



# HSA-Alt Teacher Resource Guide

## Elementary Science Classroom Embedded Assessment

### Variation in Characteristics (Hawaii NGSS 3-LS4-2)

#### Introduction

The HSA-Alt Classroom Embedded Assessments (CEAs) are non-mandatory assessment options available to HSA-Alt-identified students. The CEAs are designed for students who have an established communication system. Although non-responsive students are allowed to take the CEAs, the assessment is ideally suited for students who are able to attend to stimuli, engage in activities, and demonstrate understanding through actions, gestures, symbols, signs/signing, a communication device, or speech.

The CEAs offer a model of standards-based instruction and supports, leading to progress toward year-end targets for learning found in the [HSA-Alt Range Performance Level Descriptors](#) (PLDs). Each CEA testlet is aligned to a single standard and features scripted instructional activities and assessment items at five levels of performance: Prerequisite, Well Below, Approaches, Meets, and Exceeds.

CEA testlets include teaching activities, performance tasks, and independent items. Teaching activities and performance tasks are available to download in the General Resources section in the Test Information Distribution Engine (TIDE). It is recommended that teachers download the testlets and read them with the accompanying Teacher Resource Guides.

As classroom assessments, the CEAs offer greater flexibility than a summative assessment. The CEAs may be individualized in the following ways:

- Teachers may select the most appropriate performance level for administration of each CEA for each student by reviewing CEA testlets, HSA-Alt PLDs, and the student's instructional level.
- Teachers have up to five opportunities to administer each subject-area CEA during the testing window, which runs from October to July. The performance level of each administration may be the same as, higher than, or lower than previous administrations. Please see the Important Dates page at <https://alohahsap.org> for the exact dates for each year's testing window.
- It is recommended that teachers provide the same accommodations on the CEAs as are used during classroom instruction. The scripted language and materials in the CEAs may be adapted to support student comprehension.
- An individual administration of each CEA testlet is recommended for most students to best meet their individual needs. A small number of students may be able to participate in the CEA teaching activities and performance tasks in small groups using PDF testlets. PDF testlets are available at [www.hitide.org](http://www.hitide.org) in the General Resources section.

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## Selected Hawaii Next Generation Science Standards and CEA Targets

Next Generation Science Standards (NGSS)				
<b>3-LS4: Biological Evolution: Unity and Diversity</b>				
3-LS4-2: Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.				
Essence Statement				
Identify differences in the characteristics of individuals within a species and determine advantages or disadvantages of a characteristic in a given situation.				
Science and Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)		Crosscutting Concepts (CCC)	
<b>Constructing Explanations and Designing Solutions</b> Use evidence (e.g., observations, patterns) to support an explanation.	<b>Natural Selection</b> Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.		<b>Cause and Effect</b> Cause and effect relationships are routinely identified and used to explain change.	
Skill Levels				
Prerequisite Skill	Well Below PLD <sup>1</sup>	Approaches PLD	Meets PLD	Exceeds PLD
Identify whether two individuals in a species look the same or different.	Recognize a characteristic of an individual plant or animal.	Identify the differences in the characteristics of individuals within a species.	Determine which variation of a characteristic is most helpful to a plant or animal in a given situation.	Classify variations as likely to be an advantage or disadvantage to an animal's or plant's survival.

1. PLD: Performance-Level Descriptor

### Standard Core Concept

Organisms of the same species can have different characteristics. Some of these characteristics can help them survive in different environments. Some characteristics can be disadvantages to their survival.

### Associated Below Grade-Level Dimensions

1-LS3-1: Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

K-LS1-1: Use observations to describe patterns in the resources that plants and animals (including humans) need to survive.

## Performance-Level Materials and Supports

Please note: All graphics listed in this section of the guide are available to download from the General Resources folder in TIDE ([www.hitide.org](http://www.hitide.org)).

### *Prerequisite Level: Materials List and Graphics*

#### Materials List:

- Three pictures of sea urchins from the ocean environment picture
- A picture of an ocean environment
- A card to show a lighter pink color
- A card to show a darker purple color
- Two answer choice cards: one labeled “same” and one labeled “different”

#### Graphics:

- Sea urchins (3)
- Ocean environment
- Color cards: light pink, dark purple
- Answer option cards: same, different

### *Well Below Level: Materials List and Graphics*

#### Materials List:

- Picture of an orange starfish
- Picture of a pink sea urchin
- The color and shape chart

#### Graphics:

- Orange starfish
- Pink sea urchin
- Color and shape chart

### *Approaches Level: Materials List and Graphics*

#### Materials List:

- Three pictures of sea urchins: two pink and one dark purple
- Four pictures of large starfish: two large orange starfish with 5 arms, one large blue starfish with 5 arms, one large orange starfish with many arms
- Three pictures of small starfish: one small orange starfish with 5 arms, one small blue starfish with 5 arms, one small orange starfish with many arms

#### Graphics:

- Three sea urchins: two pink and one dark purple

- Seven starfish (6): 2 large orange starfish with 5 arms, 1 large orange starfish with many arms, 1 small orange starfish with 5 arms, 1 small orange starfish with many arms, 1 large blue starfish with 5 arms, 1 small blue starfish with 5 arms

*Meets Level: Materials List and Graphics*

Materials List:

- Picture of a pufferfish
- Picture of a shingle sea urchin and a purple sea urchin
- Picture of a pink sea urchin

Graphics:

- Pufferfish
- Shingle sea urchin
- Purple sea urchin
- Pink sea urchin

*Exceeds Level: Materials List and Graphics*

Materials List:

- A cup
- Three balls
  - For example, a small ping-pong or golf ball, a medium-sized tennis ball, and a large softball
    - The small ball should be the only one that can fit in the cup.
  - If balls are not available, use crumpled-up paper to make small, medium, and large balls.
    - The small ball should be the only one that can fit in the cup.
- Pictures of two fish
- Pictures of three sea urchins
- Picture of tide pool rock
- Answer options pictures: a small sea urchin, a brightly colored sea urchin, and a sea urchin with long spikes

Graphics:

- Two fish
- Three sea urchins
- Tide pool rock

## Academic Vocabulary Used in This Testlet

**advantage.** A feature or ability that makes an organism more likely to succeed or survive

**characteristics.** Observable qualities such as color, size, shape, and texture

**disadvantage.** A feature or limitation that makes an organism less likely to succeed or survive

**environment.** The conditions that surround and affect an organism

**harmful.** Causing or capable of causing harm

**pufferfish.** A fish that can inflate itself into a ball shape

**sea urchin.** A spiky animal with no backbone that lives on the ocean floor

**species.** A group of organisms that is capable of reproducing naturally

**spike.** A long, thin shape with a sharp point at the end

**starfish.** An animal with no backbone that has five arms and lives in the ocean

**texture.** How rough or smooth something is

**tide pool.** An isolated pool of seawater that is found where the ocean and shore meet

## Accommodating Individual Student Needs on the CEA

It is recommended that teachers provide the same accommodations on CEAs as are used during classroom instruction. Accommodations in presentation, response, setting, and timing are allowable on the CEAs.

### Presentation

The presentation of testlets is flexible and may be adapted to the needs and preferences of each student. Presentation considerations include the following:

- All parts of the testlet are designed to be read aloud or signed. Scripting is provided for ease of administration and may be adapted to support student comprehension.
- An enlarged version of the testlet may be provided by presenting the online version of the testlet on any type of screen, such as a whiteboard. The magnification tool may be used for students with low vision. The toolbar in the testing engine includes Zoom In and Zoom Out icons and four levels of magnification.
- Several color-contrast options are available in the testing engine. This feature may be helpful to students with various visual impairments.

- The entire testlet may be administered in a PDF format, which is available at [www.hitide.org](http://www.hitide.org) in the General Resources section.

### *Graphics*

Graphics, pictures, tables, charts, and other visuals are used throughout all of the testlets. Graphics may be presented in a wide variety of ways, depending on student need. The following are examples of how graphics may be presented:

- All pictures, diagrams, tables, and other figures are embedded in teaching activities and may be printed for the student. This presentation option allows the student to sort, write on, color, or in some other way manipulate the testing materials.
- Graphics may not be accessible to all students. They may be described verbally, replaced with objects or manipulatives, or augmented with textures or tactile graphics.

### *Objects and Manipulatives*

Objects and manipulatives may be provided for all parts of the CEAs to aid student understanding, engagement, and ability to focus on the concepts in this testlet. When selecting objects, consider the student's needs, preferences, and safety. Suggested objects and manipulatives for ***Variation in Characteristics*** are shown on the following page.

Level	Suggested Objects for Teaching Activity	Suggested Objects for Independent Item
<b>Prerequisite</b>	<ul style="list-style-type: none"> <li>Hairbrushes or toy balls with spikes to represent sea urchins (You may find objects with different textures if student cannot perceive color)</li> </ul>	<ul style="list-style-type: none"> <li>Answer options: use the same objects that were used for the teaching activity.</li> </ul>
<b>Well Below</b>	<ul style="list-style-type: none"> <li>A toy ball with spikes (not too sharp) to represent a sea urchin</li> <li>A model of a starfish (or something similar) with a smooth surface</li> </ul>	<ul style="list-style-type: none"> <li>Use a toy ball with safe spikes and two math pattern blocks (square, circle).</li> </ul>
<b>Approaches</b>	<ul style="list-style-type: none"> <li>Toy balls with spikes to represent sea urchins</li> <li>Models of starfish</li> <li>Reduce the number of characteristics to the size and number of arms for students who cannot perceive color</li> </ul>	<ul style="list-style-type: none"> <li>Use a small or medium toy ball with safe spikes.</li> <li>For answer options, use math pattern blocks to represent size and shape.</li> </ul>
<b>Meets</b>	<ul style="list-style-type: none"> <li>A massage ball/toy with rigid spikes to represent a pufferfish</li> <li>A massage ball/toy with smooth bumps to represent a shingle sea urchin</li> <li>A small massage ball/toy with soft spikes to represent a small sea urchin</li> <li>A medium-sized massage ball/toy with soft spikes to represent a large sea urchin</li> </ul>	<ul style="list-style-type: none"> <li>Answer options: use a ball with safe spikes, a ball with smooth bumps, and a ball with hair or cotton attached.</li> </ul>
<b>Exceeds</b>	<ul style="list-style-type: none"> <li>Two fish models (large, small)</li> <li>Three toy balls with spikes or three crumpled-up pieces of paper to represent small, medium, and large sea urchins</li> <li>A cup to use for the activity in Part C and the rock in Part D</li> <li>Three toy balls to represent answer options</li> </ul>	<ul style="list-style-type: none"> <li>Use a cup to represent the rock.</li> <li>Answer options: use small, medium, and large balls or crumpled-up pieces of paper.</li> </ul>



### *Tactile Materials, Including Tactile Graphics and Tactilely Enhanced Objects*

Students with visual impairments who use tactile graphics during instruction should also be provided with tactile graphics for this testlet. The type of tactile graphic provided should be comparable to what the student uses during instruction. Examples include embossed graphics, printouts of graphics with added texture, textures added to manipulatives, and sticky yarn that can be molded to form different shapes. Graphics in this testlet that may be presented in tactile form include the following:

- Sea urchins with various types of spikes
- Starfish with various numbers of arms
- Size and shape of animals
- Textures: sharp, bumpy, smooth

### **Response**

Students may interact with and respond to testlet activities using a preferred response mode, including the following:

- Verbal response
- Selecting a response card
- Use of gestures, signs, or pointing
- Assistive technology (AT)
- Augmentative and alternative communication (AAC)

Teachers may use prompting (hand-under-hand assistance, modeling, verbal and/or visual prompting) to facilitate student responses on CEA performance-based tasks and should record the student's level of independence with these tasks on the second rubric for each level on **Rubric 2: Teacher Evaluation of Level of Student Independence**.

### **Setting**

The CEAs may be administered in a location in the school that allows the student to focus and do their best work. Factors to consider include optimal lighting, temperature, ambient noise, positioning of the student, and ease of access to needed communication devices.

Due to the wide range of learner characteristics and the individualized nature of the assessment, most students taking the CEAs will require an individual administration. If you are planning to administer the CEAs in a small group, ensure that all students will have the support they need to show their best performance on the CEAs.

### **Timing**

The CEAs are untimed assessments. Teachers may stop and restart testing as needed and may administer the CEAs up to five times during the testing window. Factors to consider include student alertness, fatigue, hunger, and the potential impact of medications. When scheduling the CEA

administration, make sure to account for needed wait time for the student to think about and execute a response.

## Recommended Strategies

### Physical Activity

Students may benefit from incorporating movement into learning activities. The following activities may help students to identify characteristics of animals and to understand that a given characteristic may be an advantage or disadvantage:

- Explore different human characteristics during daily activities  
For example, the teacher could say, “You are taller; sometimes it helps to be taller because you can reach things on a high shelf,” or “You are shorter; sometimes it helps to be shorter because you don’t have to duck down to get into small places.”

Students may benefit from exploring materials (pictures, objects) assembled for the teaching activity before the testlet is administered.

### Pre-Teaching Vocabulary

All testlets incorporate academic vocabulary. The difficulty of academic vocabulary increases as the testlet level progresses, which means that a student working at the Prerequisite level may use the words “same” and “different,” while a student at the Exceeds level might use words like “advantage” and “disadvantage.” The knowledge of academic vocabulary is critical to understanding concepts in science. Pre-teaching academic vocabulary at the student’s level will promote academic progress.

The scripted language and materials in the CEAs may be adapted to support student comprehension.

### Strategies for Pre-Teaching Academic Vocabulary

Strategies for pre-teaching academic vocabulary include the following:

- Introduce vocabulary words with pictures.
- Use simpler words with academic vocabulary to aid comprehension.
- Post vocabulary words with pictures in a place that is convenient for student viewing. Consider making a word wall for students to look at throughout the day.
- Introduce a small number of new words in one session; just one word may be enough.
- Provide opportunities throughout the day for the student to use the vocabulary. Use the vocabulary in different settings.
- Include vocabulary in play and movement when possible.

## Resources

Burnes, J. J., & Clark, A. K. (2021). *Characteristics of students who take Dynamic Learning Maps® alternate assessments: 2018–2019* [Technical Report No. 20-01]. University of Kansas, Accessible Teaching, Learning, and Assessment Systems (ATLAS).

[https://dynamiclearningmaps.org/sites/default/files/documents/publication/Characteristics\\_of\\_Students\\_Who\\_Take\\_DLM\\_AAs.pdf](https://dynamiclearningmaps.org/sites/default/files/documents/publication/Characteristics_of_Students_Who_Take_DLM_AAs.pdf)

Hawaii TIDE site: <https://www.hitide.org>

- HSA-Alt CEA resources are available in General Resources > Download Forms at the bottom of the page.

HSA-Alt Participation Guidelines: <https://hsa-alt.alohahsap.org/resources/resources-2023-2024/hsa-alt-participation-guidelines-2023-2024>

Universal Design for Learning Instructional Units. (August 25, 2014). In *NCSC Wiki*.

[https://wiki.ncscpartners.org/index.php/UDL\\_Instructional\\_Units](https://wiki.ncscpartners.org/index.php/UDL_Instructional_Units)