HSA-Alt Teacher Resource Guide—Grade 8 Science Classroom Embedded Assessment

The HSA-Alt Classroom Embedded Assessment (CEA) is a non-mandatory assessment option available to HSA-Alt-identified students. The CEA is designed for students who have an established communication system. Although non-responsive students are allowed to take the assessment, 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 CEA offers a model of standards-based instruction and supports, leading to progress toward year-end targets for learning found in the HSA-Alt Range PLDs. Each CEA testlet is aligned to a single standard and features scripted instructional activities and assessment items at five performance levels in prerequisite, well-below, approaching, meets, and exceeds level of performance for students.

CEA testlets include teaching activities and performance tasks, which are available to download in the General Resources section in TIDE. It is recommended that teachers download the testlets and read them with the accompanying Teacher Resource Guides.

As a classroom assessment, the CEA offers greater flexibility than a summative assessment. The CEA may be individualized in the following ways to meet student needs:

- Teachers may select the most appropriate performance level for administration of each CEA for each student. Teachers can administer one or more levels for each session based on the student's instructional level.
- Teachers have up to five opportunities to administer each subject area CEA during the testing window (October 3, 2022–July 21, 2023). The complexity level of each administration may be the same or higher than the previous administration.
- It is recommended that teachers provide the same accommodations on the CEA as are utilized during classroom instruction. The scripted language and materials in the CEA may be modified to support student comprehension.
- For some students, an individually administered assessment may not be necessary. Teachers may administer the CEA to these students in small groups using PDF testlets, which include teaching activities and performance task items. PDF testlets are available at www.hitide.org.

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Targeted Hawaii Next Generation Standard Standards and CEA Targets

Next Generation Science Standards (NGSS)		
MS.ESS.3-5: Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.		
Essence Statement: Match human activity to factors causing gradual temperature changes, identify questions that could be answered using temperature data, and identify how rising temperatures could impact Hawai'i or other coastal areas.		
Science and Engineering Practices (SEP)	**Disciplinary Core Ideas (DCI)**	**Crosscutting Concepts (CC)**
Asking Questions and Defining Problems Ask questions to identify and clarify evidence of an argument	**ESS3.D: Global Climate Change** Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities.	**Stability and Change** Stability might be disturbed either by sudden events or gradual changes that accumulate over time.

Skill Levels				
Prerequisite Skill	**Well Below PLD[1]**	**Approaching PLD**	**Meets PLD**	**Exceeds PLD**
Identify natural factors that affect temperatures (i.e., the sun, volcanoes).	Recognize human activities that have an impact on the environment.	Match human activities to possible factors causing gradual temperature changes.	Identify a question that could be answered using data that depicts rising temperatures over the last 100 years.	Identify ways in which rising temperatures could have an impact on Hawai'i.

1. PLD: Performance Level Descriptor
2. For example: How might weather change? How much warmer would winter be?

Performance Level Materials and Supports

All graphics and printouts in the Materials Lists below are available to download as PDF posters from the Hawaii TIDE site (https://www.hitide.org) in the General Resources > Download Forms section.

Prerequisite Level: Materials List

Materials List:

- Picture of sun
- Picture of ice cube

Well Below Level: Materials List

Materials List:

- Picture of cars giving off pollution from tailpipe
- Picture of person riding a bike
- Two-column chart with one column titled "Creates Air Pollution," and the second column titled "Does Not Create Air Pollution"
- Picture cut-outs of a car, a bicycle, a bus, and a skateboard

Approaches Level: Materials List

Materials List:

- Pictures of cars with pollution coming from the tailpipe
- Picture of cows releasing methane
- Picture of Earth's atmosphere

Meets Level: Materials List

Materials List:

- Two pictures showing rising sea level
- Table of sea level data rise points
- Sea Level Change Over Time graph

Exceeds Level: Materials List

Materials List:

- Map with locations of Hawaii's airports to show how close they are to the coastline with potential flooding impacts
- Data table with number of tropical storms that caused heavy rains and flooding from 1990–2020 (NOAA)

Academic Vocabulary Used in This Testlet

atmosphere. The mass of air that surrounds the Earth

carbon dioxide. CO_2. A greenhouse gas released by burning fossil fuels, solid waste, trees and other biological materials

coral reef. An ecosystem of reef-building animals called corals and other marine animals and plants

data table. An arrangement of data in rows and columns

emissions. Pollution released into the air from natural or man-made sources. Also called *air pollution*

environment. The conditions that surround and affect an organism

erosion (erode). A geologic process where Earth's surface is worn down and transported away by the action of wind, water, or ice

gas (greenhouse). A component of the atmosphere that absorbs heat radiated by the Earth and subsequently warms the atmosphere

global warming. An atmospheric process where greenhouse gases absorb heat energy, instead of letting that energy escape into space, increasing the average global temperature over time

human activities. Actions people do for work or play, such as driving, farming, or swimming

methane. CH_4. A greenhouse gas emitted during the production and transport of fossil fuels, from waste decay in landfills, or by livestock

pollution. The release of harmful substances into the environment

prediction. A statement about future changes, based in observation, experience, or scientific reason

sea level. The height of the ocean surface, equivalent to 0 ft of elevation. Sea level change is a measurement of how much and how quickly that height has increased or decreased over time, relative to the nearby land

severe (as in weather). A high-energy, damaging weather event

temperature. A degree of hotness or coldness measured on a definite scale. Extreme temperatures are those at or beyond the highest or lowest historical records for a location

tropical storm. A severe storm within 23 degrees north or south of Earth's equator

Standard Core Concept

Human activities contribute to global warming that will impact Hawaii. People can make decisions to reduce the impacts of global warming by gathering data, asking questions, and making predictions (NGSS Appendix E).

Associated Below Grade-Level Dimensions

The **Disciplinary Core Idea** for this standard is ESS3.D, Global Climate Change. This topic builds on a student's understanding that if "Earth's global mean temperature continues to rise, the lives of humans and other organisms will be affected in many different ways (National Research Council, 2012)." Students should be familiar with:

- 5-ESS3-1, Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. (HSA-Alt Essence Statement: Recognize sources of pollution, identify the effects of that pollution on air or water quality, and/or determine steps that can be taken to protect or clean up the environment.)

The **Science and Engineering Practices** for this standard is Asking Questions and Defining Problems. At the middle school level, it builds in part on a student's skills to specify qualitative relationships, such as:

- identifying testable and non-testable questions, and
- using prior knowledge to describe problems that can be solved (NGSS Appendix F).

The **Crosscutting Concept** for this standard is Stability and Change. At the middle school level, it builds on a student's skills to:

- measure change in terms of differences over time, and
- understand that some systems appear stable but will eventually change over long periods of time (NGSS Appendix G).

Accommodating Individual Student Needs on the CEA

It is highly recommended that students receive the same accommodations on the CEA as they receive during classroom instruction.

Manipulatives

Manipulatives may aid student understanding, engagement, and ability to focus on the concepts in this testlet. Objects may be used to represent concepts presented in this testlet. Possible representations include:

- heat – a warm window or an object that has been warmed by the sun
- cold – an ice cube or an object that has been in the refrigerator
- atmosphere – point to the area around a globe

Physical Action

Some concepts in this testlet may be more easily understood if presented with teacher modeling or pantomiming. Some examples include pedaling to suggest bicycling, moving arms to suggest swimming, and plugging your nose to suggest that car exhaust smells bad.

Encourage the student to interact with instruction and make choices using a preferred mode of communication. If the student is not able to interact with the instruction verbally or physically (e.g., manipulating or pointing to objects or graphics), consider other ways that the student could indicate a choice.

Always make sure to provide enough wait time for the student to respond.

Picture Symbols, Sign Language, Augmentative and Alternative Communication (AAC) Devices

Ensure that the student is able to use a preferred mode of communication (verbalizing, pointing, gesturing, selecting picture symbols, using sign language or an AAC device) when interacting with the testlet. Pre-teach key vocabulary using the following strategies:

1. Introduce key vocabulary with associated graphics (illustrations or picture symbols).
2. Post the graphics in a place that is convenient for student viewing.
3. Repeat the vocabulary on a regular basis, using verbal cues.
4. Provide the student with opportunities to practice using the vocabulary.

Tactile Materials, Including Tactile Graphics and Tactilely Enhanced Objects

Tactile materials may be used to represent environmental concepts to a student with a visual impairment or a student who learns best through touch. Images may be tactilely enhanced, and graphs, tables, and maps may be presented as tactile graphics.

Resources

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-2022-2023/hsa-alt-participation-guidelines-2022-2023

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

Universal design for Learning Instructional Units, NCSC's ELA and mathematics instructional units for students with significant cognitive disabilities.
https://wiki.ncscpartners.org/index.php/UDL_Instructional_Units