



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 second review of OER in Winter 2014. For this review cycle, we evaluated full-course secondary mathematics (Geometry/Integrated Math 2) and thematic units in 9th–10th grade English Language Arts. The review process made use of existing review instruments designed to gauge alignment with the CCSS. The results from this review are 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
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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 this legislative mandate, OSPI conducted a review of OER in high school mathematics and English Language Arts (ELA) that built on the work of the [2013 WA OER Review](#). Teams evaluated full-course Geometry/Integrated Math 2 and units in 9th–10th grade ELA. In addition, an OER Algebra 1 course unavailable for review in 2013 was examined. The review process, conducted during February and March, 2014, made use of existing review instruments designed to gauge alignment with the CCSS and overall OER quality. Minor revisions to the 2013 process were informed by feedback from the first cohort of reviewers.

The results from this review enable educators and content developers to tap into the most powerful feature of OER: the ability to freely adapt and redistribute materials.

REVIEW BACKGROUND, GOALS, AND PROCESS

OSPI has over a decade of experience with [reviewing instructional materials](#) for their alignment with state learning standards in both reading and mathematics. Today, the instructional materials umbrella covers far more than just textbooks; it includes not only core curricula, but also supplemental resources from a number of sources, in both print and digital formats. OER are an important part of this new instructional material ecosystem. OSPI provides supports that help educators become critical consumers of any type of instructional material. As district interest in OER increases, so too does the need to provide an unbiased evaluation of their quality and alignment to Washington state learning standards.

In 2013, the inaugural OER review examined available open resources in Algebra 1, Integrated Math 1 (full course), and individual units in 11th and 12th grade ELA. The 2014 review cycle focused on Geometry, Integrated Math 2, and individual units in 9th and 10th grade ELA. After the 2013 review results were released, one additional source, EngageNY, released their Algebra 1 curriculum. Interest in this particular resource was very high among Washington school districts so it was added to the 2014 review.

In December 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 the [Process and Materials Overview](#) section of 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 recruited and selected a committee of 10 ELA and 10 mathematics reviewers. Reviewers were chosen from across the state, representing a variety of teaching environments from large districts to small schools in both rural and urban areas. All reviewers demonstrated deep expertise in the content area they reviewed. The committee reviewed the materials with the specific goal of analyzing how well they address the CCSS.

It is important to note:

- Though this particular review is focused on OER, the actual review process and tools are not specific to OER. They can and should be used with any instructional material under consideration by school districts.
- 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 CCSS alignment.
- The results of this review do not represent an endorsement from OSPI as to the recommended use nor 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. The results 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

Overall, the reviewers found a number of resources in both mathematics and ELA that were well-aligned to the CCSS, and worthy of consideration by districts choosing instructional materials.

Mathematics

Reviewers found that the 2014 math OER curricula showed far more alignment to the CCSS than resources reviewed in 2013. Several of the reviewed resources show significant promise as a viable selection now and several more could be considered with minor-to-moderate adaptation. Four mathematics resources consistently received an overall average score of 2 or higher (on a 0–3 point scale) across most criteria. For the most part, the other three 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, although their use as supplemental material or a portion of a unit was well documented.

English Language Arts

In ELA, reviewers found many choices for educators seeking units with alignment to the CCSS. For 12 of the 20 units reviewed, reviewers gave an average score of 2 or higher (on a 0–3 point scale) across all criteria. An additional six units had average total scores at or above the midpoint of the scale. Most ELA high school classes use a flexible 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 a teacher well versed in the standards.

As OER are developed to address the fundamental shifts in teaching and learning inherent in the CCSS and not just re-purposed, greater alignment is being achieved. 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 opportunities to access strong materials for all students regardless of the fiscal situation in their schools.

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.

PROCESS AND MATERIALS OVERVIEW

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 Geometry curriculum OR an Integrated Mathematics 2 curriculum aligned to the Common Core State Standards.
4. For ELA: resource must be a 9th–10th grade English Language Arts unit aligned to the Common Core ELA Writing Standards 1 through 10 and cover **one OR both** of:
 - a. Reading standards for literature 4, 5, 6, 7, and 9, 10 for grades 9–10
 - b. Reading standards for informational text standards 1 through 10

If materials did not meet the above selection criteria, they were not reviewed. While there are many excellent free resources available online, materials that 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.

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. Included in consideration was one Algebra 1 curriculum that was unavailable for review in 2013. 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 Educational Service District 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.

REVIEW INSTRUMENTS AND RUBRICS

OVERVIEW

This review focused specifically on alignment to the Common Core State Standards (CCSS) in mathematics and English Language Arts. As Washington’s 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. However, 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 recommends 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:

- Instructional Materials Evaluation Tool (IMET) for high school mathematics (developed by Student Achievement Partners)
- Educators Evaluating Quality Instructional Products (EQulP) Rubric (based on the TriState 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 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 Geometry, Integrated Math 2, 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 that asked specific questions regarding the extent of CCSS coverage.

The [Course Focus documents](#) for a Geometry or Integrated Math 2 course were used to provide guidance on course content and focus for the material under review.

The “target standards” for ELA units were taken directly from the reading and writing strands within the CCSS ELA document. As outlined in the OER selection criteria, writing standards 1 through 10 and select reading standards from literature or informational text were examined.

INSTRUCTIONAL MATERIALS EVALUATION TOOL (IMET)

The Instructional Materials Evaluation Tool (IMET) is a resource used to evaluate a comprehensive textbook or textbook series for alignment to the Common Core State Standards (CCSS) in mathematics and English Language Arts/literacy. There are separate versions for use with ELA/literacy materials for grades K–2 or 3–12 and for mathematics materials K–8 or high school.

[Student Achievement Partners](#), a non-profit organization founded by some of the lead writers of the Common Core State Standards to support CCSS implementation, created this rubric in collaboration with many state and education organization partners. IMET is based on the [Publishers’ Criteria](#) generated by [Council of Chief State School Officers](#) (CCSSO) and [National Governors Association](#) (NGA) in collaboration with partner organizations, teachers, researchers and other stakeholders. The Publishers’ Criteria document guides publishers and curriculum developers in understanding what must be comprehensively covered in curricular materials in order to align with the CCSS. In the 2013 OER review, the OER project adapted the narrative Publishers’ Criteria document into a reviewer scoring form.

The use of the IMET rubric represents a shift from the 2013 OER Review. The IMET rubric reorganizes the criteria from the listed order in the Publishers’ Criteria, weights different components of the criteria, and includes additional quality indicators that are referenced toward the end of the Publishers’ Criteria document. This change was based on feedback from directors of mathematics and ELA at the OSPI and the increasing use of IMET in textbook adoption committees across states who have adopted CCSS. For instance, the IMET was recently used in the [Louisiana 2013-2014 math and ELA instructional materials review](#).

Read the math IMET document in its entirety: [IMET Mathematics High School](#) (pdf)

There are several important points to note regarding the IMET rubric:

- The IMET was designed for evaluation of comprehensive materials and is not appropriate for evaluating supplemental materials. Because of the nature of this tool, the WA OER review only used IMET with full-course math resources and not with the individual ELA units.
- The IMET was written for use by district adoption committees. Certain criteria are “non-negotiable” and if not met, IMET suggests stopping the review process. Since the purpose of the OER review is to provide feedback for improvement/adaptation, we did not want to make any items “non-negotiable” and stop reviewing. Therefore, we used a 0–3 point Likert scale to rate each element of the rubric.

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. Washington teachers and content experts were part of this group. It looks at four areas, including:

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

View the complete [EQuIP rubrics for both math and ELA](#).

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 be evaluated. Rubrics that 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.

We did not use Rubric V with ELA units. The intent of this rubric is to measure interactivity and how the resource responds to the user, not just technology in general. Thus, a simulation that could be manipulated to view variable outcomes would qualify as interactive but merely opening a PDF file would not. In some of the ELA resources, there were multimedia elements like video, graphics collections, and websites, but none of these seemed to meet the criteria of “technological interactivity” described by the rubric.

REVIEWER COMMENTS

As the final step in the evaluation process, reviewers were asked to discuss the focus, coherence, rigor, and balance of the resource. They were instructed to cite evidence from the resource that supported their comments about areas needing adaptation. Additionally, they were asked to provide suggestions for changes that would help improve alignment.

Reviewers clarified the “ideal use” scenario for each reviewed resource and estimated the amount of work that would be required for a small group to make adaptations to bring the resource into CCSS alignment. They also selected the ways they would use the resource in both its current and adapted form from the options below:

- Textbook replacement
- Unit replacement
- Portion of unit
- Supplemental material
- Would not use

CHANGES FROM 2013 PROCESS

Based on reviewer and facilitator feedback from the 2013 review and newly available review instruments, we made several changes to the 2014 review process:

- Used IMET instead of adapted Publishers’ Criteria instrument to evaluate full-course resources.
- Did not use IMET with ELA review as it did not meet the full-course requirement.
- Did not use Achieve Rubric V with ELA since these units did not utilize interactive elements as defined by the rubric.
- Added more structure to the Reviewer Comments feedback form to provide more consistent user responses.
- Asked reviewers to find evidence of all their noted strengths/challenges and provide suggestions as well as identify ideal usage scenarios.

REVIEW PROCESS

The OER review focused on two subject areas: 9th and 10th grade English Language Arts and Geometry/Integrated Math 2. One additional Algebra 1 resource, unavailable for review in 2013, was also examined. For both reviews, ten reviewers with subject matter expertise and deep familiarity with the Common Core State Standards in English Language Arts and mathematics were initially selected and trained. The number of reviewers in math was reduced to eight due to illness, and as a result, the number of mathematics resources selected for review was decreased from nine to seven. 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 two pre-training webinars for each group to orient participants to their work. The introductory orientation webinar, attended by both math and ELA reviewers, described OER, clarified review goals, detailed the resource selection criteria, and unpacked results from the 2013 review.

Content area specific webinars addressed the big shifts regarding CCSS and explored the shifts in instructional practice needed to support authentic CCSS implementation for ELA and mathematics. The goal was to ensure all reviews had a common lens and understanding of the CCSS and what to look for in aligned curriculum.

These content-specific webinars also introduced reviewers to the three core instruments that would be used during the review (IMET, EQuIP, Achieve OER) and assigned the following reading in preparation for the training.

Geometry/Integrated Math 2	9 th –10 th Grade English Language Arts
<ul style="list-style-type: none">• Progression Documents for HS Algebra, HS Functions and 68 Expressions and Equations, K-6 Geometry• Common Core State Standards: Introduction, Grade 8 and HS Geometry standards• PARCC Model Content Framework Documents for Geometry and Integrated Math 2	<ul style="list-style-type: none">• Common Core State Standards for English Language Arts anchor standards and ELA Appendix A• Review the Achieve EQuIP rubric (video).• Publishers' Criteria for ELA Grades 3–12

Following the virtual sessions, reviewers received a link to one of their assigned resources in advance of the in-person training in order to get a high-level overview of the material and become familiar with the navigational structure. They also received a copy of the Common Core Worksheet to help frame their initial walkthrough of the material. This preliminary work with the resource allowed us to spend more time involved in deep group discussion of the application of the rubrics to the resource during the in-person training.

REVIEWER TRAINING

Each group attended a full day, in-person training session for their subject matter. In small groups, participants worked with each of the five instruments being used for the review, using their first assigned resource as fodder for discussion. OSPI facilitators explained the use of the instruments, why they were being used, and how they complement each other with relatively little overlap.

Facilitators addressed participant questions, assigned resources to the reviewers for the 4-week virtual review period, and covered all 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. Scoring for the first resource was discussed as a group but ultimately, all responses were individual. This face-to-face time was important in order for all reviewers to have a shared understanding of use of the instruments, application of the criteria, and expectations for their individual work.

Previous testing with the instruments showed that a typical review for mathematics would take 6–9 hours to complete and 3–4 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.

CHECK-IN MEETINGS

The OER facilitation team set up three check-in meetings each for math and ELA reviewers to measure progress during the four-week 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 discuss their comments and scores via shared Google docs and/or phone/email. 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 second review of mathematics OER materials performed by OSPI. For this review cycle, seven mathematics courses were reviewed. Five of the resources were Geometry, one was Integrated Math 2, and one was an Algebra 1 resource that was unavailable during the 2013 review cycle covering that content area.

Developer	Full Title	Short Title	Type
CK–12 Foundation	CK–12 Geometry Concepts	CK12 Geo Cncpts	Geometry
CK–12 Foundation	CK–12 Geometry Honors Concepts	CK12 Hon. Geo. Cncpts	Geometry
Curriki	Curriki Geometry	Curriki PBL Geometry	Geometry
Mathematics Vision Project	Secondary Two Mathematics: An Integrated Approach	MVP Integrated Math 2	Integrated Math 2
EngageNY/Common Core	New York State Common Core Mathematics Curriculum: Algebra 1	ENY Algebra 1	Algebra 1
EngageNY/Common Core	New York State Common Core Mathematics Curriculum: Geometry (Module 1)	ENY Geometry	Geometry
Saylor Foundation	The Saylor Foundation K–12 Geometry Course	Saylor Geometry	Geometry

The materials were reviewed with a specific goal of looking at how well they address CCSS shifts, rather than evaluating their quality by previous standards. The CCSS in mathematics are very different from 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

Overall, the findings show that the reviewed 2014 math OER curricula showed far more alignment to the CCSS than resources reviewed in 2013. Several of the reviewed resources show significant promise as a viable selection now and several more could be considered with minor-to-moderate adaptation. Four resources, EngageNY Algebra, Engage NY Geometry, MVP Integrated Math 2, and CK12 Honors Geometry Concepts, consistently received an overall average score of 2 or higher (on a 0–3 point scale) across most rubric criteria. 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, though their use as supplemental material or a portion of a unit was frequently recommended in the Reviewers’ Comments documents. As resources are being developed to address the fundamental shifts in teaching and learning inherent in the CCSS and not just re-purposed, greater alignment is being achieved.

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 six full-courses in Geometry or Integrated Math 2 and one Algebra 1 course. 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.

IMET RUBRIC

The Instructional Materials Evaluation Tool (IMET) is a resource used to evaluate a comprehensive textbook or textbook series for alignment to the Common Core State Standards (CCSS). It is based on the [Publishers' Criteria](#) documents, created to guide publishers and curriculum developers in understanding what must be comprehensively covered in curricular materials in order to align with the CCSS.

We used the IMET specific to high school mathematics materials. The IMET review instrument separates criteria into seven sections

1. **Focus in High School:** In any single course, students and teachers using the materials as designed spend the majority of their time developing knowledge and skills that are widely applicable as prerequisites for postsecondary education.
2. **Consistent, Coherent Content:** Each course's instructional materials are coherent and consistent with the content in the Standards.
3. **Rigor and Balance:** Each grade's instructional materials reflect the balances in the Standards and help students meet the Standards' rigorous expectations, by helping students develop conceptual understanding, procedural skill and fluency, and application.
4. **Practice–Content Connections:** Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.
5. **Standards for Mathematical Content**
6. **Standards for Mathematical Practice**
7. **Other Indicators of Quality:** Supports the use of technology; problems or exercises have a purpose and are given in an intentional sequence; variety in pacing and grain size of content coverage, as well as variety in what students produce; separate teacher materials that support teacher study; manipulatives connected to written methods and faithful representations of the math objects they represent; materials are reviewed by qualified individuals; visual design isn't distracting; support for special populations is thoughtful.

Since the purpose of the OER review is to provide feedback for improvement/adaptation, we adapted the rubric to include a Likert scale from 0–3 to rate each element of the rubric (Strongly Disagree – 0, Disagree – 1, Agree – 2, Strongly Agree – 3).

- All average ratings for each category trended above the midpoint of the scoring range with some categories having average scores in the upper third of the range (figure 1). This is in contrast to the 2013 review where the majority of the categories measuring similar areas were at or below the scale midpoint.
- Three resources scored in the *Agree* to *Strongly Agree* range for most all of the IMET categories – EngageNY Algebra 1, Engage NY Geometry, and MVP Integrated Math 2.

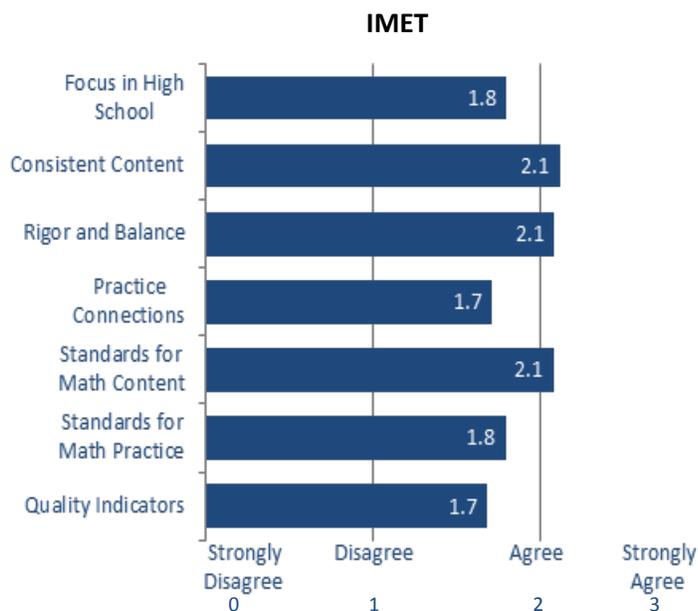


Figure 1. Average IMET ratings for all seven math resources combined – 31 total reviews.

EQUIP RUBRIC

The EQulP rubric measures overall quality of alignment to the CCSS by examining a single unit from the full course in depth. One unit from each mathematics resource was chosen to review with this instrument. The units all covered the same topical area—Congruence/Transformations. Reviewers considered four dimensions described below:

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 Shifts 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.

Each dimension had a number of criteria that were considered. The number of criteria for each dimension that were met was rated on a scale from 0–3 (None – 0, Few – 1, Many – 2, All – 3). The rubric also provides an **Overall** rating for the resource based upon the sum of each of four dimensions. Scores from 11–12 are considered *Exemplar*, 8–10 are *Exemplar if Improved*, 3–7 are in the *Revision Needed* category, and scores 2 and below are *Not Ready to Review*.

- Results for all seven resources averaged well above the midpoints of most of the scales, trending towards “many” criteria being met (figure 2).
- The majority of the 31 reviews had an **Overall** rating of *Exemplar if Improved* or *Exemplar*:

Exemplar	7 reviews
Exemplar if Improved	10 reviews
Needs Revision	12 reviews
Not Ready to Review	2 reviews

- Average **Alignment** for all resources combined was 2.1, indicating that *Many* to *All* of the CCSS criteria were met. Two resources, EngageNY Algebra 1 and EngageNY Geometry, received an *All Alignment* criteria met score on each of their reviews.
- On average, the reviewed resources met *Many* to *All* of the criteria for **Key Shifts**:

All	17 reviews
Many	11 reviews
Some	2 reviews
- 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. Some resources, such as MVP Integrated Math 2 do offer assessment components for a small fee.

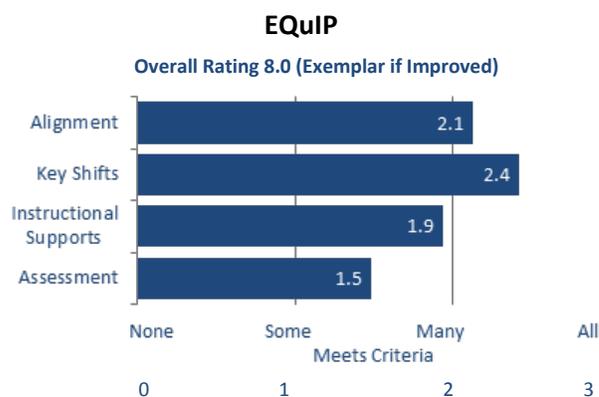


Figure 2. Average EQulP ratings for all resources combined – 31 total reviews.

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

Each rubric was scored independently of the others using a 0–3 scale that describe levels of potential quality, usefulness, or alignment (Weak – 0, Limited – 1, Strong – 2, Superior – 3).

Resources scored well on most of these rubrics, with overall averages tending to fall in the *Strong* or *Superior* category.

Of all the rubrics, Rubric V: Quality of Technological Interactivity, tended to score the lowest. In this rubric, interactivity is not defined as technology in general but rather a measure of how the object responds to the user and behaves differently based on what the user does. Resources from CK12, Curriki, and Saylor scored well on this scale. Using this particular rubric with the math review posed a challenge related to grain size of the resource. While Rubric V works perfectly well with one interactive element, it is challenging to apply to a unit where there are multiple elements, with varying degrees of interactivity. To complicate matters, most often these elements were not created by the same group that developed the base curricula, instead being aggregated from multiple sources.

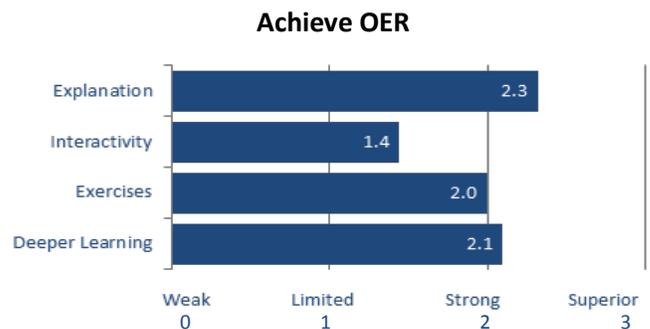


Figure 3. Average Achieve OER ratings for all resources – 31 total reviews.

REVIEWER COMMENTS

Reviewers were asked to write a short narrative providing an assessment of each of the resources they reviewed. They were instructed to cite evidence from the resource that supported their comments about areas needing adaptation. Additionally, they provided suggestions for changes that would help improve alignment.

As part of their professional assessments, reviewers clarified the “ideal use” scenario for each reviewed resource and estimated the amount of work that would be required for a small group to make adaptations to bring the resource into CCSS alignment. Finally, reviewers selected

all the ways they would use the resource in both its current and adapted form. Below are some of the highlights, but for an in-depth look at comments for each resource, please visit the OER Project [reviewed materials library](#).

- Out of 31 reviews, 7 stated they would use a resource as a textbook replacement “as is” in its current state. That number jumped to 13 if suggested adaptations were made.
 - Engage NY Algebra 1 (3 as is/4 adapted)
 - Mathematics Vision Project (2 as is/4 adapted)
 - CK12 Honors Geometry Concepts (1 as is/3 adapted)
 - CK12 Geometry Concepts (1 current/2 adapted)
- Five out of five reviewers would use EngageNY Geometry as a unit replacement in its current state. Two stated they would use the resource as a textbook replacement, however we did not count those scores as only one module was complete at time of review.
- Only two reviews out of 31 stated that they would not use a resource in some capacity.

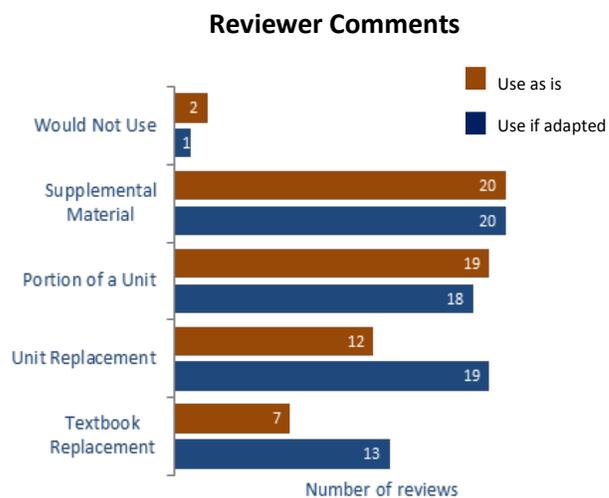


Figure 4. Number of times out of 31 reviews that each potential use was cited. EngageNY Geometry was removed from the Textbook Replacement question since only one module was complete at time of review.

While the intent of this report is not to 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.

Focus in High School

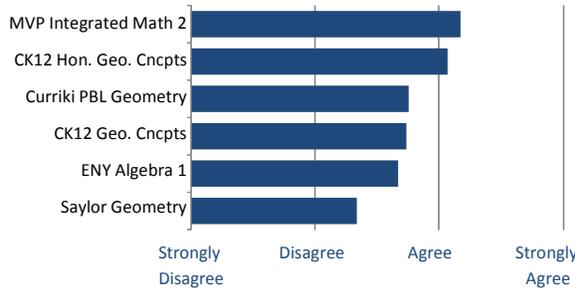


Figure 5. IMET. Students and teachers spend the majority of their time developing knowledge and skills that are widely applicable as prerequisites for postsecondary education. ENY Geometry was not included in this category since the full course was not complete.

Consistent, Coherent Content

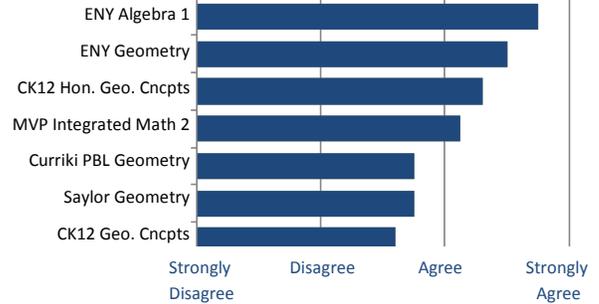


Figure 6. IMET. Instructional materials are coherent and consistent with the content in the Standards.

Rigor and Balance

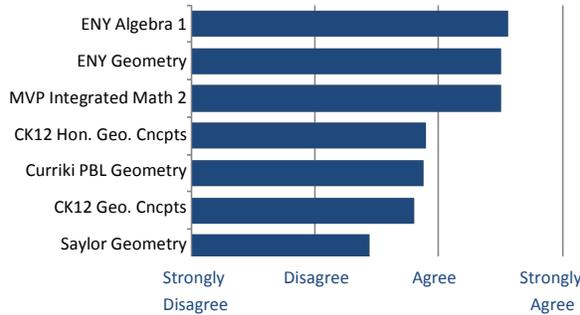


Figure 7. IMET. Material reflects the balances in the Standards and helps students meet the Standards' rigorous expectations by helping students develop conceptual understanding, procedural skill and fluency, and application.

Standards for Mathematical Content

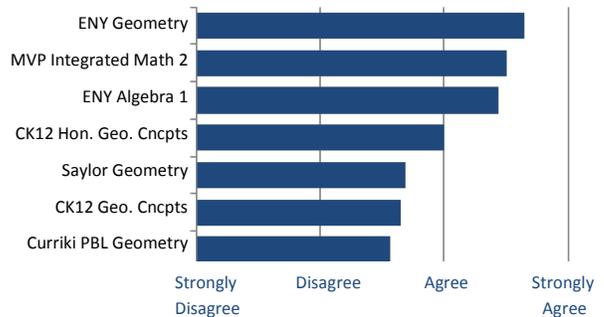


Figure 8. IMET. Material is based on content specified in the Standards. They foster coherence through connections throughout the course and preserve the focus, coherence, and rigor the Standards.

Standards for Mathematical Practice

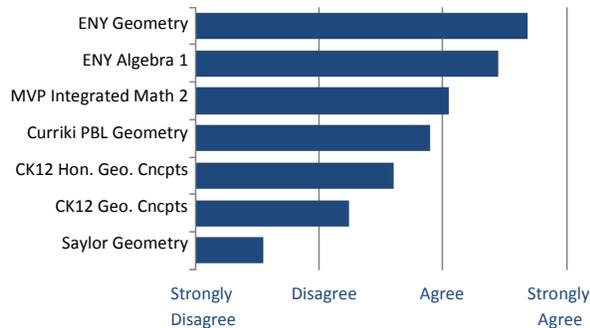


Figure 9. IMET. Materials connect practice standards with content, attend to the full meaning of all practice standards, and support the Standards emphasis on mathematical reasoning.

Alignment to the Depth of the CCSS

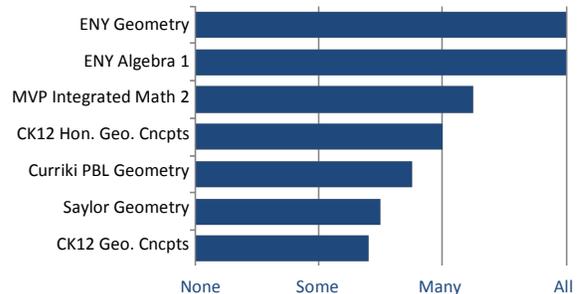


Figure 10. EQuIP. Alignment of a selected unit to the letter and spirit of the CCSS.

Key Shifts in the CCSS

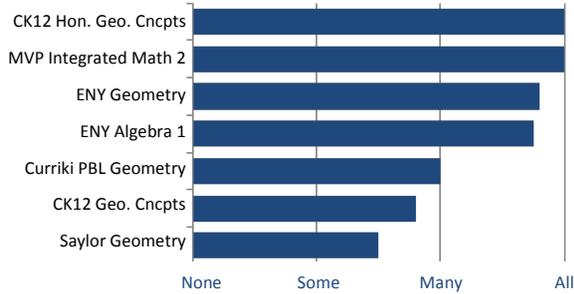


Figure 11. EQuIP. Evidence of key shifts reflected in the CCSS in one unit of the curriculum.

Instructional Supports

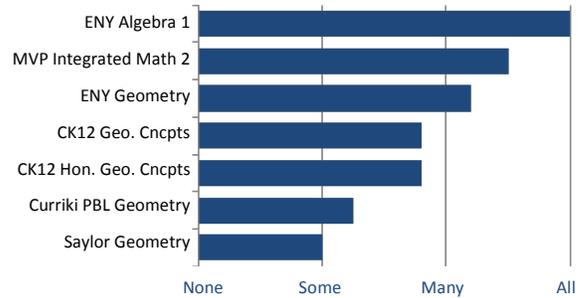


Figure 12. EQuIP. Examines whether a unit is responsive to varied student learning needs.

Assessment

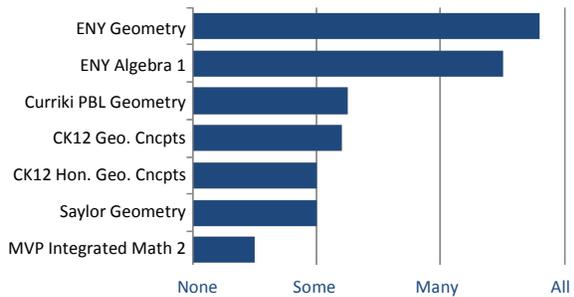


Figure 13. EQuIP. Unit regularly assesses whether students are mastering standards-based content and skills.

Deeper Learning

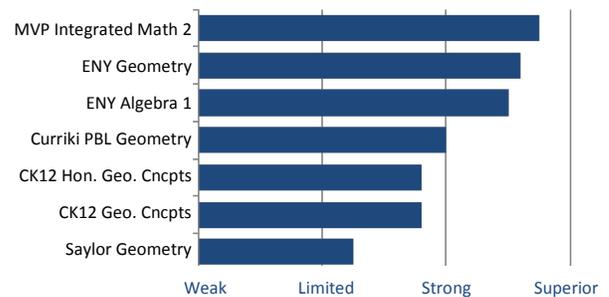


Figure 14. Achieve OER. Measures the unit's ability to engage learners in one or deeper learning skills, including think critically and solve complex problems, reason abstractly, construct viable arguments and apply discrete knowledge and skills to real-world situations.

Quality of Explanation of Subject Matter

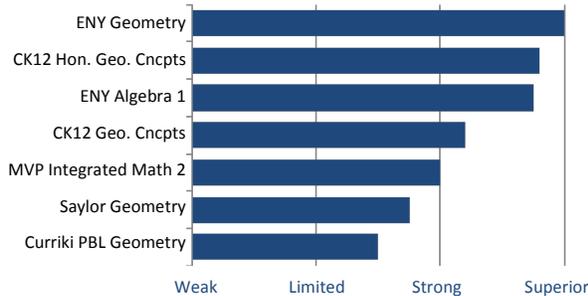


Figure 15. Achieve OER. Rates how thoroughly the subject matter is explained or otherwise revealed in the object.

Quality of Technological Interactivity

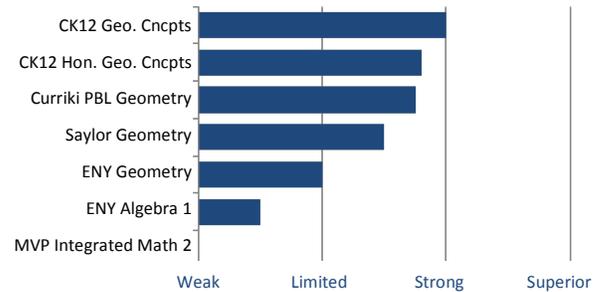


Figure 16. Achieve OER. One of the true benefits of an OER is the ability to leverage technological interactivity. Note that opening PDF files or web content does not constitute technological interactivity.

DETAILED FINDINGS

For detailed information on each reviewed mathematics resource, including scores on all rubrics, extensive reviewer comments, standard error, 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 9th and/or 10th grades.

Developer	Full Title	Short Title
BetterLesson /Christopher Arnett	Enlightened Thinking: The Argument and the Research Paper	Enlightened Thinking
BetterLesson /Tim Pappageorge	Metacognition and The Absolutely-True Diary of a Part-Time Indian	Metacognition
EDSITEMENT! National Endowment for the Humanities	From Courage to Freedom: Frederick Douglass's 1845 Autobiography *	Courage to Freedom
EDSITEMENT! National Endowment for the Humanities	A "New English" in Chinua Achebe's "Things Fall Apart": A Common Core Exemplar	Things Fall Apart
EngageNY /Public Consulting Group	New York State Common Core ELA & Literacy Curriculum 9.1.3: "Wisely and slow; they stumble that run fast."	Wisely and Slow
EngageNY /Public Consulting Group	New York State Common Core ELA & Literacy Curriculum 9.1.2: "A work of art is good if it has arisen out of necessity."	Work of Art
Georgia Virtual Learning	Ninth Literature and Composition Unit 4: Short Stories *	Short Stories
Library of Congress /Kathleen Prody & Nicolet Whearty	To Kill a Mockingbird: A Historical Perspective *	Mockingbird Historical
Library of Congress /Linda and David Lackey	The Grapes of Wrath: Scrapbooks and Artifacts *	Grapes of Wrath
NYC Dept. of Education	Grade 9 Literacy in English Language Arts: Who Is to Blame for Romeo and Juliet's Death?	Romeo and Juliet
NYC Dept. of Education /University of Pittsburgh	Grade 9–10 English Language Arts: Speeches—Argument and Methods	Speeches
Odell Education	Building Evidence-Based Arguments—Grade 9: "What is the virtue of a proportional response?"	EB Arguments
Odell Education	Making Evidence-Based Claims Unit Grade 10: MLK, Barak Obama	EBC Speeches
Odell Education	Making EBC About Literary Technique Grade 10: Emily Dickinson, Robert Frost	Literary Technique
Achieve the Core – Student Achievement Partners	The Gettysburg Address by Abraham Lincoln	Gettysburg
Achieve the Core – Student Achievement Partners/LASD	Weapons of the Spirit	Weapons of Spirit
The Big Read: National Endowment for the Arts	The Stories and Poems of Edgar Allan Poe *	Edgar Allan Poe
The Big Read: National Endowment for the Arts	To Kill a Mockingbird *	Mockingbird
The Saylor Foundation /Karen Breazeale	Saylor ELA 10 Unit 3: Anthem	Unit 3 Anthem
The Saylor Foundation /Karen Breazeale	Saylor ELA 10 Unit 5: Up from Slavery	Unit 5 Slavery

* units pre dating the Common Core State Standards

These OER were reviewed with the specific goal of looking at how well they address CCSS shifts, not evaluating their quality against existing Washington State grade level expectations. The CCSS in ELA are very different from previous K–12 state learning standards. In particular, there are several key shifts in instruction:

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

Though many of the units reviewed were crafted to specifically address the new standards, six of the units pre-date the CCSS. Thus, the review process compared these materials against target standards that developers were not originally aiming for at material creation. In those instances, we noticed much higher variation in reviewer scores. Though still within acceptable ranges of inter-rater reliability (see [Data Analysis](#)), interpretation of how well the legacy resources aligned with the new standards was a bit more challenging and open to user interpretation of the resource intent.

Overall, the findings indicated many strong choices from among the available OER materials for educators seeking ELA units with alignment to the CCSS. Twelve units received an overall average score of 2 or higher (on a 0–3 point scale) across all rubrics. They were:

- Literary Technique (Odell Education)
- Speeches (New York City Department of Education/University of Pittsburgh)
- Work of Art (Engage NY/Public Consulting Group)
- Wisely and Slow (Engage NY/Public Consulting Group)
- EB Arguments (Odell Education)
- EBC Speeches (Odell Education)
- Romeo and Juliet (New York City Department of Education)
- Gettysburg (Achieve the Core)
- Things Fall Apart (EDSITEment!)
- Metacognition (CC Better Lesson)
- Enlightened Thinking (CC Better Lesson)
- Edgar Allan Poe (The Big Read)

An additional six units had average total scores at or above the midpoint of the scale.

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 – many others exist and new resources emerge regularly. We were limited in scope and solely examined ELA thematic units that extended instruction over multiple weeks and met the criteria outlined in the [Selection Criteria](#).

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.

EQUIP RUBRIC

The EQuIP rubric is designed to be used at the unit, rather than full-course, level to get a more detailed picture of the quality of alignment to the CCSS for a resource. Reviewers considered four areas described below:

- Alignment to the Rigors of the CCSS:** the unit targets a set of grade CCSS ELA/Literacy standards; includes a clear and explicit purpose for instruction; selects texts of sufficient quality and scope that measure within the grade-level text complexity band; integrates reading, writing, speaking and listening
- Key Shifts in the CCSS:** the unit addresses reading text closely; capturing text-based evidence; writing from sources; using academic vocabulary; increasing text complexity; building disciplinary knowledge; providing a balance of texts and writing
- Instructional Supports:** the unit is responsive to varied student learning needs
- Assessment:** the unit regularly assesses whether students are mastering standards-based content and skills through direct, observable evidence, via accessible and unbiased method using varied modes of assessment

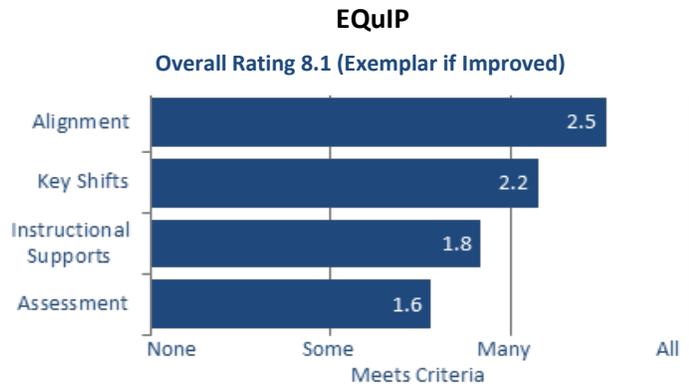


Figure17. Average EQuIP ratings for all 20 resources – 79 total reviews.

Each dimension had a number of criteria that were considered. The number of criteria for each dimension that were met was rated on a scale from 0–3 (None – 0, Few – 1, Many – 2, All – 3). The rubric also provides an **Overall** rating for the resource based upon the sum of each of four dimensions. Scores from 11–12 are considered *Exemplar*, 8–10 are *Exemplar if Improved*, 3–7 are in the *Revision Needed* category, and scores 2 and below are *Not Ready to Review*.

- Average **Overall** rating for the 20 units was *Exemplar if Improved*. Individual reviewers gave the following evaluations

Exemplar	19 reviews
Exemplar if Improved	26 reviews
Needs Revision	34 reviews
Not Recommended	0 reviews
- Average **Alignment** for all resources combined was 2.5, indicating that *Many* to *All* of the CCSS criteria were met. Nineteen out of the 20 resources fell into this category.
- On average, the reviewed resources met *Many* to *All* of the **Key Shifts:**

All	32 reviews
Many	27 reviews
Some	20 reviews
- The Assessment scale showed a lower average score than others. Reviewer comments indicated that some of the products under review had few assessment components.

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 three Achieve rubrics used for the ELA review process are:

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

The Quality of Interactivity (Rubric V) used in the math review was not used in the ELA review. The intent of the rubric was to measure interactive modules, like assessments, that provide live feedback or widgets that could be manipulated to view variable outcomes. These types of objects were not present in the ELA resources we examined.

Resources scored well in these categories, with overall averages tending to fall in the *Strong* or *Superior* category.

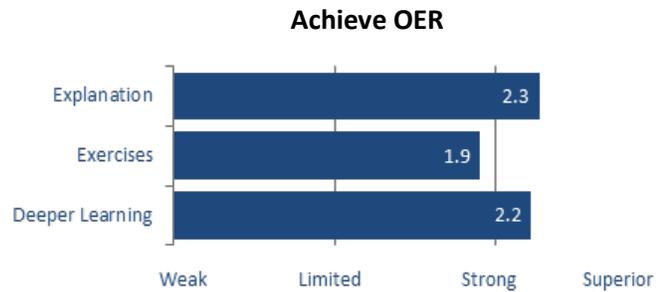


Figure 18. Average Achieve OER ratings for all resources.

REVIEWER COMMENTS

Reviewers were asked to write a short narrative providing an evaluation of each of the resources the reviewed. They were instructed to cite evidence from the resource that supported their comments about are as needing adaptation. Additionally, they provided suggestions for changes that would help improve alignment.

As part of their professional assessments, reviewers clarified the ideal use scenario for each reviewed resource and estimated the amount of work that would be required for a small group to make adaptations to bring the resource into CCSS alignment. Finally, reviewers selected all the ways they would use the resource in both its current and adapted form. Below are some of the highlights, but for an in-depth look at comments for each resource, please visit the OER Project [reviewed materials library](#).

- Out of 79 reviews, 24 stated they would use a resource as a unit replacement in its current state. That number jumped to 35 if suggested adaptations were made.

Current unit replacement (number of reviewers)

Better Lesson Metacognition	2
Big Read Edgar Allan Poe	1
Engage NY Work of Art	3
Engage NY Wisely and Slow	4
NYC Dept. of Ed. Romeo and Juliet:	2
NYC Dept. of Ed Speeches	3
Odell EB Arguments	3
Odell EBC Speeches	1
Odell Literary Techniques	4
Saylor Unit 5 Slavery	1

- Only 7 reviews out of 79 stated that they would not use a resource in some capacity in its current state.

The overall results shown in Figure 19 indicate the overall strength of OER ELA material currently available.

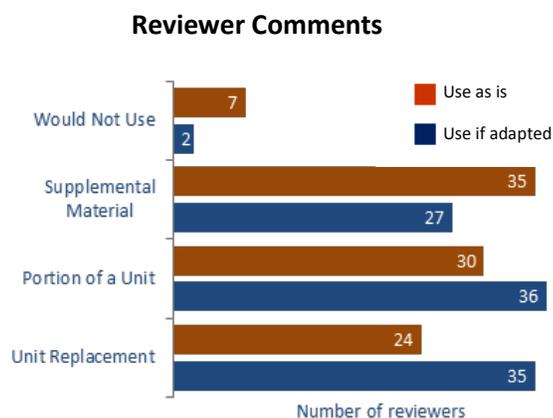


Figure 19. Number of times out of 79 reviews that each potential use was cited.

While the intent of this report is not to 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.

Alignment to the Depth of the CCSS

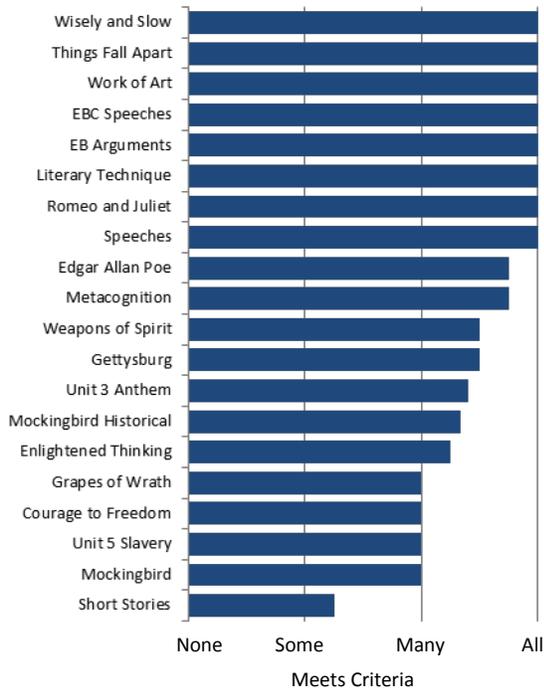


Figure 20. EQUIP. This scale looks at the overall alignment of the resource to the CCSS.

Key Shifts in the CCSS

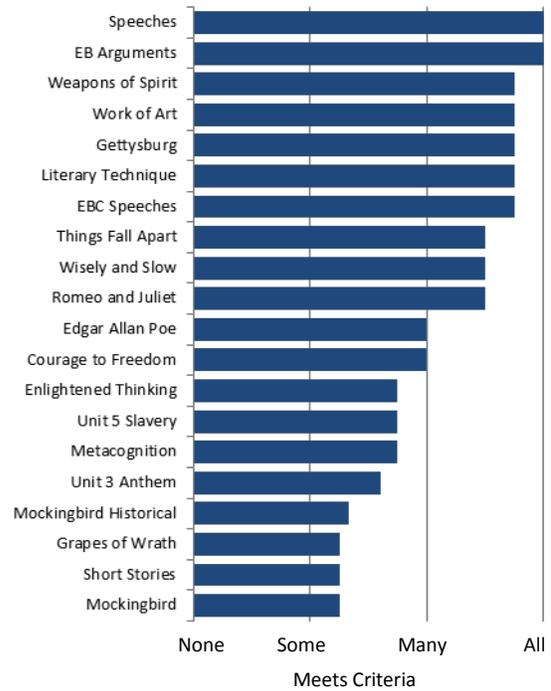


Figure 21. This scale measures how the unit addresses key shifts in the CCSS.

Instructional Supports

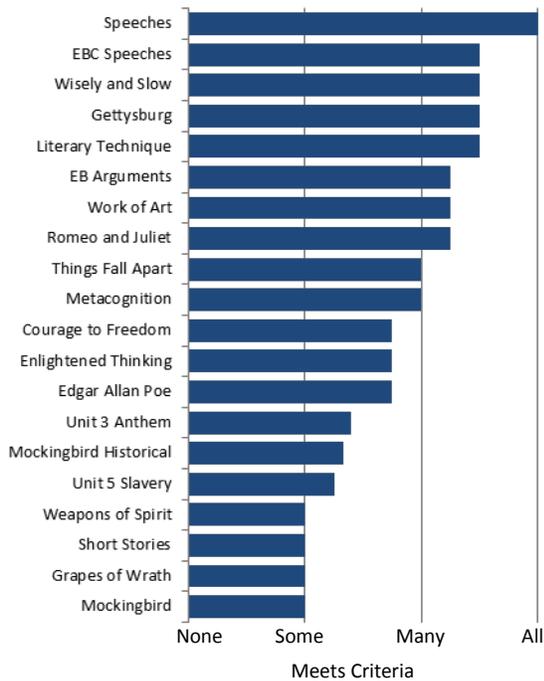


Figure 22. EQUIP. Examines whether a unit is responsive to varied student learning needs.

Assessment

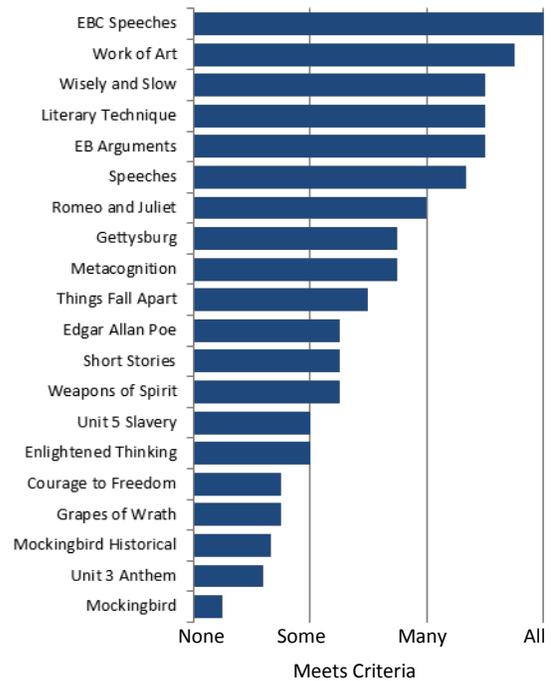


Figure 23. EQUIP. Unit regularly assesses whether students are mastering standards-based content and skills.

Deeper Learning

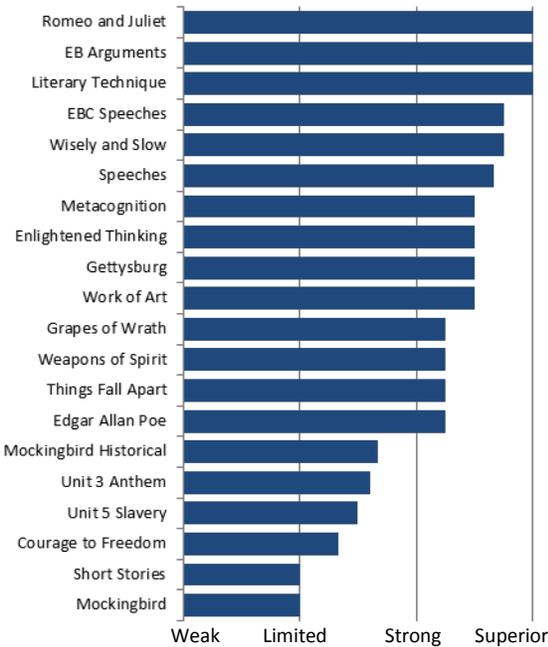


Figure 24. Achieve OER. Measures the unit’s ability to engage learners in one or deeper learning skills, including think critically and solve complex problems, reason abstractly, construct viable arguments and apply discrete knowledge and skills to real-world situations.

Quality of Explanation of Subject Matter

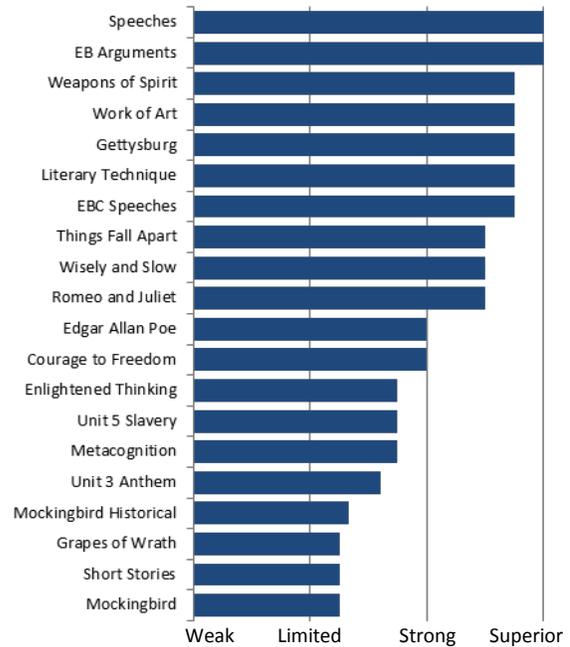


Figure 25. Achieve OER. Rates how thoroughly the subject matter is explained or otherwise revealed in the object.

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](https://www.ospi.wa.gov/oer-project-materials-review) website.

DATA ANALYSIS APPROACH

EXPLORATORY DATA ANALYSIS

Four instruments were used to consider the reviewed OER: IMET, 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. As noted earlier, the IMET rubric was not used in the ELA review due to the unit level nature of the ELA materials.

Each instrument had one or more scales comprised of one or more items. For example, in the EQuIP rubric for math, there were four scales, Alignment, Key Shifts, Instructional Support and Assessment. Those scales each had from three to nine 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

IMET Ratings	
Strongly agree	3
Agree	2
Disagree	1
Strongly disagree	0

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

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

EQuIP Overall Ratings	
Exemplar	11–12
Exemplar if Improved	8–10
Revision Needed	3–7
Not Ready for Review	0–2

Since the Overall Ratings EQuIP scores had unequal intervals between ratings, we did not convert these values to a 0–3 point scale. These scores appear as a separate reporting point and are not considered in any comparison charts showing average scores

Data was collected using PDF forms that were electronically submitted to OSPI staff. Data was recorded using the conversion tables shown above during the review collection process. The results were compiled into data sets that were then cleaned to use consistent references for unit titles, developers, and other metadata. 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 of average scores. Instead this “How would you use this resource” data appears as a separate chart (see figure 4).

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. Five were Geometry, one was Integrated Math 2, and one was Algebra 1. Each course was assigned to four independent reviewers. As capacity allowed, some resources were examined by five reviewers. CK12 Geometry Concepts, CK12 Honors Geometry Concepts, and EngageNY Geometry each received five independent reviews. In total, there were 31 reviews.

ELA

There were 20 ELA units reviewed. Each unit was assigned to four independent reviewers. Two resources, *To Kill a Mockingbird* Historical Perspective and NYC Department of Education Speeches, received three reviews. One resource, Saylor Unit 3 Anthem, received five reviews. In total, there were 79 reviews.

Though many of the full-courses and units reviewed in this process were crafted to address the CCSS, several of the resources pre-date the CCSS. Thus, the review process compared these materials against target standards that developers were not originally aiming for at material creation. In those instances, we noticed much higher variation in reviewer scores. Though still within acceptable ranges of inter-rater reliability, interpretation of how well the legacy resources aligned with the new standards was a bit more challenging and open to user interpretation of the resource intent.

TESTING REVIEWER BIAS—MATHEMATICS

We see the average score given by each reviewer, sorted in increasing order, with a 95% confidence interval for the reviewer’s mean score. There do appear to be some slight differences between reviewers, but this may just have been due to chance; some reviewers may have been assigned better curriculum, while others may have reviewed only less aligned curriculum.

In order to test whether any reviewer had a tendency to over- or under-rate, we performed a t-test comparing each reviewer’s average score to the entire

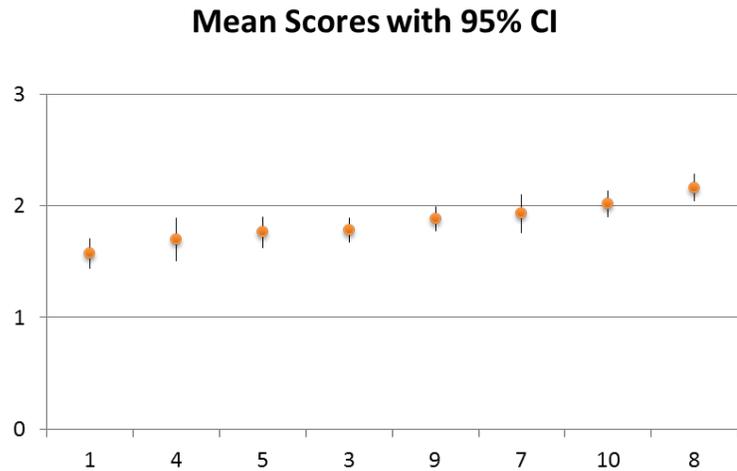


Figure 26. Math reviewer average scores with a 95% confidence interval.

sample to test whether the reviewer tended to score away from the mean. The results are shown in Table 1. Since we are performing tests for eight reviewers, it is important to adjust for multiple comparisons to avoid finding a difference significant when it could have happened by chance when drawing eight means from the same distribution. The table 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 this case, we see that even the smallest p-value does not fall below its corresponding adjusted significance level, 0.05/10, so we can conclude that there is no evidence of reviewer bias.

Table 1. t-test results for reviewer bias

Reviewer	p-value	Adjusted significance level
9	0.1056	0.0062
5	0.2129	0.0071
1	0.2794	0.0083
8	0.2932	0.0100
3	0.5177	0.0125
10	0.6196	0.0167
7	0.6418	0.0250
4	0.6739	0.0500

TESTING REVIEWER BIAS—ELA

We see the average score given by each reviewer, sorted in increasing order, with a 95% confidence interval for the reviewer’s mean score. There do appear to be some slight differences between reviewers, but this may just have been due to chance; some reviewers may have been assigned better resources, while others may have reviewed only less aligned resources.

In order to test whether any reviewer had a tendency to over- or under-rate, we performed a t-test comparing each reviewer’s average score to the entire sample to test whether the reviewer tended

to score away from the mean. The results are shown in Table 2. Since we are performing tests for 10 reviewers, it is important to adjust for multiple comparisons to avoid finding a difference significant when it could have happened by chance when drawing 10 means from the same distribution. The table 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 this case, we see that even the smallest p-value does not fall below its corresponding adjusted significance level, $0.05/10$, so we can conclude that there is no evidence of reviewer bias.

Mean Scores with 95% CI

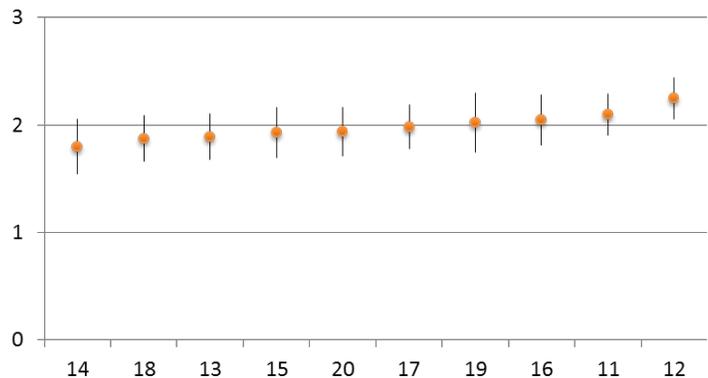


Figure 27. ELA reviewer average scores with a 95% confidence interval.

Table 2. t-test results for reviewer bias

Reviewer	p-value	Adjusted significance level
12	0.2577	0.0050
20	0.3090	0.0056
16	0.3425	0.0062
11	0.3772	0.0071
14	0.4654	0.0083
19	0.5773	0.0100
15	0.7129	0.0125
17	0.7487	0.0167
18	0.9108	0.0250
13	0.9249	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.

Molly Berger	Educational Service District 105	Instructional Improvement Coordinator (National Board Certified)
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George Christoph	North Thurston School District, River Ridge High School	Secondary Math 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)
Elissa Farmer	Seattle School District, John Stanford Center for Educational Excellence	Curriculum Specialist, Math
Sue Geiger	Educational Service District 113	Assessment, Intervention, and Professional Development TOSA
Kathleen Hodges	Educational Services District 189	Curriculum Coordinator (National Board Certified)
Charles Meierdiercks	Argosy Online University	Adjunct Professor
Casey Monahan	Walla Walla Public Schools, Walla Walla High School	Secondary English Tier II and AP Language (National Board Certified)
Charles Murphy	Toppenish School District, Toppenish High School	Secondary ELA Instructor
Monica Nelson	Walla Walla School District, Walla Walla High School	Secondary Math Teacher
Stephen Sears	Vashon Island School District, Vashon Island High School	Secondary Math Teacher/Math Chair
Gayle Smith	Snoqualmie Valley School District, Mount Si High School	Instructional Technology Specialist (National Board Certified)
Sandra Stroup	Richland School District, Richland High School	AP Language and Composition Teacher (National Board Certified)
Randall Wheeler	Wapato School District, Wapato High School	Secondary Math Teacher
Pete Whittekiend	Selkirk School District, Selkirk High School	Secondary Math Teacher
Matt Yarkosky	Bethel School District, Graham-Kapowsin High School	Assistant Principal (National Board Certified)

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RELEVANT STRATEGIES (DATA ANALYSIS)

Porsche Everson, President



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