EQuIP Rubric for Lessons & Units: Science

Introduction

The Educators Evaluating the Quality of Instructional Products (EQuIP) Rubric for science provides criteria by which to measure the alignment and overall quality of lessons and units with respect to the Next Generation Science Standards (NGSS). The purposes of the rubric and review process are to: (1) review existing lessons and units to determine what revisions are needed; (2) provide constructive criterion-based feedback and suggestions for improvement to developers; (3) identify exemplars/models for teachers' use within and across states; and (4) to inform the development of new lessons and units.

To effectively apply this rubric, an understanding of the National Research Council's *A Framework for K–12 Science Education and the Next Generation Science Standards*, including the NGSS shifts (appendix A of the NGSS), is needed. Unlike the EQuIP Rubrics for mathematics and ELA, there is not a category in the science rubric for shifts. Over the course of the rubric development, writers and reviewers noted that the shifts fit naturally into the other three categories. For example, the blending of the three-dimensions, or three-dimensional learning, is addressed in each of the three categories; coherence is addressed in the first two categories; connections to the Common Core State Standards is addressed in the first category; etc. Each category includes criteria by which to evaluate the integration of engineering, when included in a lesson or unit, through practices or disciplinary core ideas. Another difference between the EQuIP Rubrics from mathematics and ELA is in the name of the categories; the rubric for science refers to them simply as *categories*, whereas the math and ELA rubrics refer to the categories as dimensions. This distinction was made because the Next Generation Science Standards already uses the term *dimensions* to refer to practices, disciplinary core ideas, and crosscutting concepts.

The architecture of the NGSS is significantly different from other sets of standards. The three dimensions, crafted into performance expectations, describe what is to be assessed following instruction and therefore are the measure of proficiency. A lesson or unit may provide opportunities for students to demonstrate performance of practices connected with their understanding of core ideas and crosscutting concepts as foundational pieces. This three-dimensional learning leads toward eventual mastery of performance expectations. In this scenario, quality materials should clearly describe or show how the lesson or unit works coherently with previous and following lessons or units to help build toward eventual mastery of performance expectations. The term *element* is used in the rubric to represent the relevant, bulleted practices, disciplinary core ideas, and crosscutting concepts that are articulated in the foundation boxes of the standards as well as the in the NGSS appendices on each dimension. Given the understanding that a lesson or unit may include the blending of practices, disciplinary core ideas, and crosscutting concepts that are not identical to the combination of practices, disciplinary core ideas, and crosscutting concepts in a performance expectation, the new term *elements* was needed to describe these smaller units of the three dimensions. Although it is unlikely that a single lesson would provide adequate opportunities for a student to demonstrate proficiency on every dimension of a performance expectation, high-quality units are more likely to provide these opportunities to demonstrate proficiency on one or more performances expectations.

There is a recognition among educators that curriculum and instruction will need to shift with the adoption of the NGSS, but there is currently a lack of NGSS-aligned materials. The power of the rubric is in the feedback and suggestions for improvement it provides curriculum developers and the productive conversations educators have while evaluating materials (i.e., the review process). For curriculum developers, the rubric and review process provide evidence on the quality and alignment of a lesson or unit to the NGSS. Additionally, the rubric and review process generate suggestions for improvement on how materials can be further improved and more closely aligned to the NGSS. As more NGSS lessons and units are developed, this rubric may change to meet the evolving needs of supporting both educators in evaluating materials and developers in the modification and creation of materials. Additionally, support materials will be developed to complement the use of this rubric, such as a professional development guide, a criterion discussion guide, and publishers' criteria that will be more focused on textbooks and comprehensive curriculums.

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Directions

The first step in the review process is to become familiar with the rubric, the lesson or unit, and the practices, disciplinary core ideas, and crosscutting concepts targeted in the lesson or unit. The three categories in the rubric correspond to: alignment to the NGSS, instructional supports, and monitoring student progress. Specific criteria within each category should be considered separately as part of the complete review process and are used to provide sufficient information for determination of overall quality of the lesson or unit. For the purposes of using the rubric, a lesson is defined as: a coherent set of instructional activities and assessments aligned to the NGSS that may extend over a few to several class periods or days and a unit is defined as: coherent set of lessons aligned to the NGSS that extend over a longer period of time.

Also important to the review process is feedback and suggestions for improvement to the developer of the resource. For this purpose a set of response forms is included so that the reviewer can effectively provide criterion-based feedback and suggestions for improvement for each category. The response forms correspond to the criteria of the rubric. Evidence for each criterion must be identified and documented and criterion-based feedback and suggestions for improvement should be given to help improve the lesson or unit.

While it is possible for the rubric to be applied by an individual, the quality review process works best with a team of reviewers, as a collaborative process, with the individuals recording their thoughts and then discussing with other team members before finalizing their feedback and suggestions for improvement. Discussions should focus on understanding all reviewers' interpretations of the criteria and the evidence they have found. The goal of the process is to eventually calibrate responses across reviewers and to move toward agreement about quality with respect to the NGSS. Commentary needs to be constructive, with all lessons or units considered "works in progress." Reviewers must be respectful of team members and the resource contributor. Contributors should see the review process as an opportunity to gather feedback and suggestions for improvement rather than to advocate for their work. All feedback and suggestions for improvement should be criterion-based and have supporting evidence from the lesson or unit cited.

Note: This rubric will eventually have scoring guidelines for each category, as well as for an overall rating. However, given the current lack of NGSS-aligned materials, rather than focusing on ratings at this point in time, the focus should be on becoming familiar with the rubric and using it to provide criterion-based feedback and suggestions for improvement to developers and make revisions to existing materials.

Step 1 – Review Materials

The first step in the review process is to become familiar with the rubric, the lesson or unit, and the practices, disciplinary core ideas, and crosscutting concepts targeted in the lesson or unit.

- Review the rubric and record the grade and title of the lesson or unit on the response form.
- Scan to see what the lesson or unit contains, what practices, disciplinary core ideas, and crosscutting concepts are targeted, and how it is organized.
- Read key materials related to instruction, assessment, and teacher guidance.

Step 2 – Apply Criteria in Category I: Alignment to the NGSS

The second step is to evaluate the lesson or unit using the criteria in the first category, first individually and then as a team.

- Closely examine the lesson or unit through the "lens" of each criterion in the first category of the response form.
- Individually check each criterion on the response form for which clear and substantial evidence is found and record the evidence and reasoning.
- As a team, discuss criteria for which clear and substantial evidence is found, as well as criterion-based suggestions for specific improvements that might be needed to meet criteria.

If the lesson or unit is not closely aligned to the Next Generation Science Standards, it may not be appropriate to move on to the second and third categories. Professional judgment should be used when weighing the individual criterion. For example, a lesson without crosscutting concepts explicitly called out may be easier to revise than one without appropriate disciplinary core ideas; such a difference may determine whether reviewers believe the lesson merits continued evaluation or not.

Step 3 – Apply Criteria in Categories II and III: Instructional Supports and Monitoring Student Progress

The third step is to evaluate the lesson or unit using the criteria in the second and third categories, first individually and then as a group.

- Closely examine the lesson or unit through the "lens" of each criterion in the second and third categories of the response form.

- Individually check each criterion on the response form for which clear and substantial evidence is found and record the evidence and reasoning.
- As a team, discuss criteria for which clear and substantial evidence is found, as well as criterion-based suggestions for specific improvements that might be needed to meet criteria.

When working in a group, teams may choose to compare ratings after each category or delay conversation until each person has rated and recorded input for the two remaining categories. Complete consensus among team members is not required but discussion is a key component of the review process.

EQuIP Rubric for Lessons & Units: Science

I. Alignment to the NGSS	II. Instructional Supports	III. Monitoring Student Progress
The lesson or unit aligns with the conceptual shifts of the NGSS: A. Grade-appropriate elements of the science and engineering practice(s), disciplinary core idea(s), and crosscutting concept(s), work together to support students in three-dimensional learning to make sense of phenomena and/or to design solutions to problems. i. Provides opportunities to develop and use specific elements of the practice(s) to make sense of phenomena and/or to design solutions to problems. ii. Provides opportunities to develop and use specific elements of the disciplinary core idea(s) to make sense of phenomena and/or to design solutions to problems. iii. Provides opportunities to develop and use specific elements of the crosscutting concept(s) to make sense of phenomena and/or to design solutions to problems. iv. The three dimensions work together to support students to make sense of phenomena and/or to design solutions to problems. A unit or longer lesson will also: B. Lessons fit together coherently targeting a set of performance expectations. i. Each lesson links to previous lessons and provides a need to engage in the current lesson. ii. The lessons help students develop proficiency on a targeted set of performance expectations. C. Where appropriate, disciplinary core ideas from different disciplines are used together to explain phenomena. D. Where appropriate, crosscutting concepts are used in the explanation of phenomena from a variety of disciplines. E. Provides grade-appropriate connection(s) to the Common Core State Standards in Mathematics and/or English Language Arts & Literacy in History/Social Studies, Science and Technical Subjects.	The lesson or unit supports instruction and learning for all students: A. Engages students in authentic and meaningful scenarios that reflect the practice of science and engineering as experienced in the real world and that provide students with a purpose (e.g., making sense of phenomena and/or designing solutions to problems). i. The context, including phenomena, questions, or problems, motivates students to engage in three-dimensional learning. ii. Provides students with relevant phenomena (either firsthand experiences or through representations) to make sense of and/or relevant problems to solve. iii. Engages students in multiple practices that work together with disciplinary core ideas and crosscutting concepts to support students in making sense of phenomena and/or designing solutions to problems. iv. Provides opportunities for students to connect their explanation of a phenomenon and/or their design solution to a problem to their own experience. v. When engineering performance expectations are included, they are used along with disciplinary core ideas from physical, life, or earth and space sciences. B. Develops deeper understanding of the practices, disciplinary core ideas, and crosscutting concepts by identifying and building on students' prior knowledge. C. Uses scientifically accurate and grade-appropriate scientific information, phenomena, and representations to support students' three-dimensional learning. D. Provides opportunities for students to express, clarify, justify, interpret, and represent their ideas and respond to peer and teacher feedback orally and/or in written form as appropriate to support student's three-dimensional learning. E. Provides guidance for teachers to support differentiated instruction in the classroom so that every student's needs are addressed by including: i. Suggestions for how to connect instruction to the students' home, neighborhood, community and/or culture as appropriate. ii. Appropriate reading, writing, listening, and/or speaking alternatives (e.g., translations, picture support, graphic organizers) for students who are English language learners, have special needs, or read well below the grade level. iii. Suggested extra support (e.g., phenomena, representations, tasks) for students who are struggling to meet the performance expectations. iv. Extensions for students with high interest or who have already met the performance expectations to develop deeper understanding of the practices, disciplinary core ideas, and crosscutting concepts. A unit or longer lesson will also: F. Provides guidance for teachers throughout the unit for how lessons build on each other to support students developing deeper understanding of the practices, disciplinary core ideas, and crosscutting concepts over the course of the unit. G. Provides supports to help students engage in the practices as needed and gradually adjusts supports over time so that students are increasingly responsible for making sense of phenomena and/or designing solutions to problems.	The lesson or unit supports monitoring student progress: A. Elicits direct, observable evidence of three-dimensional learning by students using practices with core ideas and crosscutting concepts to make sense of phenomena and/or to design solutions. B. Formative assessments of three-dimensional learning are embedded throughout the instruction. C. Includes aligned rubrics and scoring guidelines that provide guidance for interpreting student performance along the three dimensions to support teachers in (a) planning instruction and (b) providing ongoing feedback to students. D. Assessing student proficiency using methods, vocabulary, representations, and examples that are accessible and unbiased for all students. A unit or longer lesson will also: E. Includes pre-, formative, summative, and self-assessment measures that assess three-dimensional learning. F. Provides multiple opportunities for students to demonstrate performance of practices connected with their understanding of disciplinary core ideas and crosscutting concepts and receive feedback.

EQuIP Rubric for Lessons & Units: Science

Reviewer Name or ID: **Oralia Gil, LAB-AIDS** **Grade: High School Biology**

Science Lesson/Unit Title: **CELL BIOLOGY: WORLD HEALTH - SCIENCE & GLOBAL ISSUES BIOLOGY, LAB-AIDS © 2012**

I. Alignment to the NGSS

The lesson or unit aligns with the conceptual shifts of the NGSS: *This is ONE lesson sample (the 5th lesson in the unit).*

Criteria	Specific evidence from materials and reviewers' reasoning	Suggestions for improvement
☐ A. Grade-appropriate elements of the science and engineering practice(s), disciplinary core idea(s), and crosscutting concept(s), work together to support students in three-dimensional learning to make sense of phenomena and/or to design solutions to problems. i. Provides opportunities to develop and use specific elements of the practice(s) to make sense of phenomena and/or to design solutions to problems. ii. Provides opportunities to develop and use specific elements of the disciplinary core idea(s) to make sense of phenomena and/or to design solutions to problems. iii. Provides opportunities to develop and use specific elements of the crosscutting concept(s) to make sense of phenomena and/or to design solutions to problems. iv. The three dimensions work together to support students to make sense of phenomena and/or to design solutions to problems.	SGI Biology Cell Biology: World Health 5 INVESTIGATION: What Do Specialized Cells Do? Students investigate the different numbers and types of organelles required for specialized plant and animal cells. Citations: Practices Developing and Using Models Cross cutting concepts: Cause & Effect; Structure & Function DCI: LS1.A PE: HS-LS3-1 [SGI BIO: CELL BIO Activity 5, SB p. 184-185] [SGI BIO: CELL BIO Activity 5, TE p. 290-293]	

A unit or longer lesson will also: *This is a full unit of 18 activities that takes approximately 6-8 weeks of instruction.*

Criteria	Specific evidence from materials and reviewers' reasoning	Suggestions for improvement
☐ B. Lessons fit together coherently targeting a set of performance expectations. i. Each lesson links to previous lessons and provides a need to engage in the current lesson. ii. The lessons help students develop proficiency on a targeted set of performance expectations.	In the SGI Biology Cell Biology: World Health unit, students examine several diseases and their social, environmental, and economic consequences. They learn about the mechanisms of these diseases at the cellular level. Students also investigate the structures and functions of normal cells and some of the processes that occur inside these cells. At the end of the unit, students make recommendations for how	

	best to allocate limited funding to address world health problems. Citations: The unit aligns with PE: HS-LS1-1; HS-LS1-2; HS-LS1-4; HS-LS1-5; HS-LS1-6; HS-LS1-7; HS-LS3-1 [SGI BIO: CELL BIO Unit Overview TR p. 26-28] [SGI BIO: CELL BIO Assessment Blueprint TR p. 114]	
☐ C. Where appropriate, disciplinary core ideas from different disciplines are used together to explain phenomena.	This unit targets different disciplines to explain phenomena addressed during the study of cell specializations and differentiation, cell division and the cell cycle. Citations: Sample Activities: [SGI BIO: CELL BIO Activity 1, SB p. 157-160] [SGI BIO: CELL BIO Activity 1, TE p. 251-258] [SGI BIO: CELL BIO Activity 6, SB p. 186-190] [SGI BIO: CELL BIO Activity 6, TE p. 294-299] [SGI BIO: CELL BIO Activity 11, SB p. 216-218] [SGI BIO: CELL BIO Activity 11, TE p. 339-344] [SGI BIO: CELL BIO Activity 13, SB p. 229-235] [SGI BIO: CELL BIO Activity 13, TE p. 360-369]	
☐ D. Where appropriate, crosscutting concepts are used in the explanation of phenomena from a variety of disciplines.	This unit explores cross cutting concepts such as Analyzing & Interpreting Data; Asking Questions & Defining Problems; Engaging in Argument from Evidence; Obtaining, Evaluating, & Communicating Information; Using Mathematics & Computational Thinking; Developing & Using Models; Planning & Carrying Out Investigations. Citations: Sample Activities: [SGI BIO: CELL BIO Activity 1, SB p. 157-160] [SGI BIO: CELL BIO Activity 1, TE p. 251-258] [SGI BIO: CELL BIO Activity 6, SB p. 186-190] [SGI BIO: CELL BIO Activity 6, TE p. 294-299] [SGI BIO: CELL BIO Activity 11, SB p. 216-218] [SGI BIO: CELL BIO Activity 11, TE p. 339-344] [SGI BIO: CELL BIO Activity 13, SB p. 229-235] [SGI BIO: CELL BIO Activity 13, TE p. 360-369]	

☐ E. Provides grade-appropriate connection(s) to the Common Core State Standards in Mathematics and/or English Language Arts & Literacy in History/Social Studies, Science and Technical Subjects.	CELL BIOLOGY: WORLD HEALTH unit provides constant opportunities for students to improve their English language skills. Students are expected to read informational text and procedures. The Analysis Questions, Designing Investigations activities, and science notebook entries all require that students write clearly. Students practice their oral language skills in discussions, debates, and presentations. Citations: SL.11-12.4; SL.11-12.5; RST.11-12.7; RST.11-12.9; WHST.9-12.2; WHST.9-12.1; WHST.9-12.9 CELL BIOLOGY: WORLD HEALTH unit supports CC Mathematics content: Model with mathematics [MP.2; (MP.4); HSN-Q.A.2; (HSS-IC.A.1)] [SGI BIO: CELL BIO Activity 1, SB p. 157-160] [SGI BIO: CELL BIO Activity 1, TE p. 251-258]	

If the lesson or unit is not closely aligned to the Next Generation Science Standards, it may not be appropriate to move on to the second and third categories. Professional judgment should be used when weighing the individual criterion. For example, a lesson without crosscutting concepts explicitly called out may be easier to revise than one without appropriate disciplinary core ideas; such a difference may determine whether reviewers believe the lesson merits continued evaluation or not.

II. Instructional Supports

The lesson or unit supports instruction and learning for all students: *This is a full unit of 18 activities that takes approximately 6-8 weeks of instruction.*

Criteria	Specific evidence from materials and reviewers' reasoning	Suggestions for improvement
☐ A. Engages students in authentic and meaningful scenarios that reflect the practice of science and engineering as experienced in the real world and that provide students with a purpose (e.g., making sense of phenomena and/or designing solutions to problems). i. The context, including phenomena, questions, or problems, motivates students to engage in three-dimensional learning. ii. Provides students with relevant phenomena (either firsthand experiences or through representations) to make sense of and/or relevant problems to solve. iii. Engages students in multiple practices that work together with disciplinary core ideas and crosscutting concepts to support students in making sense of phenomena and/or designing solutions to problems. iv. Provides opportunities for students to connect their explanation of a phenomenon and/or their design solution to a problem to their own experience. v. When engineering performance expectations are included, they are used along with disciplinary core ideas from physical, life, or earth and space sciences.	SGI Biology Cell Biology: World Health Activity 11: Investigating Enzyme Function Students design an experiment to test the effects of pH and temperature on the function of an enzyme. This activity follows investigations of the structure and function of cell membranes and the functions of proteins in cells (activities 7-10). The activities that follow explore and explain the energy needs of cells and cell cycle to further develop understanding. The effects of disruptions in the cell cycle (cancer, HIV, etc.) are explored via case studies at end of select activities and in analysis questions. Citations: Practices Analyzing and Interpreting Data; Constructing Explanations & Designing Solutions; Planning & Carrying Out Investigations Cross cutting concepts: Stability and Change DCI: PE: HS-LS3-1 [SGI BIO: CELL BIO Activity 11, SB p. 216-218] [SGI BIO: CELL BIO Activity 11, TE p. 339-344]	
☐ B. Develops deeper understanding of the practices, disciplinary core ideas, and crosscutting concepts by identifying and building on students' prior knowledge.	SGI Biology Cell Biology: World Health Activity 18 World Health Proposal Students write a world health proposal to address the problems of disease and vote on which to fund when funding is limited. This is the 18th activity in the unit providing students with the opportunity to use knowledge gained throughout the unit to relate evidence to explanations by developing a proposal for funding and then the class decides how to allocate funding after considering all the proposals. Citations:	

	Practices Constructing Explanations & Designing Solutions; Engaging in Argument from Evidence; Obtaining, Evaluating, & Communicating Information Cross cutting concepts: (Stability & Change); (Systems & System Models) DCI: (ETS1.B); ETS1.C PE: [SGI BIO: CELL BIO Activity 18, SB p. 252-253] [SGI BIO: CELL BIO Activity 18, TE p. 394-398]	
☐ C. Uses scientifically accurate and grade-appropriate scientific information, phenomena, and representations to support students' three-dimensional learning.	SGI Biology Cell Biology: World Health Activities provide students with multiple model (physical and electronic), card sorts, readings with literacy supports, case studies, laboratories, and research projects to develop learning across the three dimensions. Content includes cell structure and function, the cell cycle, cell transport, and stem cell differentiation. Citations : Practices: Developing & Using Models; Structure & Function; Constructing Explanations & Designing Solutions Cross cutting concepts: Structure & Function; Energy & Matter; Stability & Change DCI: LS1.A; LS1.C; LS2.B; PS3.D PE: HS-LS1-2; HS-LS1-4; HS-LS1-5; HS-LS1-6; HS-LS1-7 [SGI BIO: CELL BIO Activity 4, SB p. 180-183] [SGI BIO: CELL BIO Activity 4, TE p. 284-289] [SGI BIO: CELL BIO Activity 12, SB p. 219-228] [SGI BIO: CELL BIO Activity 12, TE p. 347-358] [SGI BIO: CELL BIO Activity 13, SB p. 229-235] [SGI BIO: CELL BIO Activity 13, TE p. 360-369] [SGI BIO: CELL BIO Activity 16, SB p. 244-249] [SGI BIO: CELL BIO Activity 16, TE p. 381-388]	
☐ D. Provides opportunities for students to express, clarify, justify, interpret, and represent their ideas and respond to peer and teacher feedback orally and/or in written form as appropriate to support student's three-dimensional learning.	SGI Biology Cell Biology: World Health analysis questions at the end of each activity provide students with various opportunities to express, justify and represent their ideas. SEPUP's 4–2–1 model ensures that individual learning is enhanced through group interaction. The 4–2–1 model refers	

	to configurations in which students work in groups of 4 to use materials and conduct the activity, 2 students will pair to discuss and present data, and each student is individually accountable for the results of each activity and for mastering the concepts discussed. Citations: [SGI BIO: CELL BIO Assessment Blueprint TR p. 114] [SGI BIO: CELL BIO TR p. Literacy Sheet 2a, 3, 4] [SGI BIO: CELL BIO Activity 1, TE p. 251-258] [SGI BIO: CELL BIO Activity 10, TE p. 332-334] [SGI BIO: CELL BIO Activity 13, TE p. 360-369]	
☐ E. Provides guidance for teachers to support differentiated instruction in the classroom so that every student's needs are addressed by including: i. Suggestions for how to connect instruction to the students' home, neighborhood, community and/or culture as appropriate. ii. Appropriate reading, writing, listening, and/or speaking alternatives (e.g., translations, picture support, graphic organizers) for students who are English language learners, have special needs, or read well below the grade level. iii. Suggested extra support (e.g., phenomena, representations, tasks) for students who are struggling to meet the performance expectations. iv. Extensions for students with high interest or who have already met the performance expectations to develop deeper understanding of the practices, disciplinary core ideas, and crosscutting concepts.	Issue-oriented science helps students see that science is connected to their lives and communities in many ways. The activities and investigations also require students to apply scientific evidence to and analyze the tradeoffs involved in personal and societal decisions. SEPUP is not an advocate of specific positions, and the course does not promote teachers' or students' acceptance of any position. Instead, it provides students with knowledge, skills, and understanding that will help them make their own informed decisions. SGI Biology Cell Biology: World Health consists of instructional support for the teacher in both the Teacher Guide and an additional Teacher Resource book. In the Teacher Resource book, the teacher will find a Diverse Learners section containing extensive information on the embedded strategies for diverse learners including students with learning disabilities, English Language Learners, and academically gifted students. Citation: [SGI BIO: CELL BIO TR p. 39-45] [SGI BIO: CELL BIO Activity 11, TE p. 339-344] [SGI BIO: CELL BIO Activity 3, TE p. 272-281]	

A unit or longer lesson will also: *This is a full unit of 18 activities that takes approximately 6-8 weeks of instruction.*

Criteria	Specific evidence from materials and reviewers' reasoning	Suggestions for improvement
☐ F. Provides guidance for teachers throughout the unit for how lessons build on each other to support students developing deeper understanding of the practices, disciplinary core ideas, and crosscutting concepts over the course of the unit.	Important concepts, skills and practices that spiral through each unit and the whole course. SEPUP introduces, develops, and reinforces scientific concepts in various ways. Key ideas and vocabulary introduced in one activity appear again in later activities and later units, enhancing students' understanding and retention. Similarly students develop essential scientific skills from one activity or unit to another. The overview and teaching suggestions for each activity explains how activities build on each other and support teachers in the three dimensions of the standards. Citation: [SGI BIO: CELL BIO TR p. 2-3] [SGI BIO: CELL BIO Activity 16, TE p. 381-388] [SGI BIO: CELL BIO Activity 17, TE p. 390-393] [SGI BIO: CELL BIO Activity 18, TE p. 394-398]	
☐ G. Provides supports to help students engage in the practices as needed and gradually adjusts supports over time so that students are increasingly responsible for making sense of phenomena and/or designing solutions to problems.	Forming the core of the SEPUP Assessment System are assessment variables (content, process skills, practices to be assessed), assessment questions or tasks used to gather evidence and scoring guides for interpreting students' responses. In particular, Analyzing Data, Evidence & Trade-Offs, and Designing Investigations are direct examples of scoring guides that asses the practices. Understanding Concepts can be used to assess both disciplinary core ideas and crosscutting concepts. Citation: [SGI BIO: CELL BIO Assessment Blueprint TR p. 114] [SGI BIO: CELL BIO Assessment TR p. 104-110, 117-120] [SGI BIO: CELL BIO Activity 11, TE p. 339-344] [SGI BIO: CELL BIO Activity 6, TE p. 294-299]	

III. Monitoring Student Progress

The lesson or unit supports monitoring student progress: *This is a full unit of 18 activities that takes approximately 6-8 weeks of instruction.*

Criteria	Specific evidence from materials and reviewers' reasoning	Suggestions for improvement
☐ A. Elicits direct, observable evidence of three-dimensional learning by students using practices with core ideas and crosscutting concepts to make sense of phenomena and/or to design solutions.	Numerous activities and assessments engage students in authentic tasks and collect evidence of what they know and are able to do. Analyzing Data assessment components includes that a response accurately summarizes data, detects patterns and trends, and draws valid conclusions based on the data used. Citations: [SGI BIO: CELL BIO Activity 8, TE p. 310-319] Understanding Concepts assessment components includes student's response identifies and describes scientific concepts relevant to a particular problem or issue. [SGI BIO: CELL BIO Activity 3, TE p. 272-281] [SGI BIO: CELL BIO Activity 5, TE p. 290-293] Evidence and Trade-Offs assessment component includes that a response uses relevant evidence to compare multiple options in order to make a choice and takes a position supported by evidence plus describes what is given up for the chose option. [SGI BIO: CELL BIO Activity 18, TE p. 394-398]	
☐ B. Formative assessments of three-dimensional learning are embedded throughout the instruction.	The SEPUP Assessment System provided many different opportunities for formative assessment. The quick checks and some of the embedded assessments work best for formative purposes. This is the case whenever an embedded assessment appears before students have had sufficient opportunity to master a concept. Any Analysis Question and many of the literacy strategies may also be used for formative assessment. For example, when students complete a literacy strategy, such as an Anticipation Guide, Concept Map, or Talking Drawing, the teacher should review their work to see what they already know, what misconceptions they may have, and what problems they might encounter. Citations: [SGI BIO: CELL BIO Assessment TR p. 106-108] [SGI BIO: CELL BIO Assessment TR p. 42-43] [SGI BIO: CELL BIO Activity 4, TE p. 284-289]	

	[SGI BIO: CELL BIO Activity 8, TE p. 310-319] [SGI BIO: CELL BIO Activity 10, TE p. 332-334]	
☐ C. Includes aligned rubrics and scoring guidelines that provide guidance for interpreting student performance along the three dimensions to support teachers in (a) planning instruction and (b) providing ongoing feedback to students.	The SEPUP Assessment System provides assessment variables (content and process skills to be assessed), assessment questions or tasks used to gather evidence and scoring guides for interpreting students' responses. It is SEPUP's goal that student perform at Level 3 (complete and correct) on all of the 9 assessment variables for the courses, and the rubric driven system allows the teacher to monitor progress towards this instructional target. Citations: [SGI BIO: CELL BIO Assessment TR p. 104-110] Scoring guides [SGI BIO: CELL BIO Assessment TR p. 117-120] Exemplars [SGI BIO: CELL BIO Assessment TR p. 121-130]	
☐ D. Assessing student proficiency using methods, vocabulary, representations, and examples that are accessible and unbiased for all students.	SEPUP curriculum incorporates flexible approaches to laboratories, modeling activities, simulations, readings, and discussions. Each activity also includes features that differentiate instruction and assessment in ways that address students' varying learning needs. The nine Scoring Guides are used from unit to unit of Issues and Earth Science for teachers to closely monitor students' growth and encourage their progression from novice to expert on each variable. These variables remain the same throughout the course, students build on their experience with each variable, reaching higher levels of competency with more challenging criteria as the year progresses. Citation: [SGI BIO: CELL BIO Assessment TR p. 117-120] [SGI BIO: CELL BIO Assessment TR p. 104-110]	

A unit or longer lesson will also: *This is a full unit of 18 activities that takes approximately 6-8 weeks of instruction.*

Criteria	Specific evidence from materials and reviewers' reasoning	Suggestions for improvement
☐ E. Includes pre-, formative, summative, and self-assessment measures that assess three-dimensional learning.	Forming the core of the SEPUP Assessment System are assessment variables (content and process skills to be assessed), assessment questions or tasks used to gather evidence and scoring guides for interpreting students' responses. It is SEPUP's goal that student perform at Level 3 (complete and correct) on all of the 9 assessment variables for	

	the courses, and the rubric driven system allows the teacher to monitor progress towards this instructional target. Citations: [SGI BIO: CELL BIO Assessment TR p. 117-120] [SGI BIO: CELL BIO Assessment TR p. 121-130] [SGI BIO: CELL BIO Activity 9, TE p. 321-329] [SGI BIO: CELL BIO Activity 12, TE p. 347-358] ExamView® for SEPUP makes it easier for educators to use your content to assess, track, and analyze student performance. Comprised of the Test Generator, Test Manager, and Test Player, ExamView® is the industry standard for paper, Internet, and LAN-based question and test development.	
☐ F. Provides multiple opportunities for students to demonstrate performance of practices connected with their understanding of disciplinary core ideas and crosscutting concepts and receive feedback.	The SEPUP Assessment System provides assistance to teachers through assessment blueprints/overviews, exemplars, moderation, item banks, and quick checks. Assessment Blueprints show the location and schedule of assessments in each unit. Because the variables remain the same throughout the course, students build on their experience with each variable, reaching higher levels of competency with more challenging criteria as the year progresses. Citation: [SGI BIO: CELL BIO Assessment Blueprint TR p. 114] [SGI BIO: CELL BIO Assessment TR p. 104-110] [SGI BIO: CELL BIO Assessment TR p. 117-120]	

Overall Summary Comments: