

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

Pennsylvania • English Language Arts

DOCUMENTS REVIEWED¹

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.

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.

Pennsylvania • Mathematics

DOCUMENTS REVIEWED

Academic Standards for Mathematics Pre-K-3. Revised May 18, 2010.

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Academic Standards for Mathematics Elementary Standards, Grades 3-8. June 1, 2009.

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Academic Standards for Mathematics Secondary. January 29, 2010.

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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.

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.

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.