

OPEN EDUCATIONAL RESOURCES REVIEW

As a part of the legislative mandate to identify and develop a library of openly licensed courseware aligned with the Common Core State Standards (CCSS), the Office of Superintendent of Public Instruction in Washington conducted a review of OER in Spring 2013. Full course secondary mathematics (Algebra 1/Integrated Math 1) and 11th - 12th grade English Language Arts units with an emphasis on American Literature were reviewed. The review process made use of existing review instruments designed to gauge alignment with the CCSS. The results from this review will be an extremely valuable tool as educators and content developers tap into the most powerful feature of OER – the ability to freely adapt and redistribute materials



OFFICE OF THE
SUPERINTENDENT OF
PUBLIC INSTRUCTION

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EXECUTIVE SUMMARY

Open Educational Resources (OER) are teaching and learning materials that reside in the public domain or have been released under an open license. These resources may be used **free of charge, distributed without restriction, and modified without permission.**

In 2012, the Washington State Legislature passed [Engrossed Second Substitute House Bill 2337](#) that directed the Office of Superintendent of Public Instruction (OSPI) to create a collection of openly licensed courseware aligned with the [Common Core State Standards](#) (CCSS) and conduct an awareness campaign to inform school districts about these resources. The Legislature saw this as an opportunity to both “reduce the expenses that districts would otherwise incur in purchasing these materials” and “provide districts and students with a broader selection of materials, and materials that are more up-to-date.”

As a part of the legislative mandate to identify and develop a library of openly licensed courseware aligned with the CCSS, OSPI conducted a review of OER in high school mathematics (Algebra 1/Integrated Math 1) and 11th - 12th grade English Language Arts with an emphasis on American Literature. The review process, conducted during May, 2013, made use of existing review instruments designed to gauge alignment with the CCSS, as well as overall OER quality.

The results from this review will be an extremely valuable tool as educators and content developers tap into the most powerful feature of OER: the ability to freely adapt and redistribute materials.

REVIEW BACKGROUND, GOALS, AND PROCESS

While OSPI has over a decade of experience with [reviewing instructional materials](#) for their alignment with state learning standards in both reading and mathematics, the evolution of OER materials as an increasingly viable option for K-12 educators is relatively new. Thus, this will be the first review focused solely on OER for English Language Arts (ELA) and mathematics. In order to narrow the initial effort to a manageable scope, this review examined available OER in Algebra 1 or Integrated Math 1 (full course) and individual units in 11th - 12th grade English Language Arts. In early 2013, OSPI announced the OER review and sought materials to include in the process. While some OER developers requested to have their materials reviewed, the OSPI OER team also took the initiative to identify OER that met the scope of the review. The notification process is detailed in this report.

Quality assurance and standards alignment are priorities as districts assess any new instructional materials. The goals of the review were:

1. Help educators select high-quality materials for their classrooms
2. Provide districts with information to help with materials adoptions and a replicable process and instruments to evaluate CCSS alignment of instructional material
3. Identify gaps in CCSS alignment that can be addressed by content creators or school district users

To conduct the OER review, OSPI, with the support of Relevant Strategies, LLC (project consultant and data analysis contractor), recruited and selected a committee of 10 ELA and 10 mathematics reviewers. The committee reviewed the materials with the specific goal of not just evaluating their quality by existing standards but specifically analyzing how well they address the CCSS.

It is important to note:

- This review process was not intended to rank the materials; rather, the results provide rich evaluator feedback on changes necessary to bring the OER resource into closer alignment with the CCSS.
- The results of this review do not represent an endorsement from OSPI as to the recommended use or adoption of the OER materials that were reviewed.
- OSPI does not require the use of any particular instructional materials, including OER, by districts or schools.
- Washington school districts have specific local policies and procedures that may govern the use and adoption of core and/or supplemental instructional materials. These should be reviewed as districts and buildings consider OER within their suite of instructional materials and resources.
- The results of this review represent a point in time in a continually evolving process of OER materials. They are intended as a resource for schools and educators, as well as content developers creating materials for those audiences.
- The instruments used in this review process were intentionally selected and are intended to be used in concert to consider the full breadth of the CCSS and the unique nature of OER materials. The suite of instruments and process may be used with any instructional material, OER or published, to gauge CCSS alignment.

FINDINGS

In ELA, reviewers found many choices for educators seeking ELA units with some alignment to the CCSS. For 10 of the 20 units reviewed, reviewers on average indicated *Agree* or *Strongly Agree* to the statement, “I would use this material in my classroom.” An additional 6 of the 20 units received an average rating of close to *Agree*. Most ELA high school classes use a dynamic set of units through the course of a quarter or semester, rather than textbooks with a fixed sequence of units and materials. Educators can reliably consider many of the OER ELA units that were reviewed for use in their classroom and be confident that the units can be reasonably adapted to meet the CCSS by an experienced teacher well versed in the CCSS.

In mathematics, reviewers found that OER are an emerging platform for mathematics curricula with alignment to the CCSS. The platform shows significant promise as a viable selection in the future but is still evolving and not yet mature. Two products of the seven ranked above the others when all rubrics were combined. For the most part, the other products showed potential in some areas, but their comprehensive scores were lower, and a majority of the reviewers did not recommend the full course for use.

For both the ELA and mathematics reviews, extensive reviewer notes provide a huge step forward along the pathway of modifying materials to meet the specific needs of districts and students. By and large, OER have the capacity to provide equitable opportunities to access strong content materials for all students, regardless of the fiscal situation in their school.

The [OSPI OER Project](#) website provides the results of this OER review as well as the process and instruments used. In addition, the results of past OSPI instructional materials reviews, including state laws and guidance for the selection of instructional materials, can be found on the [OSPI Instructional Materials Review and Resources](#) website.

SELECTION CRITERIA

The following criteria were used to identify materials for the review process:

1. Resource is **openly licensed** under a [Creative Commons](#) or other license that permits ALL of the following, FREE of charge:
 - a. *Reuse*: the right to reuse the content in its unaltered/verbatim form
 - b. *Revise*: the right to adapt, adjust, modify, or alter the content itself
 - c. *Remix*: the right to combine the original or revised content with other content to create something new
 - d. *Redistribute*: the right to share copies of the original content, the revisions, or the remixes with others
2. Resource must be able to be housed in an open courseware repository or able to be accessed at no cost to school districts. Terms of access cannot be altered after a given time period.
3. For mathematics: resource must be a full-course Algebra 1 OR Integrated Math 1 resource aligned to the Common Core State Standards.
4. For ELA: resource must be an 11th - 12th grade English Language Arts unit aligned to the Common Core ELA Writing Standards 4 through 10. The unit must also cover **one OR both** of the following:
 - a. Reading standards for literature 4, 5, 6, 7, 9, and 10 for grades 11-12
 - b. Reading standards for informational text standards 1-10

If materials did not meet the above selection criteria they were not reviewed. While there are many excellent free resources available online, materials which included a “no derivatives” clause were not included in this review. Resources that included links to embedded supplemental material (such as a video, interactive object, or document) with a license type that allowed unrestricted digital viewing but not adaptation were acceptable.

Based on anticipated reviewer capacity and the scope of the materials being reviewed (full-course for mathematics and thematic units for ELA), 7 mathematics resources and 20 ELA resources were selected for review.

See the [OSPI OER Project](#) website for a complete list of reviewed resources.

NOTIFICATION OF REVIEW

Notification of OSPI’s review process and a solicitation for materials were distributed through multiple channels:

- [Statewide memo](#) and notice to ESD superintendents and assistant superintendents, school district superintendents, assistant superintendents/curriculum directors, school building principals, school district communications, educational technology directors, and public information officers.
- [Washington Curriculum Advisory and Review Committee \(CARC\)](#) (pdf)
- [Northwest Educational Resources Association \(NWERA\)](#)
- [Washington Library Media Association \(WLMA\)](#)
- [OSPI Instructional Materials Reviews and Supports website](#)
- [Achieve OER Institute](#)

Applications from qualified educators interested in serving as OER reviewers were also solicited via the above pathways.

OVERVIEW

This review focused specifically on alignment to the Common Core State Standards (CCSS) in mathematics and English Language Arts. As Washington’s newly adopted state learning standards in these subjects (July 2011), the CCSS represent a significant shift for classroom teachers’ instruction and, more significantly, in the nature and use of instructional material and resources. OSPI has myriad resources to support educators in the transition to the CCSS. These can be found on the [OSPI CCSS](#) website.

Through the intentional development and sequencing within the CCSS, it is critical that educators and curriculum developers consider new and existing instructional materials through a different lens when looking at their alignment with student learning standards. Traditionally, judging alignment has been approached as a crosswalking exercise. But, crosswalking can result in large percentages of “aligned content” while obscuring the fact that the materials in question do not address the spirit of the standards. As such, alignment of materials to the CCSS is emerging work. Since one comprehensive instrument does not exist, OSPI and other states recommend the combined use of several instruments designed intentionally for the CCSS by CCSS developers and state/national curriculum experts. The Washington OER review was grounded in the use of these specialized instruments:

- Publishers’ Criteria for the Common Core State Standards (for English Language Arts, K-2 and 3-12, and Mathematics, K-8 and high school) developed by CCSS authors
- Educators Evaluating Quality Instructional Products (EQuIP) Rubric based on the Tri-State Rubric and modified by Achieve, Inc.
- Rubrics for Evaluating OER Objects developed by Achieve, Inc.

In some cases, we used the rubrics “as is;” in others, we discovered overlap and made adaptations to eliminate duplicated information reporting from multiple sources. In addition to the above rubrics, we added two additional review instruments:

- CCSS worksheet
- Overall reviewer comments

Details on each of the instruments follow and copies of all the rubrics distributed to reviewers may be found on the OSPI OER Project website.

- [ELA rubrics](#)
- [Mathematics rubrics](#)

CCSS WORKSHEETS

These worksheets- specific to Algebra 1, Integrated Math, and ELA - listed relevant “standards clusters” for mathematics and “target standards” for ELA to verify content inclusion. Although the worksheet was not scored, it helped create a structured review of the materials. This work provided a strong foundation, supporting the completion of other rubrics which asked specific questions regarding the extent of CCSS coverage.

The “standards clusters” determined for an Algebra 1 or Integrated Math 1 course were adapted from the [PARCC Model Content Framework for Mathematics](#) since this document reflected the single course year nature of the material under review.

The “target standards” were taken directly from the reading and writing strands within the CCSS ELA document. As outlined in the OER selection criteria, writing standards 4 through 10 and select reading standards from literature or informational text were examined.

PUBLISHERS’ CRITERIA FOR THE COMMON CORE STANDARDS

The [Council of Chief State School Officers](#) (CCSSO), [National Governors Association](#) (NGA), and lead writers of the Common Core Standards collaborated with partner organizations, teachers, researchers and other stakeholders to create the Publishers’ Criteria documents in both mathematics and ELA. These documents guide publishers and curriculum developers in understanding what must be comprehensively covered in curricular materials in order to align with the CCSS. Additionally, they help states and districts as they evaluate instructional materials or work to modify existing resources. They provide a broad overview of curricular materials and are best used to review whole courses.

The OER review committee used the criteria to help gauge whether a resource reflected the spirit of the key instructional shifts in the CCSS. Below are the documents in their entirety:

[Publishers’ Criteria for Common Core Standards in English Language Arts and Literacy, grades 3-12](#) (pdf)
[High School Publishers’ Criteria for the Common Core State Standards for Mathematics](#) (pdf)

In order to turn the large documents into a viable response form to collect reviewer data, the OER project made several adaptations to the narrative structure of the source documents based on input from the directors of the OSPI Mathematics and ELA departments.

- Major criteria in the documents were identified and a 4-pt Likert scale (Strongly Disagree to Strongly Agree) was applied.
- Mathematics: Three of eight major criteria dealt with meaningfully connecting content standards and practice standards. For the reporting instrument, they were combined.
- Mathematics: Several criteria had subcategories. In those cases, the subcategory scores were averaged to report a score for the major criteria.
- ELA: The reporting instrument was adapted from an existing resource used as part of Tennessee’s statewide instructional materials review process in 2012 (the [Tennessee Literature Review Instrument](#)). The only substantive change was to note that resources reviewed with the Publishers’ Criteria at the unit level may be limited in their range of texts. Reviewers were instructed to determine if the balance was appropriate for the intention of the unit.

EQUIP RUBRIC

[Achieve](#) is a bipartisan, non-profit organization that partnered with the CCSSO and NGA on the CCSS initiative. Achieve convened educators from a multi-state collaborative to develop the [EQuIP](#) (Educators Evaluating Quality Instructional Products) rubric to measure CCSS alignment of lessons and units. It looks at four areas, including:

- Alignment to the rigors of the CCSS
- Key areas of focus in the CCSS
- Instructional supports
- Assessment

This rubric was unchanged from its original format for this review process. Since the EQuIP rubric was not intended for full course review, only one unit in each mathematics course was reviewed using this instrument.

ACHIEVE RUBRICS FOR EVALUATING OER OBJECTS

To help states, districts, teachers, and other users determine the degree of alignment of OER to the CCSS, and to determine aspects of quality of OER, Achieve developed eight rubrics in collaboration with leaders from the OER community. These rubrics provide a structure for systematically, purposefully and comprehensively evaluating an online resource.

[Rubric I.](#) Degree of Alignment to Standards

[Rubric II.](#) Quality of Explanation of the Subject Matter

[Rubric III.](#) Utility of Materials Designed to Support Teaching

[Rubric IV.](#) Quality of Assessment

[Rubric V.](#) Quality of Technological Interactivity

[Rubric VI.](#) Quality of Instructional Tasks and Practice Exercises

[Rubric VII.](#) Opportunities for Deeper Learning

[Rubric VIII.](#) Assurance of Accessibility

Though they may be used with many types of resources (from digital textbooks to videos or interactive simulations), the rubrics are also designed to be modular in nature so that resources smaller in grain size than units or lessons may still be evaluated. Rubrics which do not apply to a particular resource, since it may not have been created to address that particular purpose, may be omitted.

Although none of the rubrics was adapted for the purpose of this review, only four were used: Rubric II, V, VI, and VII. This was due to overlap with questions addressed in the EQuIP rubric. In these areas of overlap, the EQuIP rubric assessed CCSS alignment in greater depth.

REVIEWER COMMENTS

As the final step in the evaluation process, reviewers were asked to discuss the focus, coherence, rigor, and balance of the resource. Specifically, they were instructed to cite evidence from the material that reflected alignment or sections that need adaptation. Also requested was a rating of how likely they would be to use the full resource in their classroom and an estimate of how much work would be required to bring the material into alignment.

REVIEW PROCESS

The OER review focused on two subject areas-11th - 12th grade English Language Arts and Algebra 1/Integrated Math 1. For both reviews, ten reviewers with subject matter expertise and familiarity with the Common Core State Standards in English Language Arts and mathematics were selected and trained. The ELA and mathematics groups worked independently but used the same process described here for pre-work, training, follow-up, and data validation.

Each review group received training prior to initiation of the review period. This section describes the pre-work assigned, the training day, group norming work, and follow-up sessions.

PRE-WORK

Reviewers were given pre-work to accomplish before the training day.

We held pre-training webinars for each group to orient participants to their work. The pre-training webinars described OER resources: the reason we were engaging in a curriculum review, big shifts in thinking regarding CCSS, and assigned the following reading in preparation for the training.

Algebra 1/Integrated Math 1	11 th Grade English Language Arts
<ul style="list-style-type: none">• Progression Documents for HS Algebra, HS Functions and 6-8 Expressions and Equations• Common Core State Standards: Introduction, Grade 8 and HS Algebra standards• PARCC Model Content Framework Documents for Algebra 1 and Integrated Math 1	<ul style="list-style-type: none">• Common Core State Standards for English Language Arts anchor standards and ELA Appendix A• Review the Achieve EQulP rubric (video).• Publishers' Criteria for ELA Grades 3-12

We also introduced them to the three core instruments that would be used in the review: Publishers' Criteria, Achieve EQulP Rubric, and Achieve OER Rubric.

REVIEWER TRAINING

Each group attended a full day, in-person training session for their subject matter. During the day, participants spent most of the morning exploring the biggest shifts in instructional practice needed to teach within CCSS for ELA and mathematics. The goal was to understand the changes from former standards approaches, including what to look for in aligned curriculum.

Next, we spent time examining the resources being reviewed and ensured that participants could access the sites where they was located and understood the criteria for selection.

Participants were introduced to the five instruments being used for the review.

Team leaders explained the use of the instruments, why they were being used, and how they complement each other with relatively little overlap.

Participants individually assessed the selected practice unit using each of the rubrics and submitted their training data electronically, as described more fully below.

Team leaders addressed participant questions, randomly assigned work to the reviewers, and addressed administrative details.

The evaluation at the end of the day showed that participants knew and understood what they were supposed to do, why they were doing the work, and how to get help when they needed it.

GROUP NORMING

Using the selected practice unit, participants reviewed the OER materials using the five review instruments.

Previous testing with the instruments showed that a typical review for mathematics would take 5-8 hours to complete and 2-4 hours for ELA. Reviewers understood that the first review might take longer but that subsequent reviews should fall into that range. During the first check-in meeting, when a majority of the reviewers had more than one review complete, they confirmed their experience matched this expectation.

Then, participants compared their responses to others in their small groups and ultimately to the larger group. As part of the practice review, we compared individual results, discussed differences, and provided better clarity on use of the instruments and expectations for their individual work.

CHECK-IN MEETINGS

The OER facilitation team (OSPI and Relevant Strategies) set up two check-in meetings to measure progress during the month-long review process. The purpose of the check-in meetings was to identify and answer questions that arose among the reviewers, seek congruence on approaches to evaluating the materials, and identify high-variance items.

Reviewers were asked about their initial experiences evaluating materials, including the amount of time spent and advice for other reviewers.

At the check-in meetings, after reviewer questions were addressed, we identified items where there was high variance in the responses on individual scored questions in the rubrics. While overall there were very few instances of high variance, the process drove out some lingering misconceptions about how to apply certain rubrics.

When a high variance item was uncovered, participants were notified about the variance via email. The relevant data from all reviewers was included in the email. Participants received clear direction that the purpose of the email alert was to inform the group about the high variance in a particular response. They were given the opportunity to review other's comments and scores and to collaborate with the group to identify and understand the rationale for the different responses. Participants clearly understood they could keep their existing scores, but if they had missed something in their review or had misunderstood how to evaluate a particular item in a rubric, they had the opportunity to adjust their score.

FINDINGS - MATHEMATICS

GENERAL OBSERVATIONS

This is the first review of mathematics OER materials performed by OSPI. For this initial process, seven mathematics courses were reviewed. Six of the resources were Algebra 1, and one was Integrated Math 1.

Developer	Full Title	Short Title	Type
Georgia Virtual Learning	CCGPS Algebra 1	Georgia Virtual	Algebra 1
CK-12 Foundation	CK-12 Algebra 1, 2 nd Ed.	CK-12	Algebra 1
Curriki	Curriki Algebra 1	Curriki	Algebra 1
Mathematics Vision Project	Integrated Math 1	MVP	Integrated Math 1
Monterey Institute/ NROC	NROC Algebra 1 – Open Textbook	NROC	Algebra 1
Open High School of Utah	Open High School of Utah Algebra 1 (A)	Utah Open	Algebra 1
Saylor.org	Saylor Algebra 1	Saylor	Algebra 1

The CCSS in mathematics are very different than previous K-12 state learning standards. In particular, there are several key shifts:

1. Focus: focus strongly where the standards focus
2. Coherence: think across grades and link to major topics within grades
3. Rigor: in major topics, pursue conceptual understanding, procedural skill and fluency, and application with equal intensity

See www.achievethecore.org for more information.

The materials were reviewed with a specific goal of not evaluating their quality by existing standards but looking at how well they address CCSS shifts. Like most of the currently available commercial textbooks, many of these OER materials were not designed specifically with the CCSS in mind. Thus, the review process examined materials against target standards that developers were not originally aiming for at material creation. Additionally, some of the products reviewed were not considered complete by the developers but were provided, at OSPI request, to participate in the review process.

Overall, the findings were that CCSS aligned OER are emerging platforms for mathematics curricula. They show significant promise as a viable selection in the future but are still evolving and not yet mature. This parallels the current state of much published CCSS aligned material. When all rubrics were combined MVP scored favorably, with reviewers stating they would use it in their classroom. Curriki shows promise, but didn't garner quite the same level of desire to be used in the classroom. For the most part, the other products showed potential in some areas, but their comprehensive scores were lower, and a majority of the reviewers did not recommend the full course for use.

It is important to note that this review process was not intended to rank or endorse the materials reviewed. As such, there are few comparative graphs in this report. It is also important to note that the materials reviewed are not the only OER resources available –others exist. The OER mathematics review process was limited in scope and solely examined seven full-courses in Algebra 1 or Integrated Math 1. This review should be viewed as a gap analysis and as an opportunity to provide input on the changes necessary to bring these OER resources into closer alignment with the CCSS.

Finally, this review process represents a point in time. More so than print materials, digital resources with an open license can be freely modified, so all the products that were reviewed can be and are frequently updated.

PUBLISHERS' CRITERIA

The Publishers' Criteria rubric examined six areas using a scale from "Strongly Disagree" to "Strongly Agree":

- Focus – achieving greater mastery of a smaller set of prerequisites versus shallow exposure to a wide variety of topics
- Rigor & Balance – pursuing with equal intensity conceptual understanding, procedural skill and fluency, and applications
- Consistent Content – ensuring that materials are based on content specified in the CCSS, that students have extensive work with course-level problems (versus review of previous-grade materials), and relating concepts explicitly to prior knowledge
- Coherent Connections – making mathematics make sense, where powerful knowledge results from reasoning with a small number of principles
- Practice Standards – averaged three sections of the Publishers' Criteria review instrument:
 - Practice-Content Connections - meaningfully connecting content standards and Standards for Mathematical Practice (Practice Standards)
 - Focus and Coherence via Practice Standards – promoting focus and coherence by not connecting practice standards with content in a mechanistic or random way
 - Careful Attention to each Practice Standard – attending to the full meaning of each practice standard
- Emphasis on Mathematical Reasoning – prompting students to construct viable arguments, engaging students in problem solving, and explicitly attending to the specialized language of mathematics.

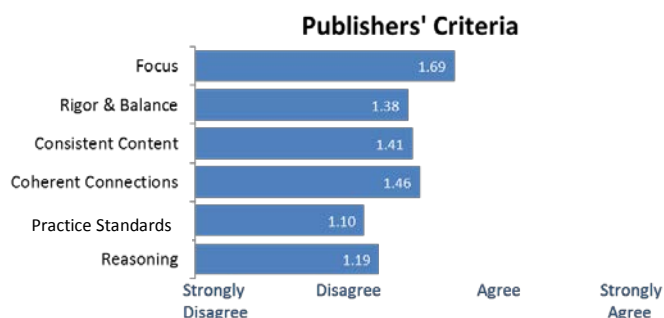


Figure 1. Average Publishers' Criteria ratings for all resources combined.

The Publishers' Criteria rubric measures broad alignment to the intent of the CCSS. It addresses the big shifts in thinking, focus, and rigor, and attends to effective Standards for Mathematical Practice. While overall average ratings trended towards the midpoint of the scoring range, many reviewers noted that the vast majority of traditional textbooks would likely have similar scores when compared to CCSS, because most textbooks have not yet been re-written to address the fundamental shifts in teaching and learning inherent in the CCSS.

EQUIP RUBRIC

The EQiP rubric measures overall quality of alignment to the CCSS by examining a single unit from the full course in depth. Reviewers considered four areas using two alignment scales described below. The four areas considered included:

- Alignment to the Rigors of the CCSS – the unit targets a set of grade level mathematics standards; Standards for Mathematical Practice that are central to the lesson are identified, and the unit presents a balance of procedures and conceptual understanding inherent in the CCSS.
- Key Areas of Focus in the CCSS – the unit reflects evidence of key shifts in focus, coherence and rigor.
- Instructional Supports – the unit is responsive to varied student learning needs, provides guidance to support teaching and learning of the targeted standards, and provides appropriate level and type of scaffolding, differentiation, intervention, and support for a broad range of learners.
- Assessment – the unit regularly assesses whether students are mastering standards-based content and skills through direct, observable evidence, via accessible and unbiased methods.

The rubric also provides an overall assessment rating for the resource based upon the four domains listed above. One unit from each mathematics resource was chosen to review with this instrument. The units all covered the same topical area (Linear and Exponential Functions).

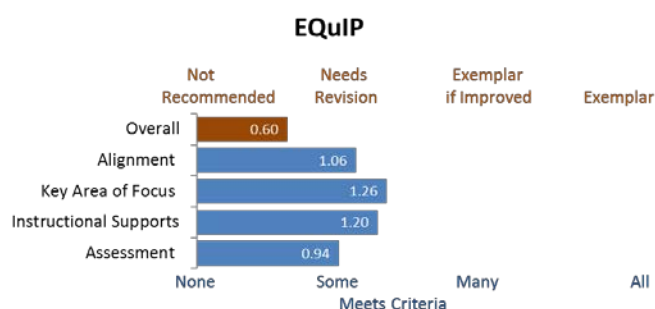


Figure 2. Average EQiP ratings for all resources combined.

Note that in the graph, two measurement scales are used. The bottom axis shows the scale values for the four areas of focus, and the top axis shows the ratings for the Overall recommendation for the resources. EQiP is designed to be used at the resource unit level, rather than the full course, to get a more detailed picture of the resource quality. Overall results for all seven resources averaged below the midpoints of the scales. The Overall rating for all of the products ranged from *Not Ready*

*for Review/Not Recommended*¹ to *Exemplar*, with a majority of the products receiving an Overall rating of *Not Recommended* (20 of 35 total responses) or *Needs Revision* (10 of 35). For many of the resources that were evaluated, the Assessment scale showed a lower average score than others. Reviewer comments indicated that many of the products under review had few or no assessment components.

¹ See the Data Analysis section for more information on the treatment of the EQiP Overall rating for *Not Ready for Review* and *Not Recommended*. In 4 out of 35 responses (1 for Georgia Virtual, 1 for MVP, and 2 for NROC), reviewers selected *Not Ready for Review*.

ACHIEVE OER RUBRICS



Figure 3. Average Achieve OER ratings for all resources.

The Achieve OER rubrics are specifically designed to be used with digital resources as opposed to print media. They also examine other aspects of OER quality, may be used with any standards, and are designed to evaluate resources that may be smaller in grain size than units or lessons.

The Achieve instrument has eight different smaller rubrics, several of which significantly overlap the EQuIP instrument. Since the

EQuIP instrument was developed specifically to consider alignment to the CCSS, it was used in this review in lieu of the overlapping Achieve OER rubrics in order to minimize duplicative measurement scales. The four Achieve rubrics used for this review process are:

- [Rubric II](#). Quality of Explanation of the Subject Matter
- [Rubric V](#). Quality of Technological Interactivity
- [Rubric VI](#). Quality of Instructional Tasks and Practice Exercises
- [Rubric VII](#). Opportunities for Deeper Learning

Initially, there was wide variance in the Interactivity rubric. We discovered that reviewers had different opinions about what constituted technological interactivity. Some individuals felt that opening a PDF or a web content link was sufficient enough to deem the resource technologically interactive. However, when the reviewers were provided additional guidance using the definition of technological interactivity according to the Achieve OER rubric, the scores in this section normalized, and variance was reduced.

REVIEWER COMMENTS

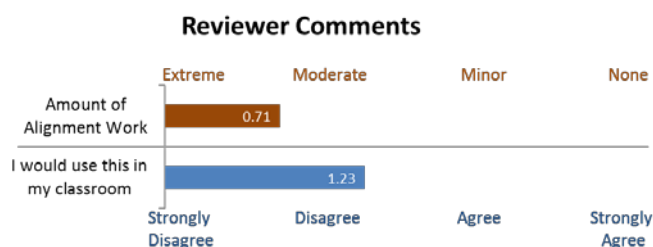


Figure 4. Overall results for Reviewer Comments, showing averages for all resources combined.

Reviewers were asked to write a short narrative providing an assessment of each of the resources they reviewed. As part of their professional assessments, they were asked to identify the amount of work they felt was necessary to bring the product into alignment with the CCSS. They were also asked to identify their level of agreement with the statement, “I would use this resource in my classroom.” The overall results are shown in Figure 4.

While the intent of this report is not to compare or rank the products based upon their overall average scores, comparing the performance of the resources on certain scales or items provides meaningful information. The charts that follow show how the resources compared with each other based upon selected scales or items.

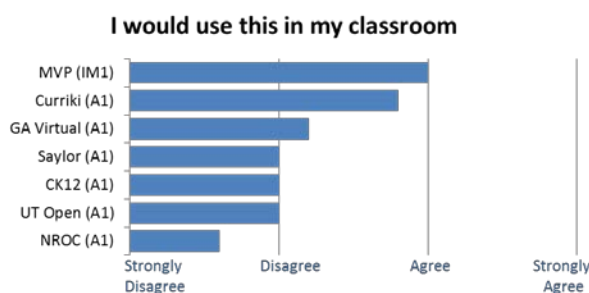


Figure 5. Reviewer Comments. Note that reviewers indicated they would use MVP and Curriki in their classrooms. It is also important to note that only the open source NROC book was reviewed. NROC has a much more robust product offered through Hippocampus.org, but it did not meet all the criteria for consideration in the review.

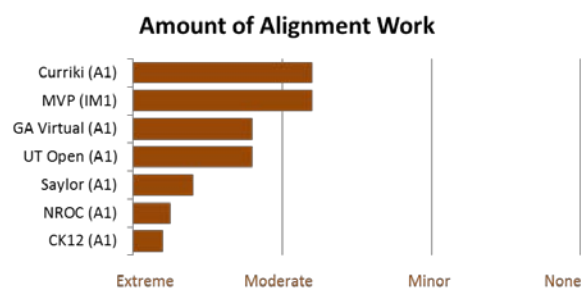


Figure 6. Reviewer Comments. This item measures the amount of work necessary to complete the alignment of the resource to the CCSS. It does not reflect the *degree* of alignment, which may be different. This is a reverse scale item. A longer bar is better, in that less work is necessary to bring the course into alignment with the CCSS.

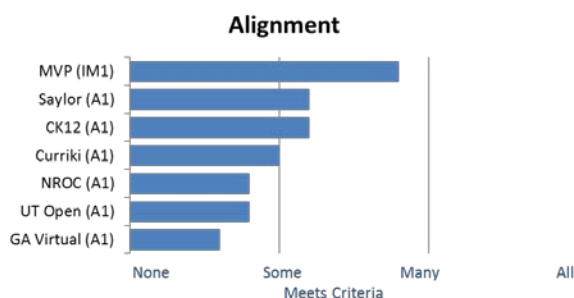


Figure 7. EQiP. This scale looks at the alignment of a selected unit in the materials to the CCSS.

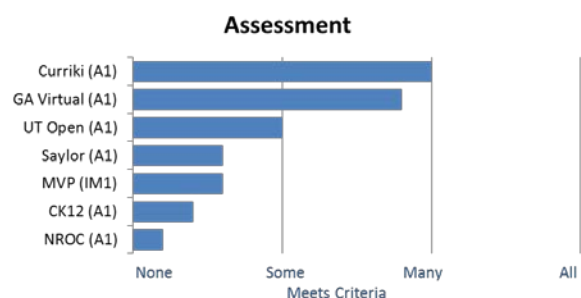


Figure 8. EQiP. Curriki and Georgia Virtual Academy demonstrated many of the criteria identified in the assessment scale of the EQiP rubric.

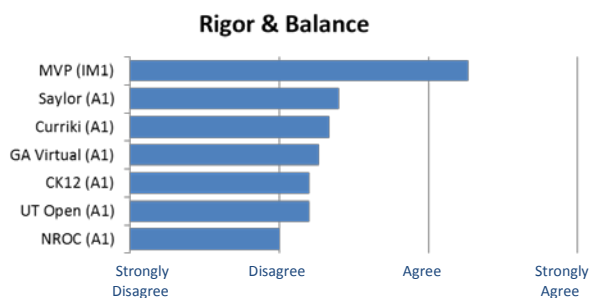


Figure 9. Publishers' Criteria. This scale measures whether the materials pursue with equal intensity conceptual understanding, procedural skill and fluency, and applications. MVP was designed from the ground up to be more aligned with shifts in thinking, including rigor and balance.

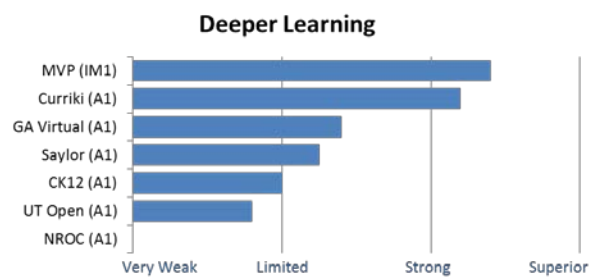


Figure 10. Achieve OER. This scale measures the unit's ability to engage learners in one or deeper learning skills, including think critically and solve complex problems, reason abstractly, construct viable arguments and apply discrete knowledge and skills to real-world situations.

Quality of Explanation of Subject Matter

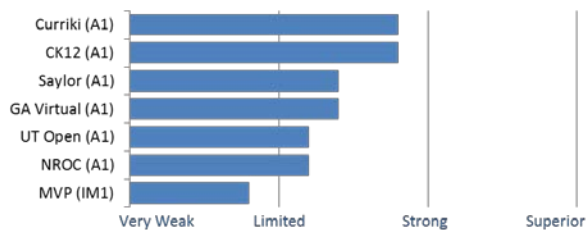


Figure 11. Achieve OER. The quality of explanation of subject matter is in the mid-range for most products. This is an area where Curriki and CK12 performed well in comparison to other resources.

Quality of Technological Interactivity

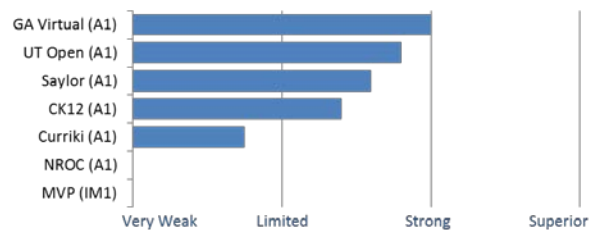


Figure 12. Achieve OER. One of the true benefits of an OER is the ability to leverage technological interactivity. Georgia Virtual and Utah Open Learning had the highest average scores on this scale, while NROC and MVP did not offer any interactive components. Note that opening PDF files or web content does not constitute technological interactivity.

DETAILED FINDINGS

For detailed information on each reviewed mathematics resource, including scores on all rubrics, extensive reviewer comments, and supplemental metadata, visit the [OSPI OER Project Materials Review](#) website.

FINDINGS – ENGLISH LANGUAGE ARTS

GENERAL OBSERVATIONS

Since most ELA high school classes use a dynamic set of units rather than textbooks with a fixed sequence of lessons, this review focused on unit level resources. Reviewers evaluated twenty English Language Arts (ELA) units for the 11th - 12th grade. Many more OER units exist, and new resources emerge regularly.

Developer	Full Title	Short Title
Georgia Virtual Academy	American Literature - Colonial Literature	Colonial Literature
Learn NC	Picturing America at the Turn of the Twentieth Century	Picturing America
Library of Congress	1900 America: Primary Sources and Epic Poetry	Epic Poetry
Library of Congress	The US Constitution: Continuity and Change	US Constitution
National Endowment for the Arts	The Great Gatsby	Great Gatsby
National Endowment for the Arts	Adventures of Tom Sawyer	Tom Sawyer
National Endowment for the Humanities	Critical Ways of Seeing The Adventures of Huckleberry Finn	Huck Finn
NYC Department of Education	On Behalf of Others	On Behalf of Others
NYC Department of Education	Creating a Research Paper: Literacy in Social Studies	Creating Research
NYC Department of Education	Are Humans Good or Evil?	Good/Evil
EngageNY (Odell Education)	Promised Land	Promised Land
EngageNY (Odell Education)	Lay Down All My Joys	Lay Down All My
EngageNY (Odell Education)	Life Steps Almost Straight	Life Steps
ReadWriteThink	An Exploration of Romanticism through Art and Poetry	Romanticism
Saylor.org	American Literature - Unit 1 America's Religious Heritage	Relig Heritage
Saylor.org	American Literature - Unit 2 Reason and Enlightenment in America	Reason & Enlight
Utah Education Network	American Dream and the Great Gatsby	Am Dream/Gatsby
Utah Education Network	Character Analysis and the Crucible	Crucible
Mountain Heights Academy (formerly Utah Open High School)	English 11 Q1	Eng 11 Q1
Mountain Heights Academy (formerly Utah Open High School)	English 11 Q2	Eng 11 Q2

The CCSS in ELA are very different than previous K-12 state learning standards. In particular, there are several key shifts in instruction necessary:

1. Content knowledge built through content-rich nonfiction
2. Reading, writing, and speaking grounded in evidence from text, both literary and informational
3. Regular practice with complex text and its academic language

The OER materials were reviewed with a specific goal of not evaluating their quality against existing standards but by looking at how well they address CCSS shifts. Like most of the currently available commercial textbooks, some of these OER materials were not designed specifically with the CCSS in mind. Thus, the review process compared some materials against target standards that developers were not originally aiming for at material creation. However, some of the materials reviewed were crafted to specifically address the new standards.

Overall, the findings indicated that there are many choices from among the available OER materials for educators seeking ELA units with some alignment to the CCSS that could be used as part of an English Language Arts high school class. For 10 of the 20 units reviewed, reviewers on average indicated *Agree* or *Strongly Agree* to the statement, “I would use this material in my classroom.” An additional 6 of the 20 units received an average rating of close to *Agree*. Educators can reliably consider many of the OER ELA units that were reviewed for use in their classroom and be confident that the units can be reasonably adapted to meet the CCSS by an experienced teacher well versed in the CCSS. Six units received an overall average score above 2.0 (on a 3.0 scale) across all rubrics. They were:

- Promised Land
- Good/Evil
- Lay Down All My Joys
- Life Steps
- On Behalf of Others
- Great Gatsby

As with the mathematics review, this review process was not intended to rank or endorse the materials. As such, there are few comparative graphs in this report. It is also important to note that the materials reviewed are not the only ELA OER resources available – others exist. We were limited in scope and solely examined ELA thematic units that extended instruction over multiple weeks. OSPI staff then pre-reviewed many of the units to select ones that had CCSS components.

This review should be viewed as an opportunity to provide input on the changes necessary to bring the OER resource into closer alignment with the CCSS. The reviews represent a point in time. More so than print materials, digital resources with an open license can be freely modified, so all the products that were reviewed can be and are frequently updated.

PUBLISHERS' CRITERIA

The Publishers' Criteria rubric examined three scales:

- Quality of Text
- Quality of Questions and Tasks
- Writing

The Publishers' Criteria rubric measures broad alignment to the intent of the CCSS. It addresses the range, complexity and focus on the text, inclusion of text dependent questions, and writing to sources.

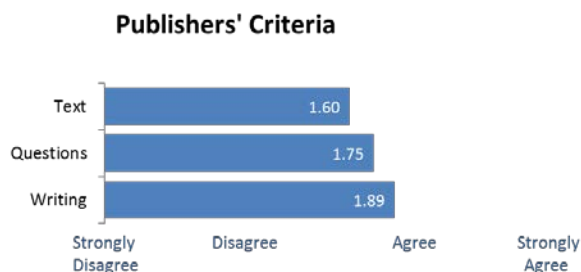


Figure 13. Average Publishers' Criteria ratings for all resources combined.

Average responses for the items in the three scales trended toward *Agree*, indicating a good overall baseline quality measure.

EQUIP RUBRIC

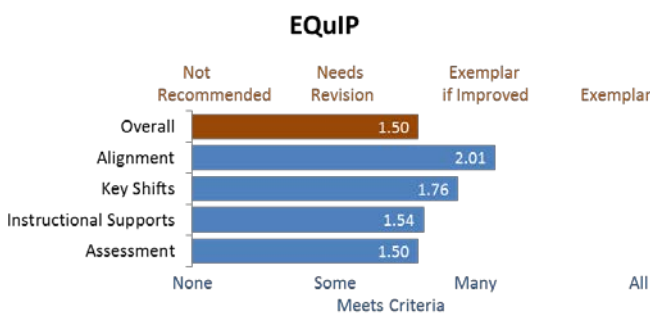


Figure 14. Average EQuIP ratings for all resources combined.

The EQuIP rubric measures overall quality of alignment to the CCSS at a unit level. It looks at four areas including Alignment, Key Shifts, Instructional Supports, and Assessment. The rubric also provides an Overall assessment rating for the resource based upon the four domains listed above. Note that in the EQuIP graph, two measurement scales are used. The bottom axis shows the scale values for the

four areas of focus, and the top axis shows the ratings for the Overall recommendation for the resources. EQuIP is designed to be used at the resource unit level, rather than the full course, to get a more detailed picture of the quality of alignment to the CCSS for a resource. Note the Alignment bar shows that for all resources combined, the average score indicates that many of the CCSS criteria are met. As in mathematics, Assessment is the weakest component of the units on average, but the rating is still reasonably positive.

The Overall rating for all of the products ranged from *Not Recommended* to *Exemplar*, with a majority of the products receiving an Overall rating of *Needs Revision* (37 of 80 total responses) or *Exemplar if Improved* (28 of 80). There were only six instances where reviewers rated a product *Not Recommended*, and in nine instances reviewers rated a product *Exemplar*.

ACHIEVE OER RUBRICS

The Achieve OER rubrics are specifically designed to be used with digital resources, as opposed to print media. They also examine other aspects of OER quality, may be used with any standards, and are designed to evaluate resources that may be smaller in grain size than units or lessons.

The Achieve instrument has eight different smaller rubrics, several of which significantly overlap the EQuIP instrument. Since the EQuIP instrument was developed specifically to consider alignment to the CCSS, it was used in this review in lieu of the overlapping Achieve OER rubrics in order to minimize duplicative measurement scales. The four Achieve rubrics used for this review process are:

- [Rubric II](#). Quality of Explanation of the Subject Matter
- [Rubric V](#). Quality of Technological Interactivity
- [Rubric VI](#). Quality of Instructional Tasks and Practice Exercises
- [Rubric VII](#). Opportunities for Deeper Learning

The Quality of Interactivity rubric proved problematic for the ELA review. The intent of the rubric was to measure interactive modules, like assessments which provide live feedback or widgets that could be manipulated to view variable outcomes. Fifty of the eighty responses for this scale indicated that the item was not applicable to the unit being reviewed, because there were no interactive components. The

remaining responses had high variability due to conflicting interpretations of what constituted an interactive component, and ultimately, the scale was dropped from subsequent data analysis because so few of the units reviewed were designed to have interactive components.

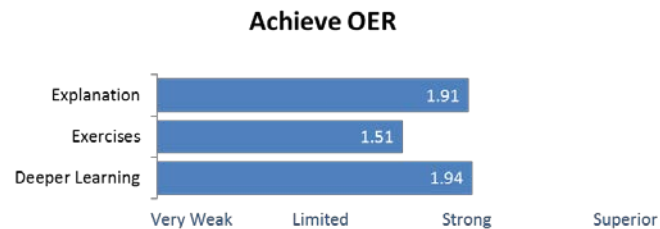


Figure 15. Average Achieve OER ratings for all resources.

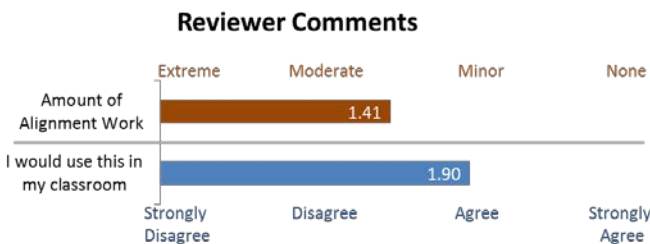


Figure 16. Overall results for Reviewer Comments, showing averages for all resources combined.

Figure 16. Of note here is that the average rating for all ELA units for the item, “I would use this in my classroom,” is close to *Agree*, which indicates the overall strength of OER ELA material currently available.

REVIEWER COMMENTS

Reviewers were asked to write a short narrative providing an assessment of each of the resources they reviewed. As part of their professional assessments, they were asked to identify the amount of work they felt was necessary to bring the product into alignment with the CCSS. They were also asked to identify their level of agreement with the statement, “I would use this resource in my classroom.” The overall results are shown in

While the intent of this report is not to compare or rank the products based upon their overall average scores, comparing the performance of the resources on certain scales or items provides meaningful information. The charts below show how the resources compared with each other based upon selected scales or items.

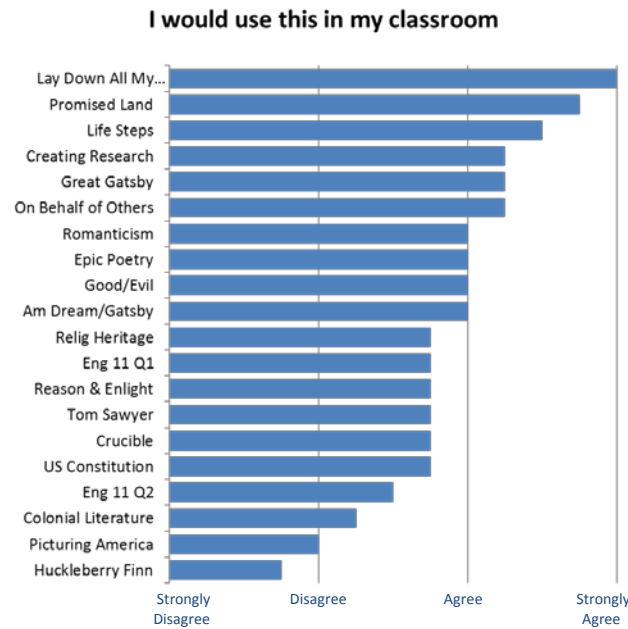


Figure 17. Reviewer Comments. Note that the average reviewer score exceeds or approaches Agree in 16 of the 20 cases.

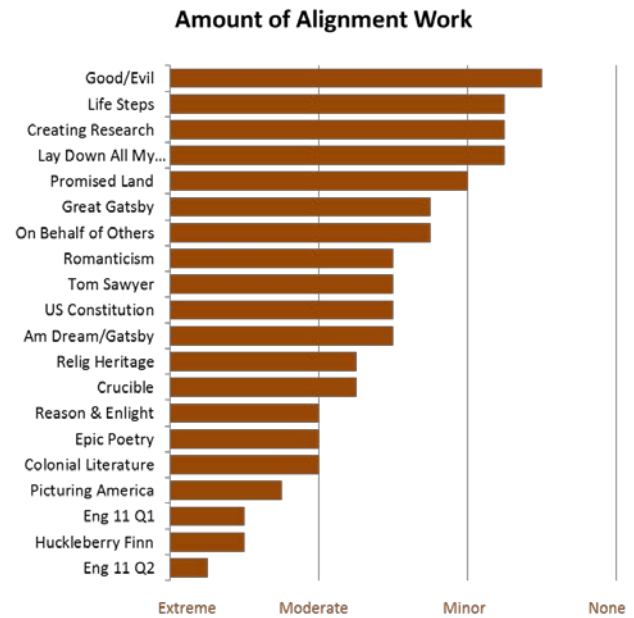


Figure 18. Reviewer Comments. This item measures the amount of work necessary to complete the alignment of the resource to the CCSS. It does not reflect the degree of alignment, which may be different. This is a reverse scale item. A longer bar is better, in that less work is necessary to bring the unit into alignment with CCSS.

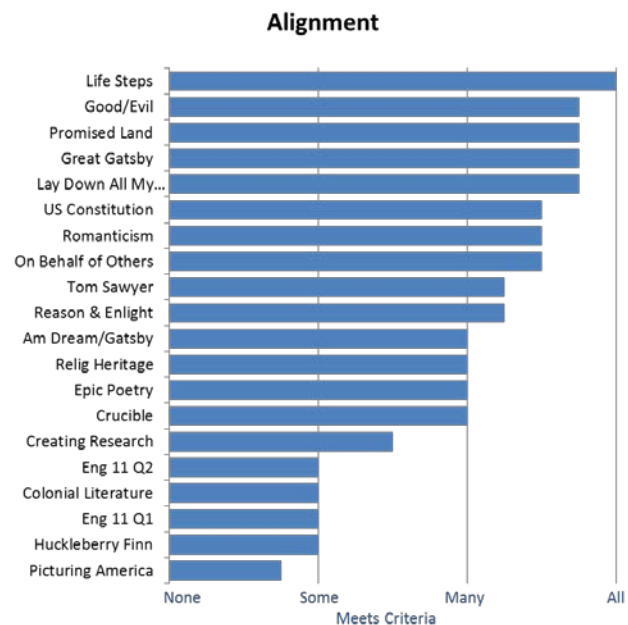


Figure 19. EQUiP. This scale looks at the overall alignment of the resource to the CCSS. Fourteen of the twenty products reviewed meet many or all of the criteria for alignment to the CCSS.

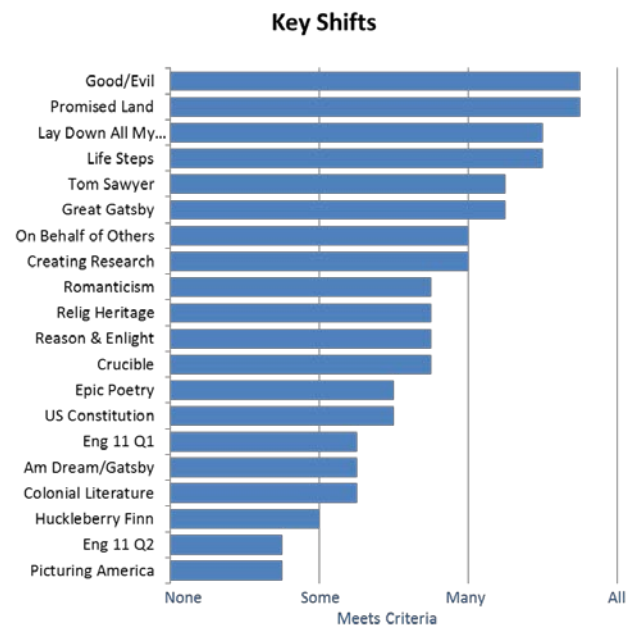


Figure 20. This scale measures how the unit addresses key shifts in the CCSS, including requiring the student to read the text closely, cite text-based evidence, write from sources and build academic vocabulary.

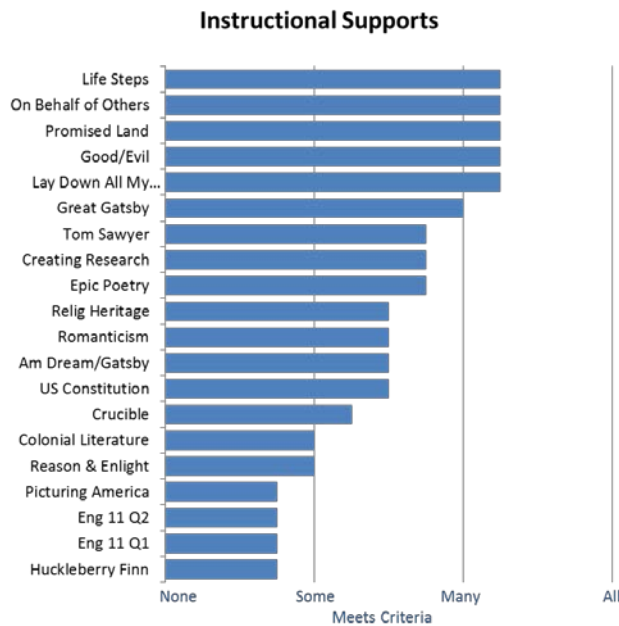


Figure 21. EQuIP. While a few of the units reviewed met many of the criteria for instructional supports, a majority of the units reviewed scored at the midpoint or below on average for this scale.

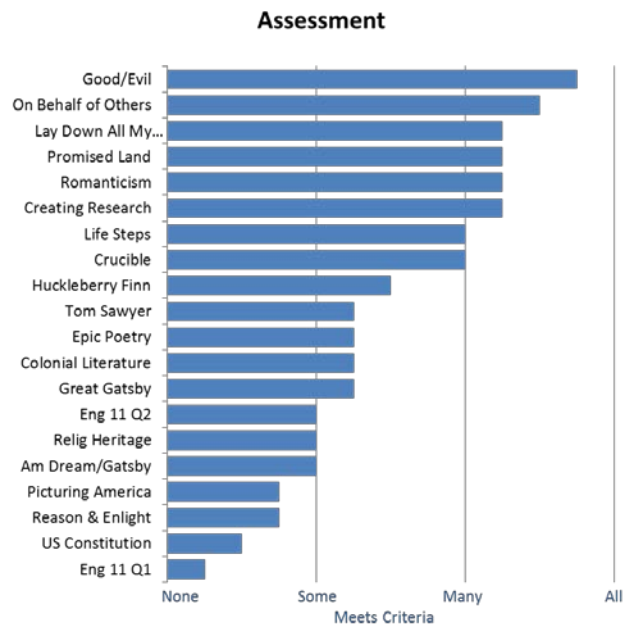


Figure 22. EQuIP. This chart shows which units have strong assessment tools that meet many or all of the criteria identified in the Assessment scale of the EQuIP rubric.

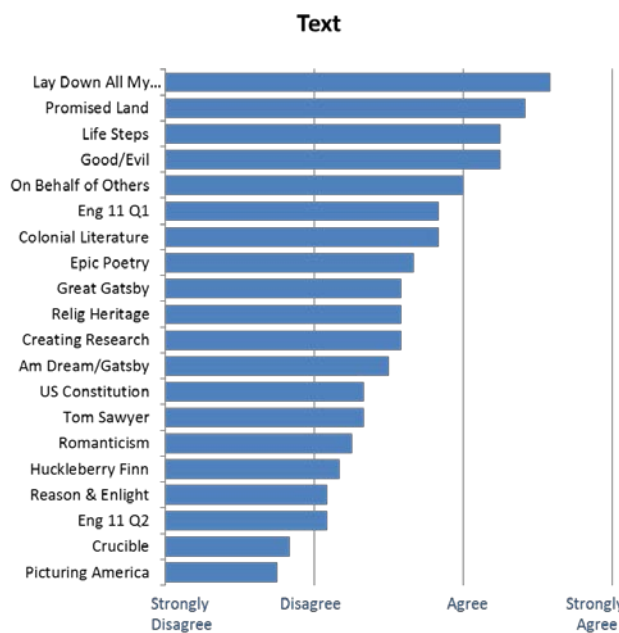


Figure 23. Publishers' Criteria. The Quality of Text scale measures the range and complexity of text, along with sufficient practice in reading complex texts.

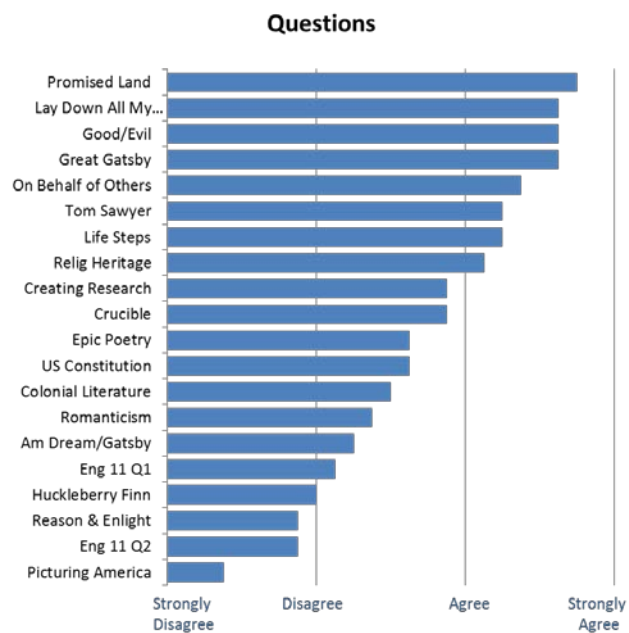


Figure 24. Publishers' Criteria. The Quality of Questions and Tasks scale measures both the focus on the text and the inclusion of text dependent questions.

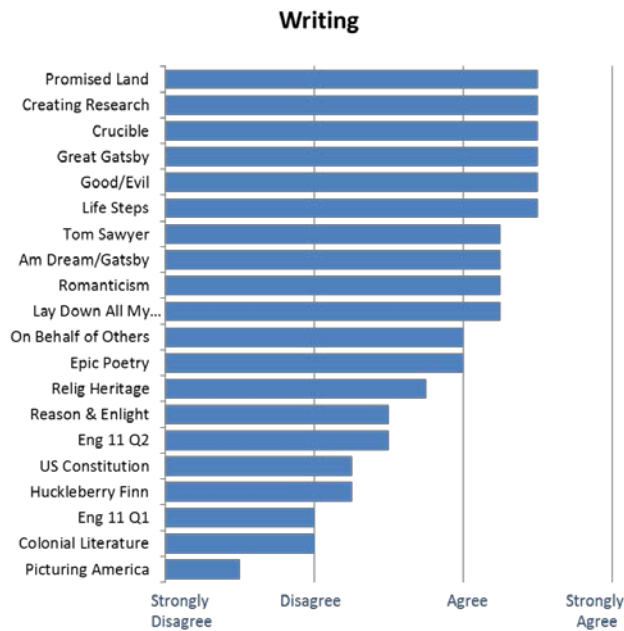


Figure 25. Publishers' Criteria. The Quality of Writing scale measures how the written and oral tasks require the student to draw on textual evidence, using a balance of argumentative and explanatory writing.

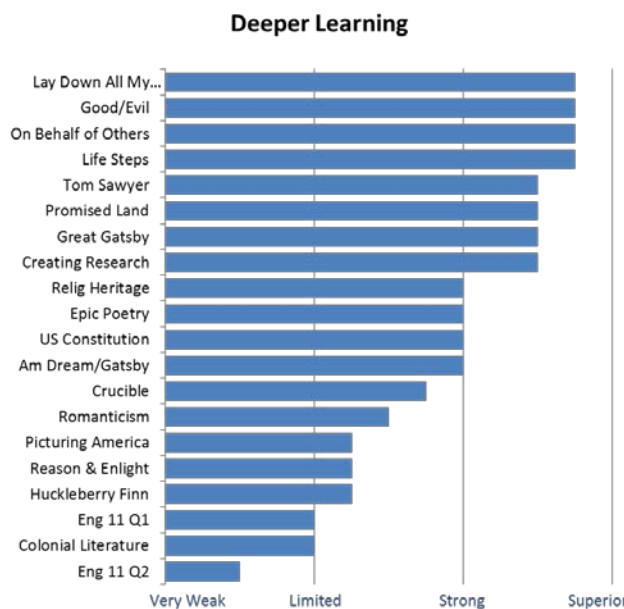


Figure 26. Achieve OER. Twelve of the twenty units reviewed showed strong or superior opportunities for deeper learning.

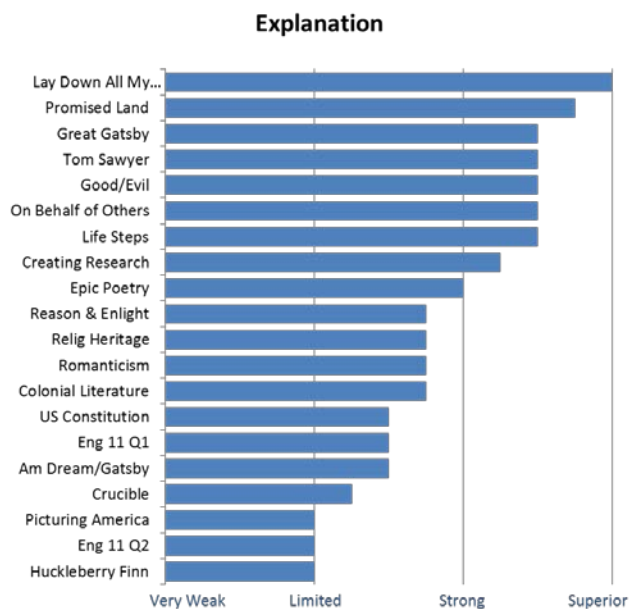


Figure 27. Achieve OER. This scale measures the quality of explanation of the subject matter, for a target audience of either the teacher or students.

DETAILED FINDINGS

For detailed information on each reviewed ELA resource, including scores on all rubrics, extensive reviewer comments, and supplemental metadata, visit the [OSPI OER Project Materials Review](http://www.ospri.org/OER-Project-Materials-Review) website.

EXPLORATORY DATA ANALYSIS

Four instruments were used to consider the reviewed OER: *Publishers’ Criteria*, *EQuIP*, *Achieve OER* (selected scales) and *Reviewer Comments*. A fifth instrument, the CCSS Worksheet, helped provide foundational information for the other four but was not reported. Each instrument had one or more scales comprised of one or more items. For example, in the Publishers’ Criteria rubric for English Language Arts, there were three scales, Quality of Text, Quality of Questions, and Writing. The Quality of Text scale had three questions. Data was aggregated at the scale level.

The Likert scales on the rubrics were converted to an ordinal value, as shown below.

Achieve OER Ratings	
Superior	3
Strong	2
Limited	1
Very Weak	0
Not Applicable (Not Included in Analysis)	-

For the Achieve OER rubric, the *Not Applicable* ratings were removed from the data analysis. There were 14 instances in mathematics where reviewers selected *Not Applicable*, almost all in the Quality of Interactivity scale. In the ELA data, the entire Quality of Interactivity scale was removed, because there was virtually no interactivity in the ELA units. While digital in nature, they were primarily static PDFs and web content. The two remaining instances in ELA where reviewers selected *Not Applicable* were removed from the data analysis.

Tri-State EQuIP Overall Ratings	
Exemplar	3
Exemplar if Improved	2
Revision Needed	1
Not Recommended	0
Not Ready for Review	0

For the EQuIP Overall ratings, both *Not Recommended* and *Not Ready for Review* were coded as 0. One of the challenges of converting Likert-type responses to ordinal data is that sometimes the written values do not have equivalent “distances” between each step. The ratings *Not Recommended* and *Not Ready for Review* are fairly equivalent in that a reasonable person would not find a distinct advantage from one rating to the other. In comparison, the remaining steps on this scale show positive progression and are coded 1, 2, and 3 respectively.

EQuIP Scale Ratings	
Most to all criteria met	3
Many criteria met	2
Some criteria met	1
Does not meet criteria	0

Publishers' Criteria Ratings	
Strongly agree	3
Agree	2
Disagree	1
Strongly disagree	0

Reviewer Comments: Amount of Work Required Ratings	
Extreme	0
Moderate	1
Minor	2
None	3

Reviewer Comments: Use this Material in my Classroom Ratings	
Strongly agree	3
Agree	2
Disagree	1
Strongly disagree	0

Data was collected using PDF forms which were electronically submitted to OSPI staff. The results were compiled into data sets which were then cleaned to use consistent references for unit titles, developers, and other metadata. Data was recoded using the conversion tables shown above. Note that while some binary data (worksheet check-marks) was collected to help reviewers assess the scored items, none of the worksheet check mark data was included in the analysis.

The scope of the data analysis did not involve comparing instructional materials to each other using a combination of all scores and all rubrics. Rather, data was compiled into charts for each unit or course with some limited comparisons between the resources based upon individual items or scales.

An independent review of the data was conducted post-hoc to ensure that the data cleaning and organization steps did not introduce errors. Approximately 10% of the data was selected from the raw submitted files and compared to the final consolidated data set. No errors were detected.

Inter-rater reliability was addressed throughout the data collection process. The reviewers received ongoing training and guidance on standardizing their answers based upon evidence in the text and the detailed instructions found within each of the rubrics. When all the data was submitted for a particular unit or course, a quick analysis of the individual ratings for each of the rubrics was performed. In the instances where there was a difference of more than two points for an individual item, the reviewers who rated that product were given the opportunity to discuss their conclusions and make adjustments as necessary. They were also given clear feedback that they could retain their existing score if they wished.

MATHEMATICS

There were seven full mathematics courses reviewed. Six were Algebra 1 and one was Integrated Math 1. Each course was randomly assigned to five independent reviewers.

Four of the seven curricula had very low variation in responses for all scored elements. Three units had minor variation among 1-3 items, with Curriki having the highest variation with three of thirty items having a variation of more than two on an individual item. All the high variance items were in the EQUIP rubric. In total, 5 of 210 (2.4%) sets of responses for individual items had a difference of more than two in the reviewer responses.

ELA

There were 20 ELA units that were reviewed. Each unit was randomly assigned to four independent reviewers.

Eleven of the twenty ELA units had very low variation in responses for all scored elements. The remaining nine units had 1-3 items each with a variation of more than two points. One item in particular had high variance, the *Quality of Interactivity* on the Achieve OER rubric, with 5 of the 20 products showing a high variation. This can be explained by a lack of clarity regarding what constitutes interactivity. While the Achieve OER rubric carefully described what would and would not be considered interactive, training and subsequent follow-up did not sufficiently reinforce this direction. For example, opening a PDF or content web page is not considered interactive, but viewing a video or adjusting dynamic values in a table would be considered interactive. ELA had so little interactivity overall that this scale was dropped from the analysis.

TESTING REVIEWER BIAS

For each unit, we assessed the scores to look for evidence of reviewer bias.

Figure 28 shows the average score given by each ELA reviewer, sorted in increasing order, with a 95% confidence interval for the reviewer's mean score. There do appear to be some differences between reviewers, but this may just have been due to chance; some reviewers would have been assigned better OERs, while others may have reviewed only poor OERs. Similarly, Figure 14 shows the average score given by each mathematics reviewer.

In order to test whether any reviewer had a tendency to over- or under-rate, we calculated a standardized score within text for each reviewer, and performed a t-test comparing each average standardized score to 0 to test whether the reviewer tended to score away from the mean. The results are shown in Table 1 and Table 2.

Since validity tests were performed for many reviewers, it was important to adjust for multiple comparisons to avoid finding a difference significant when it could have happened by chance when drawing ten means from the same distribution. Each table below gives the adjusted significance level, calculated using the Bonferroni method, in which we compare the ordered p-values to the nominal significance level (0.05) divided by the number of tests remaining. As soon as one test is deemed insignificant, the rest are also. In both cases, we see that even the smallest p-values for mathematics and ELA do not fall below their corresponding adjusted significance level, 0.05/10, so we can conclude that there is no evidence of reviewer bias in either review. Within the tables, the results are presented in the order tested, sorted from most significant to least significant difference.

Mean score by ELA reviewer with 95% CI

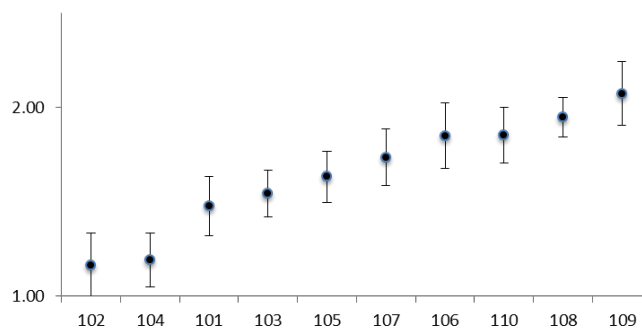


Figure 28. ELA reviewer average scores with a 95% confidence interval.

Mean score by math reviewer with 95% CI

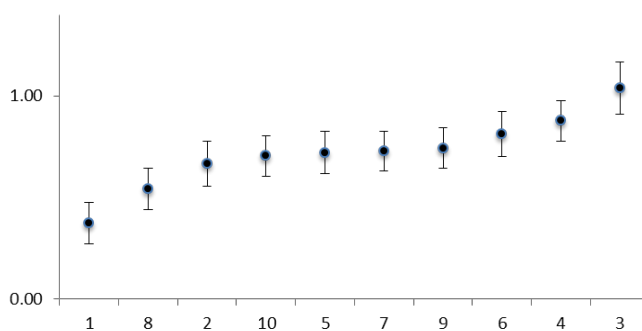


Figure 29. Math reviewer average scores with a 95% confidence interval.

Table 1. P-values and adjusted significance levels for mathematics reviewers. Note that even the smallest p-value of 0.2425 does not fall below the adjusted significance level of 0.0050, which allows us to conclude that there is no evidence of reviewer bias in mathematics.

Reviewer	p-value	Adjusted significance level
3	0.2425	0.0050
7	0.4181	0.0056
10	0.4247	0.0062
5	0.5360	0.0071
2	0.6665	0.0083
8	0.7124	0.0100
1	0.7424	0.0125
9	0.8369	0.0167
4	0.9084	0.0250
6	0.9434	0.0500

Table 2. P-values and adjusted significance levels for ELA reviewers. In this instance, the smallest p-value of 0.0694 does not fall below the adjusted significance level of 0.0050, which allows us to conclude that there is no evidence of reviewer bias in ELA.

Reviewer	p-value	Adjusted significance level
109	0.0694	0.0050
104	0.1925	0.0056
102	0.2953	0.0062
110	0.2975	0.0071
105	0.5617	0.0083
106	0.8631	0.0100
107	0.8928	0.0125
108	0.8980	0.0167
101	0.9848	0.0250
103	0.9995	0.0500

APPENDIX A ACKNOWLEDGEMENTS

We are indebted to the educators who thoughtfully assisted in conducting the OER mathematics and ELA reviews. The panel members endeavored to apply the scoring criteria objectively and with a commitment to providing a quality resource to school districts looking for guidance. They devoted many hours out of their busy schedules to do this work. We are grateful for their efforts.

Kathryn Absten	Olympic ESD 114	Regional Mathematics Coordinator
Claire Alexander	Glenwood School District	Mathematics Teacher
Christine Cheng	OSPI Office of Student and School Success	Mathematics Technical Assistance Contractor with Specialized Expertise
George Christoph	North Thurston School District, River Ridge High School	Secondary Mathematics Teacher (National Board Certified)
Christine Corbley	Federal Way Public Schools	K-12 Curriculum Resource Specialist
Susan Dolan	Central Valley School District, Central Valley High School	Teacher Librarian/District Secondary Language Arts Vertical Chair (National Board Certified)
Alyse Fritz	Eatonville School District, Eatonville High School	Teacher-Librarian (National Board Certified)
Kacie Hoard	Central Valley School District, Central Valley High School	Secondary English Language Arts Teacher (National Board Certified)
Kyla Hohnhorst	Newport School District, Newport High School	Secondary Mathematics Teacher
Patrick Kjack	Wenatchee School District	6-12 Mathematics Coach
Danielle Maletta	Eastside Catholic School	Mathematics Teacher and Department Head (National Board Certified)
Janice Maxson	Edmonds School District, College Place Middle School	Learning Support Teacher (National Board Certified)
Heather Roossien	Wahluke School District, Wahluke High School	Secondary English Language Arts Teacher
Michele Starkey	Antioch University College of Education	Field Instructor
Holly Stein	Kent School District	K-12 Literacy Program Specialist
Sandra Stroup	Richland School District, Richland High School	AP Language and Composition Teacher (National Board Certified)
Jorn van de Weghe	Sequim School District, Sequim High School	Secondary Mathematics Teacher
David Whitney	Edmonds School District, Lynnwood High School	Secondary Mathematics Teacher (National Board Certified)
James Wise	Sunnyside School District, Sunnyside High School	Secondary Mathematics Coach (National Board Certified)
Matt Yarkosky	Bethel School District, Graham-Kapowsin High School	Assistant Principal (National Board Certified)

OSPI OER PROJECT TEAM

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Barbara Soots, OER Program Manager

Greta Bornemann, Mathematics Director

Liisa Moilanen Potts, English Language Arts Director

Jessica Vavrus, Assistant Superintendent,
Teaching and Learning

Dennis Small, Educational Technology
Director

Peter Tamayo, Chief Information Officer

Alan Burke, Deputy Superintendent

Susan Canaga, Digital Learning Support
Manager

RELEVANT STRATEGIES (PROJECT CONSULTANT AND DATA ANALYSIS)

Porsche Everson, President



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