

# EQuIP Review Feedback



**Lesson/Unit Name:** Roving Ranges

**Content Area:** Mathematics

**Grade Level:** 6

**Overall Rating:**

**E/I**

Exemplar if Improved

## Dimension I – Alignment to the Depth of the CCSS

<p><i>The lesson/unit aligns with the letter and spirit of the CCSS:</i></p> <ul style="list-style-type: none"><li>✓ Targets a set of grade-level CCSS mathematics standard(s) to the full depth of the standards for teaching and learning.</li><li>❑ Standards for Mathematical Practice that are central to the lesson are identified, handled in a grade-appropriate way, and well connected to the content being addressed.</li><li>✓ Presents a balance of mathematical procedures and deeper conceptual understanding inherent in the CCSS.</li></ul>	<p>While this lesson states that it targets a set of 6th grade math standards (6.SP 1-5), it does not do so to the full depth of all of these standards. It does, however, address the central idea of statistics at this grade level related to statistics and predicting variability. SP4 is addressed in that students display their data throughout the lesson using dot plots, histograms, and box plots. A more explicit connection could be needed for students to relate the content of this lesson to SP1. It is recommended that one or two standards be selected as the target standards for this lesson.</p> <p>The Standards for Mathematical Practice are embedded into the lesson, but are not explicitly noted. It might be useful to highlight SMP#2: Reason abstractly and quantitatively along with SMP#3: Construct viable arguments and critique the reasoning of others. Students will be working to create arguments to justify their reasoning for the range they selected in the game and then have the opportunity to revise their thinking on their group's poster. Making the Standards for Mathematical practices explicit by noting them throughout the lesson will make the connections clear to teachers.</p> <p>This lesson provides a balance of deeper conceptual understanding with mathematical procedures. The worksheets and poster problem provide opportunities for the students to practice representing their data in different ways. Requiring the students to amend their posters and the deeper questioning are used to spur the students on to deeper conceptual understanding of the content addressed.</p>
<p><b>Rating: 2 – Meets many of the criteria in the dimension</b></p>	

## Dimension II – Key Shifts the CCSS

<p><i>The lesson/unit reflects evidence of key shifts that are reflected in the CCSS:</i></p> <ul style="list-style-type: none"><li>✓ <b>Focus:</b> Lessons and units targeting the major work of the grade provide an especially in-depth treatment, with especially high expectations. Lessons and units targeting supporting work of the grade have visible connection to the major work of the grade and are sufficiently brief. Lessons and units do not hold students responsible for material from later grades.</li><li>❑ <b>Coherence:</b> The content develops through reasoning about the new concepts on the basis of previous understandings. Where appropriate, provides opportunities for</li></ul>	<p><b>Focus:</b> One of the critical areas for grade 6 is that students develop an ability to think statistically. The lesson targets an important concept and the central idea related to statistics and probability – namely, that “Statistical questions anticipate variability.” It may be important to make this explicit at later points in the lesson when discussing the student posters, particularly to those who require re-teaching of the concept in order to see the connection of this central idea to the rolling of the four dice. Examining the experimental probability and comparing it to the theoretical probability of dice sums is an engaging way to help students begin to think about this topic.</p> <p><b>Coherence:</b> The prerequisite skill of creating boxplots is mentioned in the lesson ("Prerequisite Note"). Secure knowledge is expected regarding line plots in grade 5. There is mention of standard deviation as a concept to be covered in high school in one of the ‘teacher tune-ups.’ It might be useful to teachers to include connections to standards from other domains as</p>
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<p>students to connect knowledge and skills within or across clusters, domains and learning progressions.</p> <p>✓ <b>Rigor:</b> Requires students to engage with and demonstrate challenging mathematics with appropriate balance among the following:</p> <ul style="list-style-type: none"> <li>– <b>Application:</b> Provides opportunities for students to independently apply mathematical concepts in real-world situations and solve challenging problems with persistence, choosing and applying an appropriate model or strategy to new situations.</li> <li>– <b>Conceptual Understanding:</b> Develops students' conceptual understanding through tasks, brief problems, questions, multiple representations and opportunities for students to write and speak about their understanding.</li> <li>– <b>Procedural Skill and Fluency:</b> Expects, supports and provides guidelines for procedural skill and fluency with core calculations and mathematical procedures (when called for in the standards for the grade) to be performed quickly and accurately.</li> </ul>	<p>well as from other grades in a more explicit way. This lesson provides a foundation for statistics and has clear connections to later learning in grade 6 and beyond with statistics and probability.</p> <p>Rigor: This lesson requires students to apply mathematical thinking and statistical reasoning using the real-world application of tossing dice. Students are required to provide reasoning for their selection of the range and have opportunities to revise their thinking as the lesson progresses. A formula is provided for the students in order for them to calculate points <math>(20 - (\max - \min))</math>, but with no accompanying explanation or discussion.</p>
<p>Rating: <b>2 – Meets many of the criteria in the dimension</b></p>	

### Dimension III – Instructional Supports

<p><i>The lesson/unit is responsive to varied student learning needs:</i></p> <ul style="list-style-type: none"> <li>✓ Includes clear and sufficient guidance to support teaching and learning of the targeted standards, including, when appropriate, the use of technology and media.</li> <li>✓ Uses and encourages precise and accurate mathematics, academic language, terminology and concrete or abstract representations (e.g., pictures, symbols, expressions, equations, graphics, models) in the discipline.</li> <li>✓ Engages students in productive struggle through relevant, thought-provoking questions, problems and tasks that stimulate interest and elicit mathematical thinking.</li> <li>✓ Addresses instructional expectations and is easy to understand and use.</li> <li>☐ Provides appropriate level and type of scaffolding, differentiation, intervention and support for a broad range of learners. <ul style="list-style-type: none"> <li>– Supports diverse cultural and linguistic backgrounds, interests and styles.</li> <li>– Provides extra supports for students working below grade level.</li> </ul> </li> </ul>	<p>Overall, the lesson provides adequate guidance to support the teaching and learning of the targeted standards. Directions are clear and teacher questions are provided throughout the lesson. The "Teacher Tune-ups" provide background information and support as well as help teachers to implement the lesson with fidelity. Photos of student work along with annotated teacher notes are helpful in guiding teachers through the process of assessing student work and thinking. One suggestion is to include additional guidance in presenting the formula for "How many points?" Rationale for the use of the formula would encourage knowledge construction rather than use of an algorithm. The formula as it is currently presented in the lesson does not make a connection to students' prior knowledge.</p> <p>This lesson encourages the use of visuals, models, and mathematical language to explain and show statistical reasoning through the poster task. There are, however, several terms specific to statistics that seem to be assumed such as minimum, maximum, range, and median. This appears to be an exploratory lesson, but it is not clear which terms students should know prior to this lesson. Including prerequisite vocabulary is a suggestion for improvement as well as indicating how this vocabulary will be developed throughout the lesson.</p> <p>This lesson engages students in productive struggle and mathematical thinking through the whole class discussions and small group work where they are required to make connections to statistical thinking. The poster task requires students to show their thinking and amend it when needed.</p>
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<ul style="list-style-type: none"> <li>- Provides extensions for students with high interest or working above grade level.</li> </ul> <p><u>A unit or longer lesson should:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Recommend and facilitate a mix of instructional approaches for a variety of learners such as using multiple representations (e.g., including models, using a range of questions, checking for understanding, flexible grouping, pair-share).</li> <li><input type="checkbox"/> Gradually remove supports, requiring students to demonstrate their mathematical understanding independently.</li> <li><input type="checkbox"/> Demonstrate an effective sequence and a progression of learning where the concepts or skills advance and deepen over time.</li> <li><input type="checkbox"/> Expect, support and provide guidelines for procedural skill and fluency with core calculations and mathematical procedures (when called for in the standards for the grade) to be performed quickly and accurately.</li> </ul>	<p>Asking students to consider what will happen when they use an additional die helps students extend their mathematical thinking.</p> <p>The language used in the lesson is clear. The numbered levels with descriptors of students' current level of thinking provide a clear reference for teachers to use when looking at student work. Questions and prompts are provided throughout.</p> <p>While there is not a distinct section of the lesson devoted to differentiation, there are notes throughout that guide the teacher through remediating for those who may need additional support and extensions for those who may be ready for more. There does not appear to be any explicit mention of how to support diverse cultural and linguistic backgrounds, nor any mention of work for students working above grade level. The directions for creating the poster are quite wordy and students requiring support in English may find this to be a challenge to navigate. Including vocabulary support would be useful as well.</p>
<p>Rating: <b>2 – Meets many of the criteria in the dimension</b></p>	

#### Dimension IV – Assessment

<p><i>The lesson/unit regularly assesses whether students are mastering standards-based content and skills:</i></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Is designed to elicit direct, observable evidence of the degree to which a student can independently demonstrate the targeted CCSS.</li> <li>✓ Assesses student proficiency using methods that are accessible and unbiased, including the use of grade-level language in student prompts.</li> <li>✓ Includes aligned rubrics, answer keys and scoring guidelines that provide sufficient guidance for interpreting student performance.</li> </ul> <p><u>A unit or longer lesson should:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Use varied modes of curriculum-embedded assessments that may include pre-, formative, summative and self-assessment measures.</li> </ul>	<p>As the lesson is currently written, there is little to no opportunity for students to apply their mathematical understanding in an independent manner. Reference is made throughout the lesson to class discussions and students working in groups. The prompts and directions are grade-level appropriate. On page 6, under "Directions for teacher," the levels of thinking are outlined. This helps to provide consistency in scoring and a useful informal assessment of student learning. This lesson would be improved with the inclusion of an assessment that would target individual students' understanding and ability to apply the targeted standards in a novel situation.</p>
<p>Rating: <b>2 – Meets many of the criteria in the dimension</b></p>	

#### Summary Comments

This sixth grade lesson provides a rich mathematical task for students to explore statistical thinking. Students are encouraged to engage in productive struggle and to revise their work by amending their poster. Including explicit mention of the Standards for Mathematical Practice as well as an independent assessment to guide the teacher in further instruction would greatly improve this lesson.

### **Rating Scales**

#### **Rating Scale for Dimensions I, II, III, IV:**

- 3:** Meets most to all of the criteria in the dimension  
**2:** Meets many of the criteria in the dimension
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- 1:** Meets some of the criteria in the dimension  
**0:** Does not meet the criteria in the dimension

#### **Overall Rating for the Lesson/Unit:**

- E:** Exemplar – Aligned and meets most to all of the criteria in dimensions II, III, IV (**total 11 – 12**)  
**E/I:** Exemplar *if* Improved – Aligned and needs some improvement in one or more dimensions (**total 8 – 10**)
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- R:** Revision Needed – Aligned partially and needs significant revision in one or more dimensions (**total 3 – 7**)  
**N:** Not Ready to Review – Not aligned and does not meet criteria (**total 0 – 2**)

### **Rating Descriptors**

#### **Descriptors for Dimensions I, II, III, IV:**

- 3: Exemplifies CCSS Quality** - meets the standard described by criteria in the dimension, as explained in criterion-based observations.  
**2: Approaching CCSS Quality** - meets many criteria but will benefit from revision in others, as suggested in criterion-based observations.
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- 1: Developing toward CCSS Quality** - needs significant revision, as suggested in criterion-based observations.  
**0: Not representing CCSS Quality** - does not address the criteria in the dimension.

#### **Descriptor for Overall Ratings:**

- E: Exemplifies CCSS Quality** – Aligned and exemplifies the quality standard and exemplifies most of the criteria across Dimensions II, III, IV of the rubric.  
**E/I: Approaching CCSS Quality** – Aligned and exemplifies the quality standard in some dimensions but will benefit from some revision in others.
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- R: Developing toward CCSS Quality** – Aligned partially and approaches the quality standard in some dimensions and needs significant revision in others.  
**N: Not representing CCSS Quality** – Not aligned and does not address criteria.