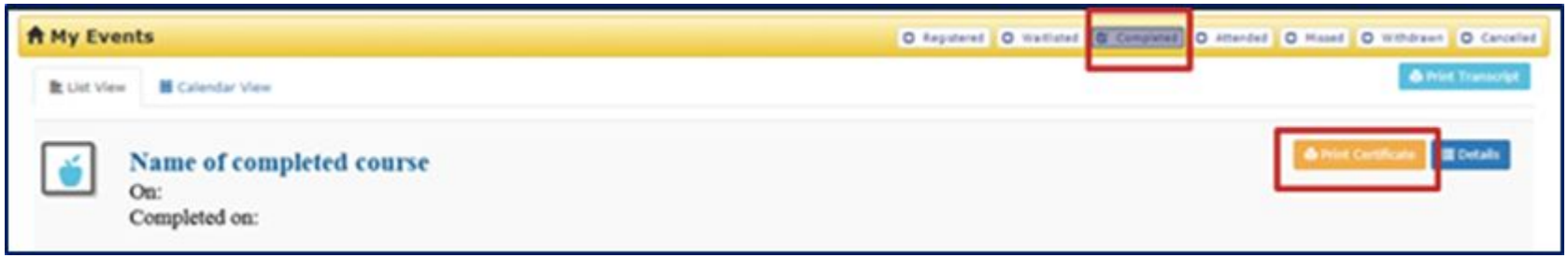
WELCOME!

Please review this information while we wait for all to join!

Attendance, Resources & PD Clock Hours

- **Please stay on the whole time to receive credit**
- **<u>YOU</u> print your certificate through ADE Connect(see image)- please wait 24-48 hours of webinar before printing certificates**



- **Please make sure your name (in Zoom) matches the name used to register in ADE system**
- **AFTER WEBINAR: Survey & follow-up email from ADE**

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What Secondary Science Educators Need to Know About Performance Tasks

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What Secondary Teachers Need to Know about Performance Tasks- Webinar Dashboard

Facilitators/Developers: ADE: Rebecca Garelli: Rebecca.Garelli@azed.gov I Sarah Sleasman: Sarah.Sleasman@azed.gov
ASTA: Sara Torres: astaexedir@gmail.com I Meg Gebert: 2019_president@azsta.org

ADE Science Standards Page | ADE Science Resource Page | Arizona Science Teachers Association

1	General Resources	⊕ **Presentation PDF:** PDF of Slides
2	Video Describing 7th Grade Science Unit	⊕ 7th Grade Unit from Arizona- Journey to the Center of the Earth ○ Overview Video of Arizona 7th Grade Earth & Space Unit ○ Arizona Middle School Units ⊕ ADE Science Standards Planning Tool
3	What is a Performance Task (PT)?	⊕ **STEM Teaching Tool #29:** Steps to Designing 3-D Assessments
4	Arizona 7th Grade Created PT	⊕ Arizona 7th Grade Performance Task (ONLY student task) ○ 7th Grade Arizona PT MAKE A COPY
5	Arizona 7th Grade Performance Task (FULL TASK)	⊕ Full Copy of Arizona PT: Full PT 7th Grade Arizona

What, Why, How

Introduction and review of assessment to define what a performance task is by defining the characteristics of high-quality assessment.

Key takeaways that participants will learn:

- what a performance task is
- key components of a performance task
- how to evaluate a performance task

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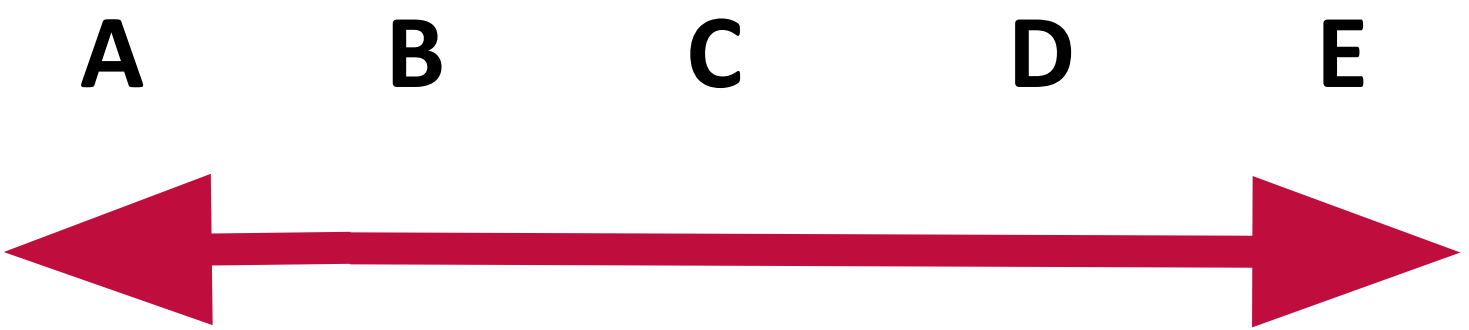
Performance Task (PT) Comfort Level

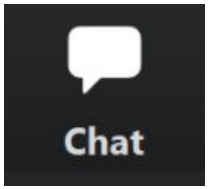
Where do you fall on this spectrum?



I know the Performance Tasks exist

I have used PTs with my students

I can confidently screen tasks and/or create my own



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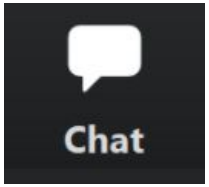
Developing Assessments for 3-Dimensional Science Standards

What does three-dimensional assessment mean to you?

Alone Zone

Waterfall



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Developing Assessments for 3-Dimensional Science Standards

"Assessment tasks have to be designed to provide evidence of students' ability to use **practices**, to apply their understanding of the **crosscutting concepts**, and draw on their understanding of specific **disciplinary ideas**, all in the context of addressing specific problems."

– *Pellegrino, Wilson, Koenig, Beatty,* Editors*, Developing Assessments for the Next Generation Science Standards National Academies Press (2014)*

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What is a Performance Task (PT)?

A **performance task** is any learning activity or assessment that asks students to perform to demonstrate their knowledge, understanding and proficiency. **Performance tasks** yield a tangible product and/or **performance** that serve as evidence of learning.

Task: A single, multi-component activity designed to elicit understanding of a standard/performance expectation (or part of one).

Setting the Stage

Arizona 7th Grade Earth & Space Unit: Journey to the center of Earth: Traveling from the atmosphere to the lithosphere

Anchor Phenomena: Living on the moon would require materials to cycle as they do on Earth

- **Guiding question:** How can humans colonize the moon?

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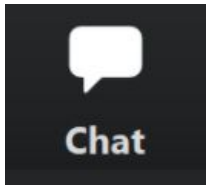
Arizona 7th Grade Created PT

Take a few minutes to immerse yourself into the task, **make a copy** (#4 in Dashboard)

What do you notice/wonder about the PT?

How is this different/similar than traditional assessments?



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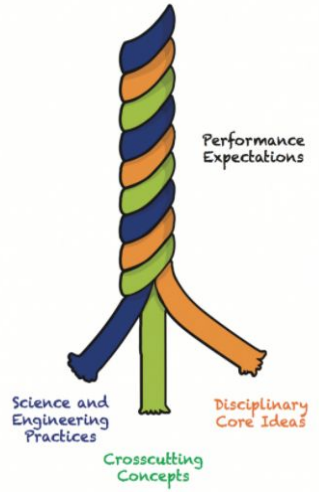
Standards

7.E1U1.5
Construct a model that shows the cycling of matter and flow of energy in the atmosphere, hydrosphere, and geosphere.

[AZ Department of Education Science Standards Planning Tool]



MS-ESS2-1 Earth's Systems

Students who demonstrate understanding can:

MS-ESS2-1. **Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.** [Clarification Statement: Emphasis is on the processes of melting, crystallization, weathering, deformation, and sedimentation, which act together to form minerals and rocks through the cycling of Earth's materials.] [*Assessment Boundary: Assessment does not include the identification and nam*

MS-ESS2-4 Earth's Systems

Students who demonstrate understanding can:

MS-ESS2-4. **Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.** [Clarification Statement: Emphasis is on the ways water changes its state as it moves through the multiple pathways of the hydrologic cycle. Examples of models can be conceptual or physical.] [*Assessment Boundary: A quantitative understanding of the latent heats of vaporization and fusion is not assessed.*]

3-Dimensional Scavenger Hunt- 5 min

- Identify & highlight the Crosscutting Concepts in the PT
- Identify & highlight the Science & Engineering Practices in the PT
- Identify & highlight the Disciplinary Core Ideas in the PT

(#4 in Dashboard)

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Breakout Room Discussion

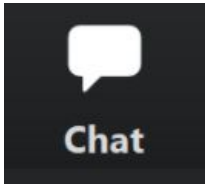
Facilitator - ensure everyone has a turn to share

Time Keeper - 8 minutes

Reporter - prepare brief summary for whole group chat

Discussion questions:

Did you find the 3-dimensions in the PT? Provide evidence of where you found the 3-dimensions.



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Guide for Developing a Performance Task & Rubric

Step 1: Review Standard/Performance Expectation

Step 2: Identify the 3-dimensions that you want to assess

Step 3: Identify learning goals, Evidence of Learning (EoLs), or learning claims

Step 4: Construct PT questions and prompts aligned with EoLS/Learning Claims

Step 5: Develop Scoring Rubric (high, low, and medium levels as needed)

Step 6: Pilot PT

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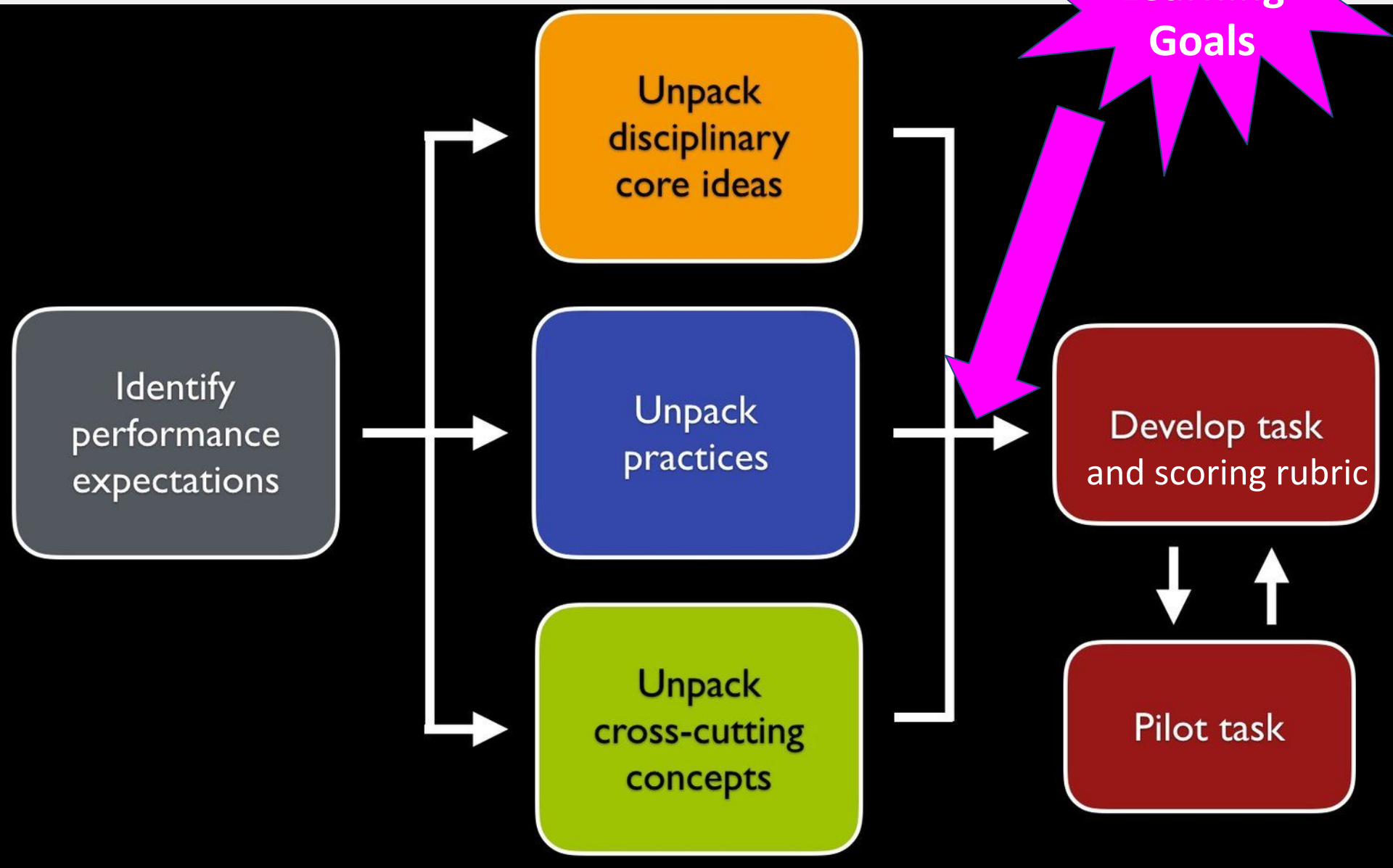
Guide for Developing a Performance Task & Rubric



Developing a PT: Steps 1-3

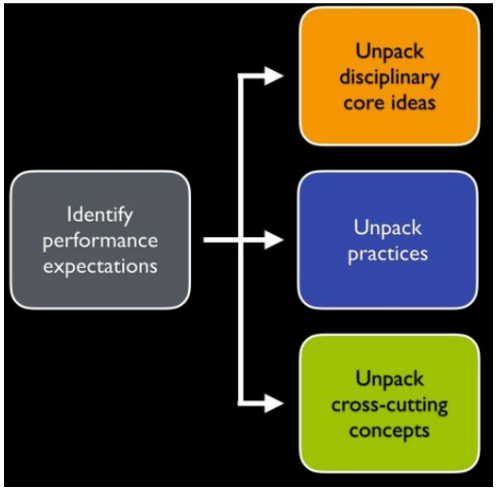
Develop task

7.E1U1.5
Construct a model that shows the cycling of matter and flow of energy in the atmosphere, hydrosphere, and geosphere.

Evidence of Learning Specifications

1. **Construct a model that:**
   a. Describes the cycling of matter in the hydrosphere as a system
   b. Describes the cycling of matter(Carbon) in the atmosphere as a system
   c. Describes the flow of energy from the sun within the hydrospheric and atmospheric systems
   d. Describes how the energy flow and matter cycling systems interact within the hydrosphere and the atmosphere.

a.



Step 1 & 2

b.

Create Learning Goals

Step 3

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Step 4: Construct PT Questions & Prompts

Develop task

Phenomena - Observable events in the natural world (science)

-OR-

Problem - human need or want (engineering)

Stimuli - information (e.g. data, text, etc.) required for the prompts (also called scenarios)

Prompts - questions on the assessment

1. You have decided to apply for a job in the aquarium department at a pet store. As part of your interview, you must demonstrate your understanding of what is needed to keep fish healthy in a simple fish bowl.

SCENARIO

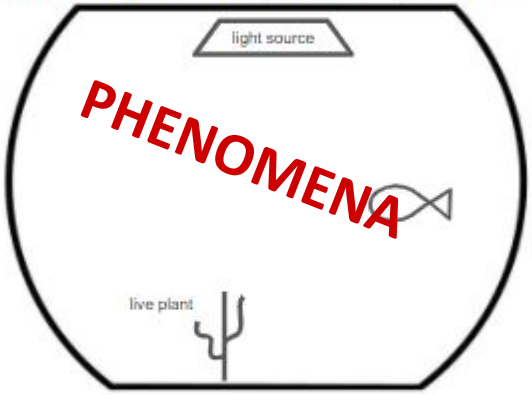
Looking at the basic layout below, describe how the light source, fish, and live plant work together in the system that helps keep the fish alive by:

a) adding arrows to the diagram showing how both energy and matter cycle in the bowl and
b) completing the table describing the sources and sinks in the bowl.

NOTE: Fish take in oxygen and expel carbon dioxide just like humans do. However, they use gills instead of lungs and the CO_2 and O_2 are dissolved in the water instead of being gases in the air.

PROMPT

a) add arrows to the diagram showing how both energy and matter cycle in the bowl



b) complete this table by listing the sources and sinks for each of the elements listed

PROMPT

	source(s)	sink(s)
carbon dioxide		
light		
oxygen		

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Adapted from [The Wonder of Science Performance Assessment Screening Tool]

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Scenarios in a Performance Task

Develop task

Engaging, relevant, and compelling scenarios in assessment tasks...
✓ Present students with **real-world** observations. **Phenomena**
✓ Are based around at least one **specific instance**, not a topic or generally observed occurrence.
✓ Are presented to students as **puzzling or intriguing**.
✓ Provide, as part of the scenario, a **compelling question or observation that needs to be explained**—in other words, scenarios clearly point out to students what aspect of the scenario is uncertain, and why figuring that uncertainty out matters to someone.
✓ Are **explainable using the grade-appropriate DCIs, SEPs, and CCCs**—and not ideas that are outside what is described by each dimension, or parts of the dimensions that are below or above grade-level.
✓ **Effectively use at least 2 modalities** (e.g., text-based descriptions, images, video, etc) to present information.
✓ Present **real or well-crafted, grade-appropriate data**, if data are being used.
✓ **Use as many words as needed** to convey the relevant and compelling features of the phenomena, **but no more.**
✓ Are **sufficiently rich to drive the task at hand**—they provide students with enough information to engage in the whole task without including unnecessary information that might distract or confuse students. Note that whether a task is "rich enough" depends on the length and purpose of the task.

As you look at this, what matches with your current thinking about assessments? What is new?

Chat

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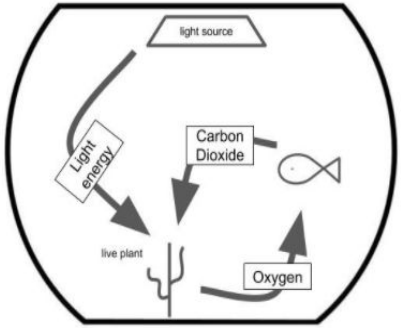
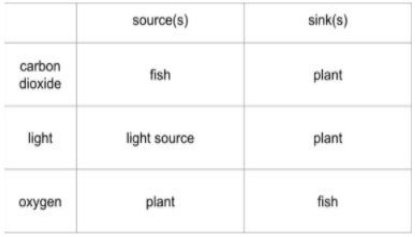
Step 5: Develop Scoring Rubric

Develop task and scoring rubric

Evidence of Learning Specifications

1. **Construct a model that:**
   a. Describes the cycling of matter in the hydrosphere as a system
   b. Describes the cycling of matter(Carbon) in the atmosphere as a system
   c. Describes the flow of energy from the sun within the hydrospheric and atmospheric systems
   d. Describes how the energy flow and matter cycling systems interact within the hydrosphere and the atmosphere.

	Level 4: Advanced	Level 3: Proficient	Level 2: Developing	Level 1: Beginning	Level 0: Not Evident
Annotated Diagram	Level 3 annotation PLUS any correct inputs from or outputs to the fishbowl surroundings		2 arrows with correct labels or all three arrows with 1-2 labels or all three labels, with 1-2 arrows	1 arrow with correct label or some arrows with no labels or some labels with no arrows	no annotation on the diagram
Table	Level 3 table PLUS additional sinks (outside of bowl) and/or sources (from outside of bowl)		4 or 5 sources or sinks correctly identified	2 or 3 sources or sinks correctly identified	only light source is filled in on the table

	source(s)	sink(s)
carbon dioxide	fish	plant
light	light source	plant
oxygen	plant	fish

Step 6: Pilot Performance Task

Purpose:

- Determine if the PT is aligned with your learning goals
- Imagine the range of possible student responses to question
- Construct an ideal student response
- Share, review, and revise

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Guide for Developing a Performance Task & Rubric

Step 1: Review Standard/PE

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Step 4: Construct PT questions and prompts aligned with EoLS/Learning Claims

Step 5: Develop Scoring Rubric (high, low, and medium levels as needed)

Step 6: Pilot PT

But...what happens if you find a PT? How do you check for alignment to standards?

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How to See if a Task is Aligned to 3-Dimensional Science Standards

If task is NGSS- compare to AzSS **FIRST**:
Standards Planning Summaries- NGSS vs. AzSS

Then look at the NGSS Evidence statements:
https://www.nextgenscience.org/evidence-statements

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Screening a Performance Task (PT)- 10 min

Question	Yes	No
1. The task introduces new concepts or ideas.	☐	☐
2. Is there a **phenomenon** or problem driving the task?	☐	☐
3. Can the majority of the task be answered **without** using information provided by the task scenario?	☐	☐
4. Can significant portions of the task be answered successfully by using **rote knowledge** (e.g., definitions, prescriptive or memorized procedure)?	☐	☐
5. Does the majority of the task require students to **use reasoning** to successfully complete the task?	☐	☐
6. Does the task require students to use some understanding of **disciplinary core ideas** to successfully complete the task?	☐	☐
7. Do students have to use at least one **science and engineering practice** to successfully complete the task?	☐	☐
8. Are the **dimensions assessed separately** in the majority of the task?	☐	☐
9. Is the task **coherent and comprehensible** from the student perspective?	☐	☐
10. The prompts explicitly mention or require students to use **crosscutting concepts**. (yellow box is goal, but may not be possible)	☐	☐

#10 Dashboard

Grade 9-12: Drought in the Galapagos TCT

January-April

May-August

Sept-Dec

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Screening a Performance Task (PT)

Question	Yes	No
1. The task introduces new concepts or ideas.	☐	☐
2. Is there a **phenomenon or problem driving the task**?	☐	☐
3. Can the majority of the task be answered **without** using information provided by the task scenario?	☐	☐
4. Can significant portions of the task be answered successfully by using **rote knowledge** (e.g., definitions, prescriptive or memorized procedure)?	☐	☐
5. Does the majority of the task require students to **use reasoning** to successfully complete the task?	☐	☐
6. Does the task require students to use some understanding of **disciplinary core ideas** to successfully complete the task?	☐	☐
7. Do students have to use at least one **science and engineering practice** to successfully complete the task?	☐	☐
8. Are the **dimensions assessed separately** in the majority of the task?	☐	☐
9. Is the task **coherent and comprehensible** from the student perspective?	☐	☐
10. The prompts explicitly mention or require students to use **crosscutting concepts**.	☐ ★	☐

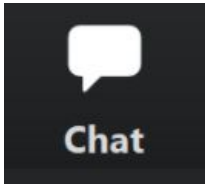
Based on your assessment needs and the task purpose recorded above, make a recommendation about this task moving forward (choose one):

- ☐ Keep it - ready to use as is.
- ☐ Adapt it – minor changes needed to make it match assessment needs.
- ☐ Kick it – not usable given the assessment needs.

(#11 in Dashboard)

Now What?

1. Review "Xs" and compare to red flags
2. Determine if you will keep, adapt, kick it
3. Share ideas in chat & describe WHY



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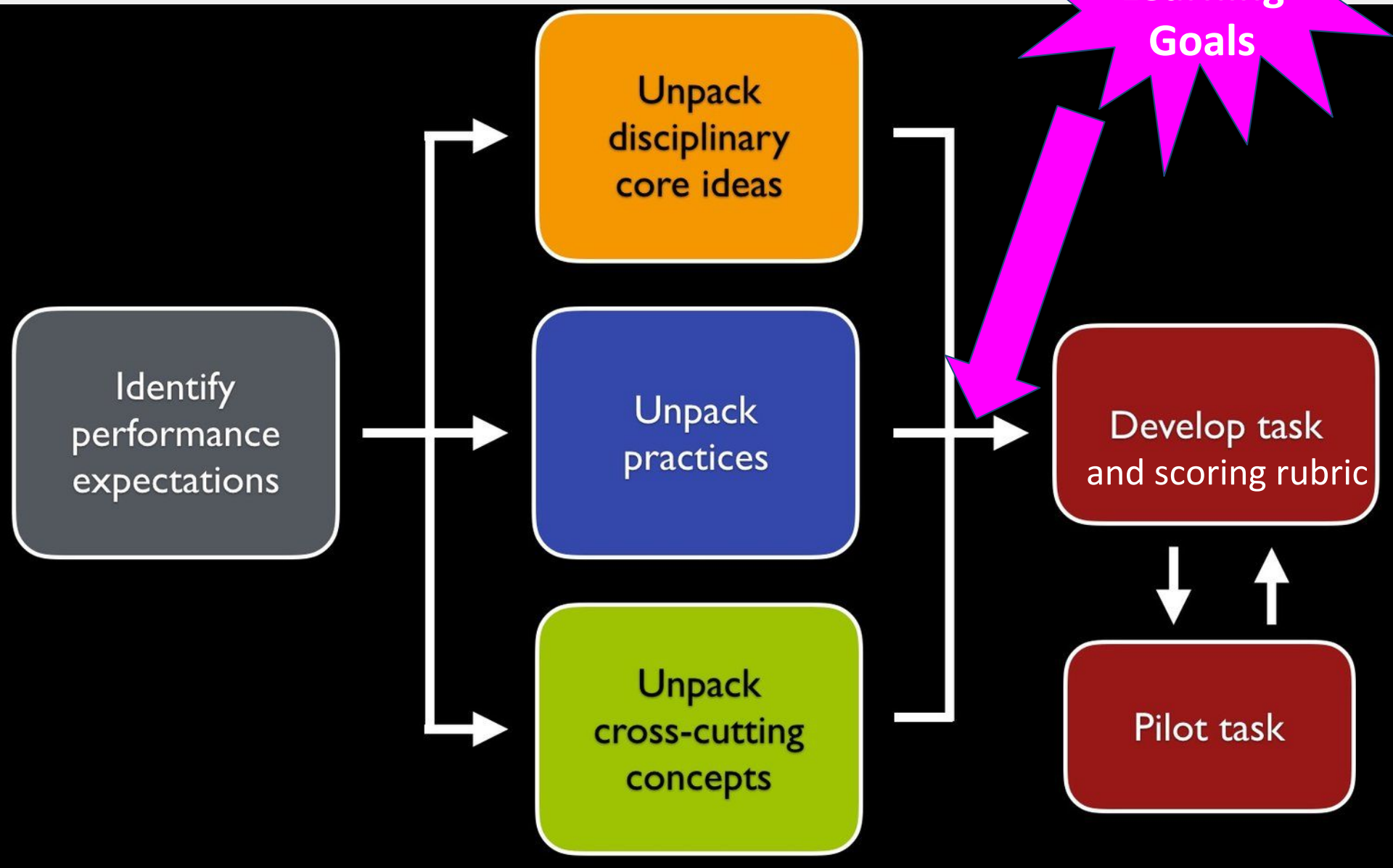
Guide for Developing a Performance Task & Rubric



Consideration

Amphi Tool 5 Student Checklist

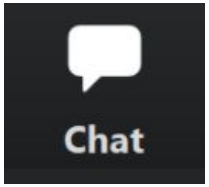
Q.#	Task	✓
1.	Annotate model with labels and arrows to show all interactions	
	Complete the table of sources and sinks	
2.	Choose at least one solution	
	Describe why the oxygen is low and how the solution(s) address(es) it. .	
3.	Label the model with as many parts and processes of the water cycle as you can. Your labeled model must show evidence of one complete water cycle.	
	Describe why there is water blocking the view into the dome	
4.	Annotate the coworker's solution using the key and explanations in the margin.	
	Annotate the boss's solution using the key and explanations in the margin.	
	Choose one of these solutions to give to the customer.	
	Write your name on your assessment! 😁😁	

Developing a Performance Task

How does this process compare to what you have traditionally done in developing assessments?

Alone Zone (by yourself)- 1 min write

Waterfall



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Friday Focus Webinars

Friday Focus Flyer

#1 - The State of Assessments and Accountability - September 25, 2020 - Video - PDF - PowerPoint - FAQ (Webinar Chat Questions)

#2 - Things You Need to Know as a New District Test Coordinator - October 16, 2020 - Video - PDF - PowerPoint - FAQ (Webinar Chat Questions)

#3 - AzSCI: Test Administration, Instruction, and Next Steps - October 30, 2020 - Video - PDF - PowerPoint - FAQ (Webinar Chat Question)

#4 - Accessibility and Assessments / Special Paper Version Tests - November 6, 2020 - Video - PDF - PowerPoint - FAQ (Webinar Chat Questions)

#5 - Field Tests - Why Do We Do Them? - December 4, 2020

#6 - Accountability - What Now? - February 5, 2021

AzSCI Resource Suite

AzSCI Sample Test - Select Arizona, then click on "Mic Check and Sample Tests"

- Recorded Videos for Using the Sample Tests
  - Accessing the Sample Test
  - How the Tests are Set Up
  - Item Types
- Scoring Guides
  - AzSCI Scoring Guide_Grade 5
  - AzSCI Scoring Guide_Grade 8
  - AzSCI Scoring Guide_Grade_11
- Grade 8 and 11 Exhibit
  - Periodic Table of Elements
- Grade 11 Exhibit
  - Formula Reference Guide
- Item Specifications
  - Grade Band 3-5
  - Grade Band 6-8
  - High School

ADE Friday Focus Webinars

ADE Assessment Website

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Other Opportunities!

Assessing in a 3-D Way

- 8 hour course to assist teachers in developing performance tasks
- Asynchronous & Synchronous using Schoology platform
- Based on grade-bands (K-2, 3-5, 6-8, HS)

PAEMST 7-12 Awards

The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) are the nation's highest honors for teachers of mathematics and science (including computer science). Nominations and applications open for mathematics and science teacher grades 7-12 opened in the Fall. To submit a nomination, you only need the teacher's contact information. If you know more than one teacher deserving this award, you may submit more than one nomination. Teachers may also initiate the application process themselves at www.paemst.org.

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REMINDER!

Attendance, Resources & PD Clock Hours

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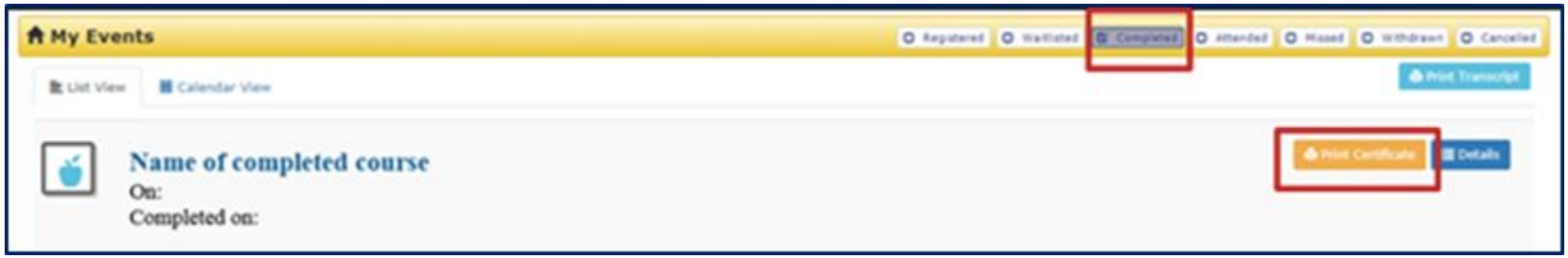
- YOU print your certificate through ADE Connect(see image)- please wait 24-48 hours of webinar before printing certificates



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- AFTER WEBINAR: Survey & follow-up email from ADE

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Thank you!

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