

Introduction

Formative Assessment Exemplar - K.1.2 (cluster A)

Introduction:

The following formative assessment exemplar was created by a team of Utah educators to be used as a resource in the classroom. It was reviewed for appropriateness by a Bias and Sensitivity/Special Education team and by state science leaders. While no assessment is perfect, it is intended to be used as a formative tool that enables teachers to obtain evidence of student learning, identify gaps in that learning, and adjust instruction for all three dimensions (i.e., Science and Engineering Practices, Crosscutting Concepts, Disciplinary Core Ideas) included in a specific Science and Engineering Education (SEEd) Standard.

In order to fully assess students' understanding of all three dimensions of a SEEd standard, the assessment is written in a format called a cluster. Each cluster starts with a phenomenon, provides a task statement, necessary supporting information, and a sequenced list of questions using the gather, reason, and communicate model (Moulding et al., 2021) as a way to scaffold student sensemaking. The phenomenon used in an assessment exemplar is an analogous phenomenon (one that should not have been taught during instruction) to assess how well students can transfer and apply their learning in a novel situation. The cluster provides an example of the expected rigor of student learning for all three dimensions of a specific standard. In order to serve this purpose, this assessment is NOT INTENDED TO BE USED AS A LESSON FOR STUDENTS.

Because this assessment exemplar is a resource, teachers can choose to use it however they want for formative assessment purposes. It can be adjusted and formatted to fit a teacher's instructional needs. For example, teachers can choose to delete questions, add questions, edit questions, or break the tasks into smaller segments to be given to students over multiple days.

Of note: All formative assessment clusters were revised based on feedback from educators after being utilized in the classroom. During the revision process, each cluster was specifically checked to make sure the phenomena was authentic to the DCI, supporting information was provided for the phenomena, the SEPs, CCCs, and DCIs were appropriate for the learning progressions, the cluster supported student sensemaking through the Gather, Reason, and Communicate instructional model, and the final communication prompt aligned with the cluster phenomena. As inconsistencies were found, revisions were made to support student sensemaking. If other inconsistencies exist that need to be addressed, please email the current Utah State Science Education Specialists with feedback.

General Format:

Each formative assessment exemplar contains the following components:

1. Teacher Facing Information: This provides teachers with the full cluster as well as additional information including the question types, alignment to three dimensions, and answer key. Additionally, an example of a proficient student answer and a proficiency scale for all three dimensions are included to support the evaluation of the last item of the assessment.
2. Students Facing Assessment: This is what the student may see. It is in a form that can be printed or uploaded to a learning platform. (Exception: Questions including simulations will need technology to utilize during assessment.)

Accommodation Considerations:

Teachers should consider possible common ways to provide accommodations for students with disabilities, English language learners, students with diverse needs or students from different cultural backgrounds. For example, these accommodations may include: Providing academic language supports, presenting sentence stems, or reading aloud to students. All students should be allowed access to a dictionary.

References:

Moulding, B., Huff, K., & Van der Veen, W. (2021). *Engaging Students in Science Investigation Using GRC*. Ogden, UT: ELM Tree Publishing.


Teacher Facing Info






Teacher Facing Information

Standard: K.1.2

Obtain, evaluate, and communicate information on the effect of forecasted weather patterns on human behavior. Examples could include how humans respond to local forecasts of typical and severe weather such as extreme heat, high winds, flash floods, thunderstorms, or snowstorms. (ESS3.B)

Assessment Format: Printable and Online







Phenomenon	
<p>This person wore the wrong shoes for the weather.</p> <p>Figure 1: Sandals in the snow</p>  <p>https://www.google.com/search?q=shorts%20in%20snow&tbm=isch&hl=en&tbs=il:cl&sa=X&ved=0CAAQ1vwEahcKEwiwpYus8ojxAhUAAAAHQAAAAQAg&biw=1193&bih=645#imgrc=xm83a4252CGinM</p>	<p>Proficient Student Explanation of Phenomenon:</p> <p>I can use the weather forecast to be prepared.</p>
Cluster Task Statement	
<p>Use the pictures and weather forecasts below to obtain information about the weather to complete the following tasks.</p>	
Supporting Information	
<p>This person wasn't prepared for the weather that happened on this day. A forecast shows what the weather is predicted to be like from information scientists gather. In the forecast below it shows what the sky will look like and what the temperature will feel like.</p> <p>Figure 2: Labeled weather pictures</p>	

Rain	Sun	Wind	Snow	Partly Sunny
				

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The temperature will be represented by ice cubes and fire.

Table 1: ice cubes and fire

	Very cold
	Cold
	Cool
	Warm
	Hot
	Very hot

<https://publicdomainvectors.org/en/free-clipart/i-is-for-ice-alphabet-learning-guide-vector-clip-art/34024.html>

<https://www.goodfreephotos.com/vector-images/monochrome-flame-clipart.png.php>

Cluster Questions

Gather:

Cluster Question # 1

Question Type: Multiple Choice

Addresses:

x__ DCI-ESS3.B

x__ SEP - Obtain/Evaluate

x__ CCC - Cause and Effect

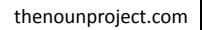
Answer:











Snowy Day and Very Cold










































































































Question 1

Circle the day in the forecast that matches the weather in the picture.

Circle the day in the forecast that matches the weather in the picture.



Monday	Tuesday	Wednesday	Thursday	Friday
				
				

	<table><tr><td>Monday</td><td>Tuesday</td><td>Wednesday</td><td>Thursday</td><td>Friday</td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr></table> <table><tr><td>Monday</td><td>Tuesday</td><td>Wednesday</td><td>Thursday</td><td>Friday</td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr></table> <p>thenounproject.com</p>	Monday	Tuesday	Wednesday	Thursday	Friday											Monday	Tuesday	Wednesday	Thursday	Friday										
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<p>Communicate:</p> <p>Cluster Question # 4</p> <p>Question Type: Short answer</p> <p>Addresses:</p> <p>x__ DCI-ESS3.B</p> <p>x__ SEP -</p> <p>Obtain/Evaluate/Communicate</p> <p>x__ CCC - Patterns</p> <p>Answer:</p> <p>Might include: a person in shorts and t-shirt, sandals, swimsuits, summer dresses, etc.</p> <p>Accommodation answers:</p> <p>flip-flops, t-shirt</p>	<p>Question 4</p> <p>Look at this new weather forecast. Draw a picture of what you would wear based on the weather forecast.</p> <table><tr><td>Monday</td><td>Tuesday</td><td>Wednesday</td><td>Thursday</td><td>Friday</td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr></table> <p>thenounproject.com</p> <p>Accommodation: have students circle the items of clothing they would wear for the weather forecast.</p> <table><tr><td></td><td></td><td></td><td></td><td></td></tr></table> <p>google images</p>	Monday	Tuesday	Wednesday	Thursday	Friday																									
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<p>Proficiency Scale</p>																															
<p>Proficient Student Explanation:</p> <p>I can use the weather forecast to be prepared.</p>																															

Level 1 - Emerging	Level 2 - Partially Proficient	Level 3 - Proficient	Level 4 - Extending
<p>SEP: Does not meet the minimum standard to receive a 2.</p>	<p>SEP: With support, read grade-appropriate texts and/or use media to obtain scientific and/or technical information to determine patterns in and/or evidence about the natural and designed world(s).</p> <p>Identify specific images (e.g., a diagram showing how a machine works) that support a scientific or engineering idea.</p> <p>With support, obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question and/or supporting a scientific claim.</p> <p>With prompting, communicate information or design ideas and/or solutions with others in oral and/or written forms using models, drawings, writing, or numbers that provide detail about scientific ideas, practices, and/or design ideas.</p>	<p>SEP: Reading grade-appropriate texts and/or using media to obtain scientific information to determine patterns in and/or evidence about the natural world.</p> <p>Describing how specific images support a scientific idea.</p> <p>Obtaining information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question and/or supporting a scientific claim.</p> <p>Communicating information with others in oral and/or written forms using models, drawings, writing, or numbers that provide detail about scientific ideas and/or practices.</p>	<p>SEP: Extends beyond proficient in any way.</p>
<p>CCC:</p>	<p>CCC: With support, identify observable patterns in</p>	<p>CCC:</p>	<p>CCC: Extends beyond proficient in any way.</p>

Does not meet the minimum standard to receive a 2.	the natural and designed world.	Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.	
DCI: Does not meet the minimum standard to receive a 2.	DCI: Weather can be forecasted.	DCI: Weather scientists forecast typical and severe weather so that the communities can prepare for and respond to these events	DCI: Extends beyond proficient in any way.

Student Facing Format on following page)

Student Assessment

Name _____ Date _____

Stimulus

This person wore the wrong shoes for the weather.

Figure 1: Sandals in the snow.








<https://www.google.com/search?q=shorts%20in%20snow&tbm=isch&hl=en&tbs=il:cl&sa=X&ved=0CAAQ1vwEahcKEwiwpYus8ojxAhUAAAAAHQAAAAQAg&biw=1193&bih=645#imgrc=xm83a4252CGlnM>

A forecast shows what the weather is predicted to be from information scientists gather.

The pictures on the next page are what some scientists use to show what the sky will look like and what the temperature will feel like.







Figure 2: Labeled weather pictures

Rain	Sun	Wind	Snow	Partly Sunny
				

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The temperature will be represented by ice cubes and fire.

Table 1: Temperature Key

	Very cold
	Cold
	Cool
	Warm
	Hot
	Very hot

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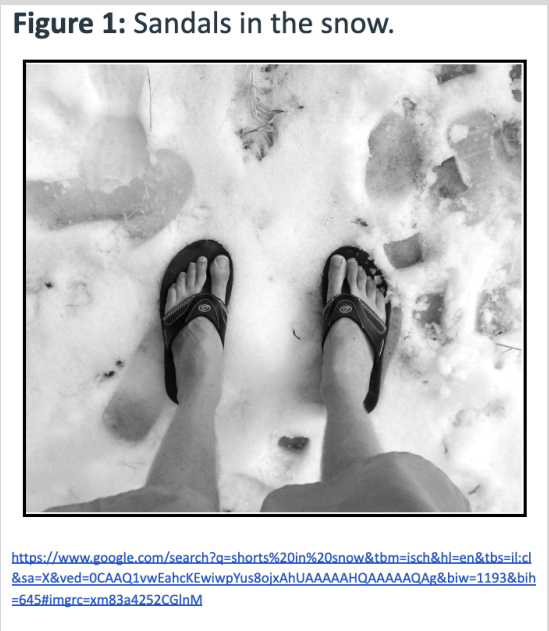
<https://www.goodfreephotos.com/vector-images/monochrome-flame-clipart.png.php>











Your Task

Use the pictures and weather forecasts below to obtain information about the weather and complete the following tasks.

Question 1

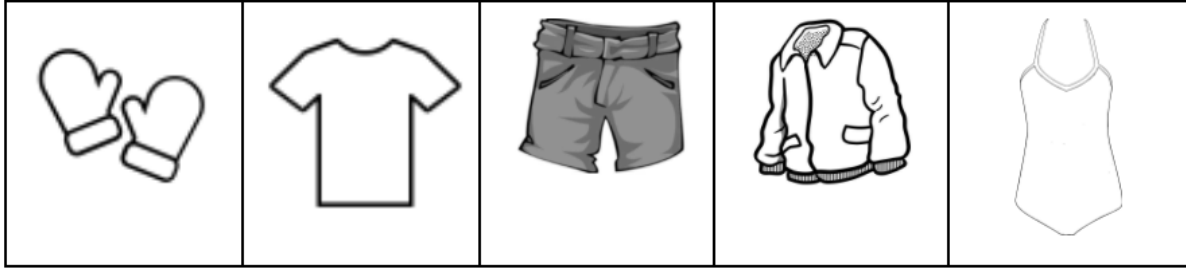
Circle the day in the forecast that matches the weather in the picture.



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Question 2

For the day you circled in the weather forecast above, circle the items of clothing you should choose to wear.













images











google

Question 3











Circle the whole weekly weather forecast when you would choose to wear sandals.

Monday	Tuesday	Wednesday	Thursday	Friday
				
				

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Monday	Tuesday	Wednesday	Thursday	Friday
				
				











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Monday	Tuesday	Wednesday	Thursday	Friday
				
				

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Question 4

Look at this new weather forecast. Draw a picture of what you would wear based on the weather forecast.











Monday	Tuesday	Wednesday	Thursday	Friday
				
				

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Question 4 Accommodation

Question 4

Look at this new weather forecast. Circle the 2 pictures of what you would wear based on the weather forecast.

Monday	Tuesday	Wednesday	Thursday	Friday
				
				

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