

Sample Performance Assessment

Content Area: Science

Grade Level: High School

Instructional Unit Sample: Earth's Changing Surface

Colorado Academic Standard(s): SC09-GR.HS-S.3-GLE.3; SC09-GR.HS-S.3-GLE.7

Concepts and skills students' master: Change, Systems, Plate Tectonics, Impacts, Landforms

Unit Description

This unit, [Earth's Changing Surface](#), focuses on our restless planet. Topics include plate tectonic theory, technological evidence/advances that have furthered knowledge of this theory, natural hazards associated with plate tectonics, and resources and landforms that result from tectonic forces.

Performance Assessment Description

You are a consulting geologist for a large company looking to open a satellite office. Three locations have been determined as possibilities (Iceland, coastal Alaska, and Brazil) and the company is looking for your expertise to determine the safest geologic location for the new office. (You could also provide an alternate location.) You need to present your claim for the best location, based on the causal relationship between natural hazards and plate tectonics. Create an organization method (website, presentation, report, etc.) that establishes and communicates clear relationships among the claim, counterclaims, reasons, and evidence.



RUBRIC: EARTH'S CHANGING SURFACE

	Above Mastery	Mastery of Grade Level Standards	Approaching Mastery	Novice	
Scoring Criteria	4	3	2	1	Weight
Claim	An alternate location is proposed and is geologically safe but is not a location given or discussed during unit work	Location chosen is the safest geological choice OR the alternate location is safe, but one discussed during unit work	Location chosen is not the safest choice, but is not the most geologically hazardous	The location chosen is the most geologically hazardous	.05
Plate Boundary	n/a	Correctly identified and described, including the landforms created for the location chosen	Correctly identified and described but landforms are not correct or included for the location chosen	Boundary is incorrectly identified OR Correctly identified but not correctly described	.15
Hazards	Impacts of local and global hazards are correctly identified, defined and discussed using specific data from direct and indirect evidence	Impacts of local and global hazards are correctly identified, defined and discussed using generalized data from direct and indirect evidence	Impacts and/or hazards are identified and defined, but there is limited discussion using data	Impacts and/or hazards are identified, but not defined or data based	.30
Counter claims	Used specific data to compare and contrast to the other two locations	Used generalized data to compare and contrast to the other two locations	Used generalized data to compare and contrast with only one location	Limited or missing data for the counterclaim(s)	.20
Reasoning	Strong, concise and detailed relationships between the claim, evidence and counterclaims is supported through scientific reasoning	Clear relationships between the claim, evidence and counterclaims is supported through scientific reasoning	Relationships are not always clear to establish reasoning between the claim, evidence and counterclaims	Reasoning does not show relationships between the claim, evidence and counterclaims	.30



Performance Assessment Development Template

Who is developing this performance assessment?	
Name: Colorado Content Collaborative in Science	Position/Affiliation: Colorado Content Collaborative in Science

I. CONTENT STANDARDS	
Content Area: Science	
Colorado Academic Standards Specify the Colorado Academic Standard(s) that will be evaluated by the performance tasks. Colorado Academic Standards Online (hold CTRL and click to visit the website)	SC09-GR.HS-S.3-GLE.3 SC09-GR.HS-S.3-GLE.7
Grade Level(s)	High School
Indicate the intended Depth of Knowledge (DOK) for this performance assessment.	<input type="checkbox"/> DOK 1 <input type="checkbox"/> DOK 2 <input checked="" type="checkbox"/> DOK 3 <input type="checkbox"/> DOK 4
What are some real-world situations that relate to the content standards above? Some examples are included in the Colorado standards under "Relevance and Application."	Companies expanding into new locations need to understand the possible geologic hazards Humans choices are impacted by the dynamic geosphere
Summary. Provide a brief summary describing the task in the boxes below.	
Performance Task Name	Brief Description of the Task
Company Expansion Geologic Report	You are a consulting geologist for a large company looking to open a satellite office. Three locations have been determined as possibilities (Iceland, coastal Alaska, and Brazil) and the company is looking for your expertise to determine the safest geologic location for the new office. (You could also provide an alternate location.) You need to present your claim for the best location, based on the causal relationship between natural hazards and plate tectonics. Create an organization method (website, presentation, report, etc.) that establishes and communicates clear relationships among the claim, counterclaims, reasons, and evidence.



II. Claims, Skills, Knowledge & Evidence	
Claims. <i>What claim(s) do you wish to make about the student? In other words, what inferences do you wish to make about what a student knows or can do? Define any key concepts in these claims.</i>	Successful completion of this task would indicate... <ul style="list-style-type: none"> ➤ Plate tectonic theory allows for prediction of natural hazards and their impacts, locally and globally.
Skills. <i>Refer to the standard(s), grade level, and DOK levels you listed in Section I. Given this information, what skills should be assessed? All skills should align with the above claims.</i>	Student should be able to... <ul style="list-style-type: none"> ➤ Predict landforms and/or natural hazards found at a specific plate boundary ➤ Identify landforms created by geologic activity
Knowledge. <i>Refer to the standard(s), grade level, and DOK level you listed in Section I. Given this information, what knowledge/concepts should be assessed? All knowledge should align with the above claims.</i>	Student should know/understand... <ul style="list-style-type: none"> ➤ The theory of plate tectonics and how it explains the Earth's geological features ➤ The causes of plate movement ➤ The interactions between tectonic plates and the resulting landforms and natural hazards ➤ Geophysical technology and its relationship to current theory of plate tectonics
Evidence. <i>What can the student do/produce to show evidence of the above knowledge and skills?</i>	Student will show evidence of skills and knowledge by... <ul style="list-style-type: none"> ➤ Predict the safest geologic location ➤ Determine the hazards associated with specific boundary types ➤ Use direct and indirect evidence to support a claim and counterclaim ➤ Use scientific reasoning about plate tectonics to support the claim, evidence and reasoning



III.A. PERFORMANCE TASKS: Instructions to the Student
<p><i>Think about the performance assessment process from a student’s perspective. What instructions does the student need? Make sure the instructions are <u>fair and unbiased</u>. Instructions should be detailed, clear, and written at the appropriate grade level.</i></p>
<p><i>Give the student an overview of the performance assessment (i.e., purpose of the assessment, tasks the student will need to complete, etc.).</i></p> <p>As a geologist, you need to prepare a detailed communication about specific locations for a company’s expansion.</p>
<p><i>Stimulus Material. Describe what stimulus material the student will receive. For example, the stimulus might be a story or scenario that the student reads, analyzes, and to which the student provides a response.</i></p> <p>You are a consulting geologist for a large company looking to open a satellite office. Three locations have been determined as possibilities (Iceland, coastal Alaska, and Brazil) and the company is looking for your expertise to determine the safest geologic location for the new office. (You could also provide an alternate location.) You need to present your claim for the best location, based on the causal relationship between natural hazards and plate tectonics. Create an organization method (website, presentation, report, etc.) that establishes and communicates clear relationships among the claim, counterclaims, reasons, and evidence.</p>
<p><i>Explain to the student what documents/materials they have for the performance assessment. Explain what the student should <u>do</u> with those documents/materials.</i></p> <p>You will be provided the stimulus, the rubric and a labeled world map (with the locations mentioned) and any other materials you may need to complete this assessment depending on your necessary accommodations. You need to use the stimulus and rubric to drive your work product to successful completion.</p>
<p><i>Describe in detail any safety equipment that is required. Is safety equipment provided onsite, or are students expected to bring their own safety equipment?</i></p> <p>No safety equipment is required</p>
<p><i>Explain what students need to do when they complete each task (e.g., submit work to the educator, move on to the next task, etc.).</i></p> <p>After you are completed, return all materials and your work product to your proctor.</p>
<p><i>Provide any other relevant information for the students’ instructions.</i></p> <p>None</p>



**III.B. PERFORMANCE TASKS:
Instructions to the Educator**

Think about the performance assessment process from an educator’s perspective. What instructions do educators need? Instructions to the educator should be clear and concise.

Before the Performance Assessment is Administered

How should the educator prepare the site where the performance assessment will be administered? Be as specific as possible.

Student work products will be varied, so different supplies may be needed depending on how students choose to complete the product. Posters, paper, computers, etc might be needed.

What materials should be provided to students? Be as specific as possible.

Students will be given the stimulus and the rubric. They also need a labeled world map with the mentioned locations. Some students may need a world map with plate boundaries, depending on accommodations and needs. Data sets might be needed for higher need students. A framework for writing/communicating for higher need students might also be needed.

What materials should the student bring to the performance assessment session? Be as specific as possible.

Depends upon how the student chooses to complete the work product.

What materials should not be available to the student during the performance assessment session (e.g., cell phones, calculators, etc.)?

Students should not use internet access, unless documented through accommodations.

Should the educator keep track of time? If so, specify how much time the student will have to complete the performance assessment. Explain how the educator should keep track of and record time.

Depends on the work product and teacher intent. The prompt should be completed without the need for student research gathering.

Will the educator need to video/audio record the students during the performance assessment session? If so, provide detailed instructions on how to set up the recording equipment.

None required, but could be dependent on student work product



During the Performance Assessment Session

How should the educator respond to students' questions?

Clarify questions on how to interpret the rubric and prompt, but do not provide specific data.

What should the educator do while the student is completing the tasks (e.g., should the educator make notes about the student's process, mark scores on rubrics, etc.)?

Actively proctor

Upon Completion of the Performance Assessment

What does the educator need to collect from the student?

Student work products and handouts given to students

What information should the educator give the student at the end of the performance assessment session?

Depends on how the product is intended to be used within the classroom.

Who is responsible for cleaning/resetting the workstation (if necessary)—the student or the educator? How should the workstation be cleaned?

n/a

Other relevant information for the educator's instructions:

This assessment is intended to be given without students being able to actively research, as they are being assessed at the end of the unit. Educators need to determine their purpose for this assessment within the classroom.

The "correct" location was purposely left off the grading rubric. As the work products are being graded, the safest geologic location is Brazil, followed by Iceland, then coastal Alaska. Brazil is not on a plate boundary, so there are limited geologic hazards due to plate tectonics. Iceland is on a divergent boundary, so there would be some shallow earthquakes and volcanoes. Coastal Alaska is on a convergent boundary, resulting in shallow, mid and deep earthquakes, volcanoes and other associated hazards. If students are making their own choice, they should choose a location off a plate boundary for the "safest" in relation to plate tectonics and should choose one not previously discussed in classwork. Students need to be able to use the correct data in relation to the boundaries in order to completely and accurately argue their claim.



III.C. PERFORMANCE TASKS: Other Considerations

How will students' responses be recorded? Describe how evidence will be collected about each student's performance (e.g., student submits a work product, educator records information about the student's process, etc.)

- Students will be submitting a variety of work products.
- Evidence is dependent on the products submitted.

What needs to be built for this performance assessment? Refer to the materials list above. Think about what materials must be created for this performance assessment. Some examples include: worksheets, instruction sheets for the educator, videos, websites, etc.

- World map with labeled locations
- World map with labeled locations and plate boundaries
- Other and/or writing scaffolds as required by documented accommodations
- Student handouts of the prompt and rubric

III.D. PERFORMANCE TASKS: Accommodations

What are the requirements for this set of tasks? What accommodations might be needed? List all accommodations that might apply (e.g., accommodations for language, timing, setting, etc.).

This is dependent on the required and documented accommodations.
See above also.

IV. EDUCATOR INFORMATION

What are the requirements to be an educator for this performance assessment? What are the knowledge and skills and educator must possess in order to successfully administer and score this performance assessment. Please provide your recommendations below.

Proctor - No required scientific knowledge is needed. Some basic knowledge of the prompt, rubric and scientific explanations would be helpful to address possible student clarifications.

A strong earth science content background and firm understanding of the prompt, rubric, unit, standards and scientific explanations is required for scoring.



Performance Assessment Development Process

The work of the Colorado Content Collaboratives is intended to support effective instructional practice by providing high quality examples of assessment and how assessment information is used to promote student learning.

The new Colorado Academic Standards require students to apply content knowledge using extended conceptual thinking and 21st century skills. Performance assessments have the highest capacity to not only measure student mastery of the standards but also provide the most instructionally relevant information to educators. Further, performance assessments can integrate multiple standards within and across content areas, providing educators a comprehensive perspective of student knowledge and giving students the opportunity to demonstrate the degree to which they understand and transfer their knowledge.

Performance Assessment - An assessment based on observation and judgment. It has two parts: the task and the criteria for judging quality. Students complete a task (give a demonstration or create a product) and it is evaluated by judging the level of quality using a rubric. Examples of demonstrations include playing a musical instrument, carrying out the steps in a scientific experiment, speaking a foreign language, reading aloud with fluency, repairing an engine, or working productively in a group. Examples of products can include writing an essay, producing a work of art, writing a lab report, etc. (Pearson Training Institute, 2011)

The Content Collaboratives worked closely with the [Center for Educational Testing and Evaluation from the University of Kansas](#) to establish protocols for the development of performance assessments and to use those protocols to develop performance assessments that include scoring rubrics. The Performance Assessment Development Process includes a collection of resources to aid schools and districts that choose to engage in locally developing performance assessments. These resources can be accessed in the CDE Assessment Resource Bank at <http://www.coloradopl.org/node/12765>.

The Performance Assessment Development Process is best utilized when intending to create an assessment for culminating assessment purposes such as a unit, end of course, end of semester, or end of year summative assessment. Additionally, a district, BOCES, or school may wish to create a common performance assessment that can be used across multiple classrooms. Engaging in the Performance Assessment Development Process serves as evidence that an educator is participating in valuable assessment work that aligns to the Colorado Academic Standards, district curriculum, and district goals.

The performance assessments developed by the Content Collaboratives serve as high-quality examples of performance assessments that can be used for a variety of purposes. Scores from these performance assessments are used at the discretion of the district or school.

