

OPPORTUNITY



OF A LIFETIME

NSCAS Science: Building a Coherent System of Curriculum, Instruction, and Assessment

Audrey Webb- NDE Science Content Specialist

Rhonda True-NDE CGSA Specialist

Agenda

1. Dive into a 5th Grade Science Formative Task
2. Extrapolate needed Science instructional shifts
3. Analyze Science classroom video
4. Building coherence with parallel instructional and assessment shifts for Science
5. Access the Nebraska Science Formative Assessment Repository

Warm Up

While you are settling in to your seats you have 5 minutes to look through the **5th grade formative science tasks** and consider the following questions:

In this task,

- a. What do you notice students DOING?
- b. What do you notice students figuring out?
- c. How do you notice students thinking about science?

Warm Up

Take 5 minutes to look through the two **5th grade formative science tasks** and consider the following questions:

In this task,

- What do you notice students DOING?
- What do you notice students figuring out?
- How do you notice students thinking about science?

[Task 1](#)
[Task 2](#)



Three-Dimensional Science Learning

Science and Engineering Practices (SEP)

1. Asking questions (sci.) & defining problems (eng.)
2. Developing & using models
3. Planning & carrying out investigations
4. Analyzing & interpreting data
5. Using mathematics & computational thinking
6. Constructing explanations (sci.) & designing solutions (eng.)
7. Engaging in argument from evidence
8. Obtaining, evaluating, & communicating info

What students DO

Disciplinary Core Ideas (DCI)

Life Sciences

- LS1: From molecules to organisms: structures & processes
LS2: Ecosystems: interactions, energy, & dynamics
LS3: Heredity: inheritance and variation of traits
LS4: Biological evolution: unity & diversity

Earth and Space Science

- ESS1: Earth's place in the universe
ESS2: Earth's systems
ESS3: Earth & human activity

Physical Science

- PS1: Matter & its interactions
PS2: Motion & stability: forces & interactions
PS3: Energy
PS4: Waves & their applications in technology for information transfer

Engineering, Tech & the Application of Science

- ETS1: Engineering design
ETS2: Links among eng., tech, science, & society

Crosscutting Concepts (CCC)

1. Patterns
2. Cause & effect
3. Scale, proportion, & quantity
4. Systems & system models
5. Energy & matter
6. Structure and function
7. Stability & change

How students think

Created by JF 7-8-2020

What students figure out

What would instruction need to look like to...?

1. ...support student sensemaking?
2. ... give opportunities for all students to access?
3. ...provide a natural pathway of student learning?



Science Education involves less:	Science Education involves more:
rote, decontextualized memorization	facts and terms learned as needed while developing explanations and designing solutions supported by evidence-based arguments and reasoning
Learning of ideas disconnected from questions about phenomena	systems thinking and modeling to explain phenomena and to give a context for ideas
teachers providing information to the whole class	students conducting investigations, solving problems, and engaging in discussions with teacher guidance
teachers posing questions in only one right answer	students discussing and asking open-ended questions that help solve a problem or explain a phenomenon
students reading textbooks and answering questions at the end of the chapter	students reading multiple sources
pre-planned outcome for cookbook laboratory or hands-on activities	multiple investigations driven by student questions with a range of possible outcomes that collectively lead to a deep understanding of science ideas
oversimplification of activities for students who are perceived to be less able to do science	provision of supports so that all students can engage in sophisticated science

We need to teach in the way learning happens

1. Relevant
2. Activity → concept → vocabulary
3. Opportunities to explain
4. Opportunities to revise

Let's see it in action

[1st Grade Video](#) (start at 3:35 and go to the end of the segment)

While you watch, notice

1. What is the teacher doing to support sensemaking?
2. What are the students doing to figure out the phenomenon?
3. What does the teacher use as her assessment? How does she decide if students are approaching mastery?



Teacher Actions	Student Actions

What did the teacher use as her assessment tool?

Teacher Moves

- Asking questions
- Creating problems for students to solve
- Differentiating
- Formatively assessing
- Prompting students to revise thinking
- Providing multiple modes for students to explain their thinking
- Storylining a unit

Science and Engineering Practices

- Asking questions
- Developing models
- planning/carrying out investigations
- Analyzing data
- Mathematical thinking
- Constructing explanations
- Engaging in argument from evidence
- Obtain, evaluate, communicate information

Formative Assessment

Turn and Talk

1. What would you look for in a science classroom?
2. How could you support teachers in this process?

Write and Reflect

1. What would you look for in a science classroom?
2. How could you support teachers in this process?



Building from the Classroom Level



Quality Summative Assessments

Quality Interim Assessments

Quality Formative Assessments

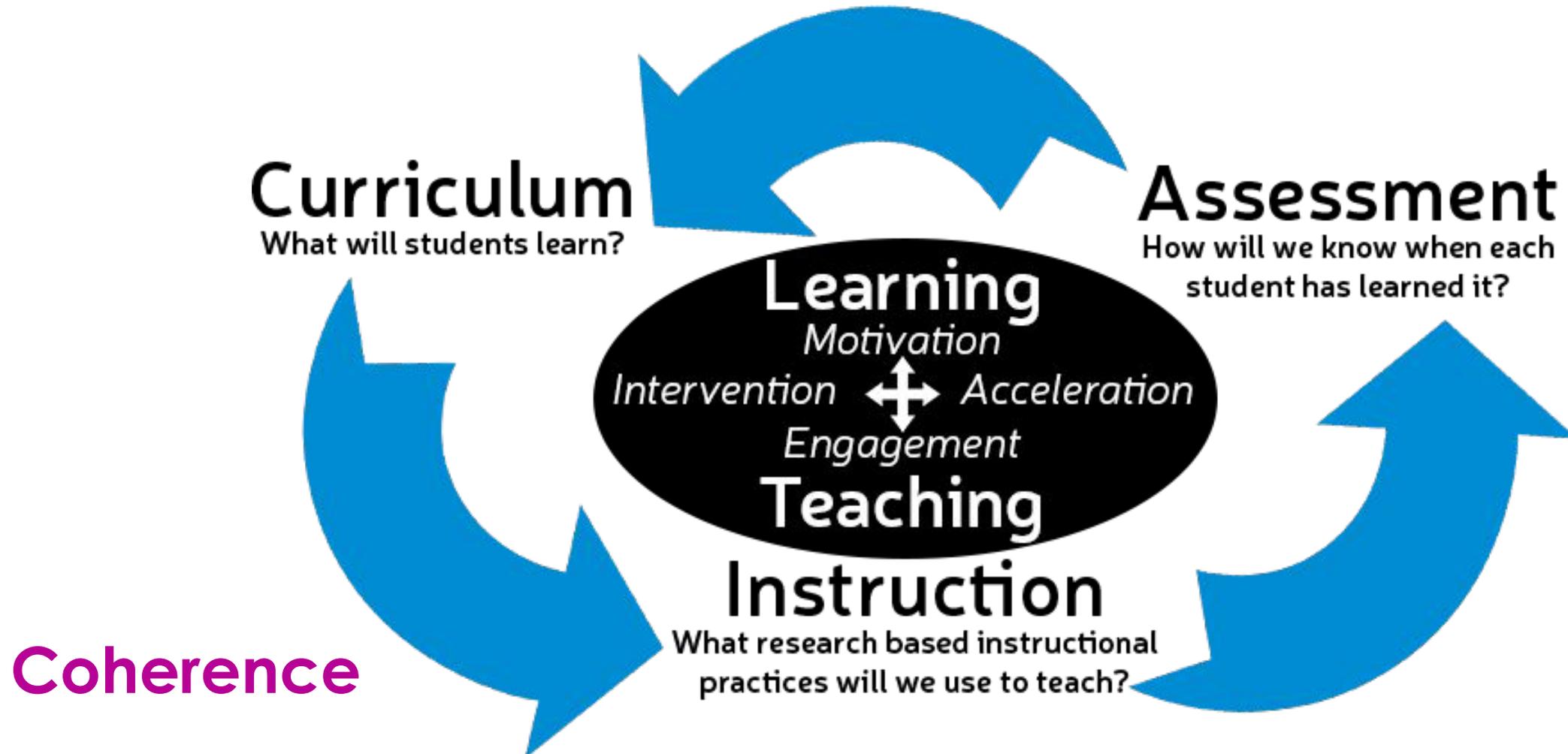
Quality Instruction

Quality Standards

Building in this direction makes Summative Assessment at the service of instructional shifts instead of the other way around.



Cycle of Instruction: CIA triangle



Features to Maintain Consistency

Phenomena and
Problem-
focused

Engage diverse
sense-
making

Require reasoning
with evidence

Grade
appropriate 3D
targets

Demonstrate
science under-
standing by doing
science

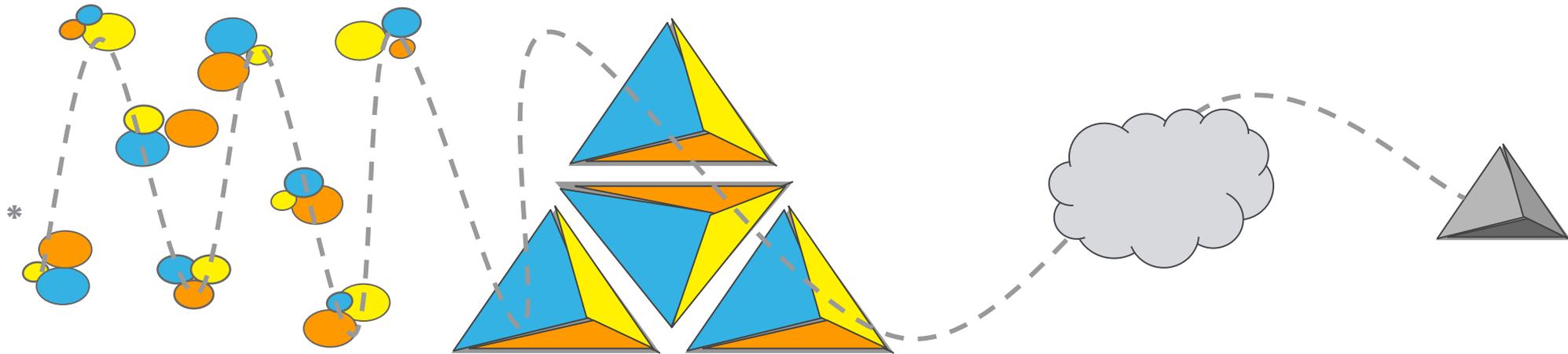


Nebraska's Assessment Development Process Shifts

Moving From	Moving Toward
Writing assessments in isolation	Developing assessments in a coherent system
Modifying instruction to fit assessment (teach to the test)	Curriculum, Instruction, and Assessment equally inform each other as part of a feedback loop
Assigning construct to task	Developing task from construct, utilizing design tools to guide and revise
Determining what assessments measure based on student performance	Determining what counts as actionable evidence with teachers making design choices
Focusing state resources solely on state summative	Focusing resources on the entire system, beginning with classroom formative



NSCAS Science Assessment System Components



Common Thread: Professional learning for educators

Classroom Tasks
(K-12)

**NDE Formative Task
Repository**

Currently at 5 and 8
Building K-12

Interim Assessments
(district chosen)

- District Benchmarks with PAD
- Map Growth

**Statewide
Summative**
(5,8,11**)

**ACT for 3rd year cohort



Statewide Assessment Home

Contact Us

Important Assessment Dates

District Assessment Contact

NSCAS Overview

NSCAS Growth

General Summative Assessment

NSCAS English Language Arts

NSCAS Mathematics

NSCAS Science

Alternate Summative Assessment

ACT

ELPA21

Interim and Formative Supports

Test Development & Applications

Assessment Vendor Partners

Technical Advisory Committee

Technical Reports

National Assessment of Educational Progress (NAEP)

NAEP Current Events

NAEP – Tools & Resources

NE NAEP Snapshot Reports

Questions, Comments, or Corrections? Let us know!

NSCAS Science

NSCAS Science for general assessment is administered to students in grades 5 & 8. Science assessment will transition to College and Career Ready in 2021-2022.

If a student is taking the Science Alternate Assessment please go to the [NSCAS Alternate Summative Assessment Page](#).

Test Administration Window

March 22, 2021 – April 30, 2021

Make-up Testing Only

May 3, 2021 – May 7, 2021

Science Classroom Formative Task Repository for Grades 5 & 8

[Grades 5 & 8](#)

NSCAS Science Test Design

[NSCAS Science Recording & PowerPoint](#)

[NSCAS Science DRAFT Blueprint](#)

[NSCAS Science DRAFT Blueprint Breakdown](#)

[NSCAS Science Draft ALDs](#)

Science Pre-Pilot & Pilot Resources

[5 & 8 Grade Pre-Pilot Science Task](#)

[Spring 2019 Science Pilot](#)

Password:
ScienceFA



NDE Formative Science Repository

Name ↑	Owner	Last modified	File size
 Blank Templates	me	Oct 15, 2020 me	–
 Grade 5	me	Oct 15, 2020 me	–
 Grade 8	me	Oct 15, 2020 me	–
 Learning Module: Become Familiar ...	me	7:43 AM me	–
 Learning Modules: The Tools/Templ...	me	7:44 AM me	–
 How to Access the Documents i...	me	Oct 20, 2020 me	9 KB

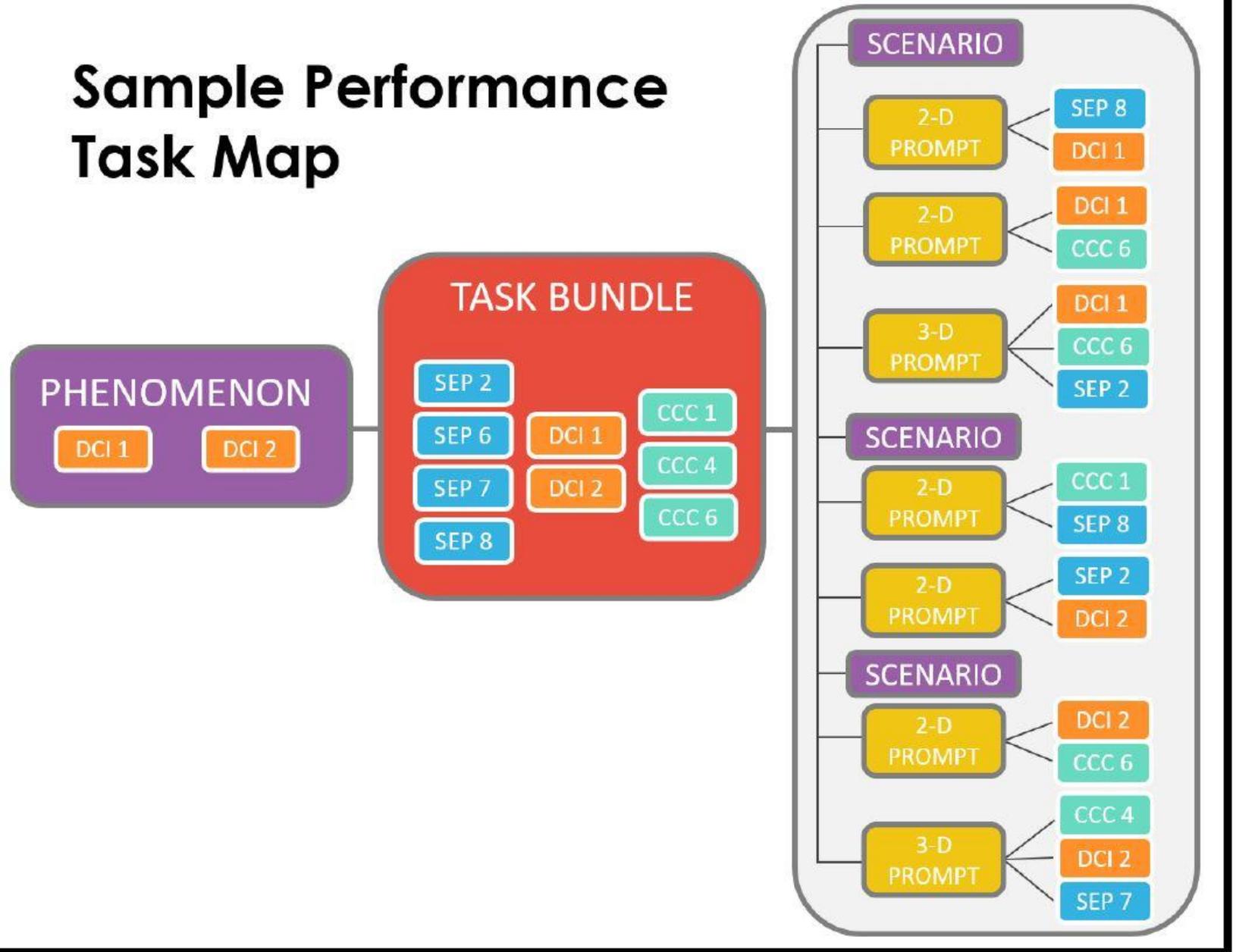
Click to enlarge and see the organization of the folders

The Science Classroom Formative Task repository contains the following folders:

1. Blank Templates
2. Grade 5
3. Grade 8
4. Learning Module: Become Familiar with this Repository
5. Learning Modules: The Tools/Templates & Processes to Write Your Own Tasks
6. How to Access the Documents in the Repository & Keep the Formatting

Statewide Summative Task Model

Sample Performance Task Map



OPPORTUNITY
OF A LIFETIME



Questions?