blueprints that distinguish literary from non-literary reading. (24 points)
- **Organization:** The overall presentation and organization of the presentation was evaluated and judged. (12 points)
- **Disciplinary coverage:** Standards were evaluated to ensure they covered critical K-12 content, including listening and speaking skills, reading for information, writing, etc. (28 points)
- **Quality:** The quality of the standards was evaluated by whether the standards were written in clear, specific, and jargon-free language, and whether they demonstrate a rigorous progression of content from grade to grade. (24 points)
- **Requirements or expectations that impede learning:** States could lose points in this area for including expectations that addressed, for example, the teaching of moral and social dogma, the assumption that texts are subject to an infinite number of interpretations, and whether the standards explicitly or implicitly support a particular pedagogy or philosophy. (-6 points)

After points were calculated, the score was converted to a grade-point average by dividing the total score by twenty-two (the total number of positive criteria against which the standards were judged). Finally, the GPA was converted to a letter grade (Table C-1).

Table C-1: 2005 Grading Scale for ELA

2005 Grading Scale	
A	3.5-4.0
B	2.7-3.49
C	1.71-2.69
D	1.3-1.7
F	1.29 and below

For additional details on the criteria and grading scale used in the 2005 ELA reviews, please visit: http://www.edexcellence.net/detail/news.cfm?news_id=337.

For a comparison of the state ELA grades in 2005 and 2010, please see Table 2 in the *Executive Summary*.

2005 Math Criteria and Grading Scale

In math, standards were judged in 2005 against criteria in four areas, each worth a total of four points:

- **Clarity:** refers to the clarity of language, the definitiveness of prescriptions given (i.e., they leave little room for interpretation), and testability of the standards.
- **Content:** refers to the coverage of essential K-12 mathematics content.
- **Reason:** refers to whether their statement includes or implies that standards are to be taught with the explicit inclusion of information on their standing within the overall structures of mathematical reason.
- **Negative qualities:** looks for the presence of unfortunate features of the document that contradict its intent or would cause its reader to deviate from what otherwise good, clear advice the document contains.

Content was weighted more heavily (40 percent) than were clarity, reason, or negative qualities (each 20 percent). Scores were then converted into a GPA (Table C-2) based on a four-point grade scale.

Table C-2: 2005 Grading Scale for Math

2005 Grading Scale	
A	3.25 – 4.0
B	2.5 – 3.24
C	1.75 – 2.49
D	1.0-1.74
F	0.0-0.99

For additional details on the criteria and grading scale used in the 2005 math reviews, please visit: http://www.edexcellence.net/detail/news.cfm?news_id=338.

For a comparison of the state math grades in 2005 and 2010, please see Table 3 in the *Executive Summary*.