



Spring 2019 Science Pilot Training

February 2019



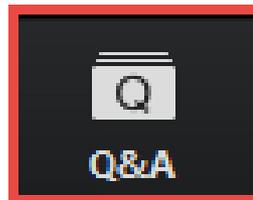
Welcome

- Jeremy Heneger, Director of Assessment, NDE
- Sara Cooper, Science Education Specialist, NDE
- Rhonda True, Enhanced Assessment Grant Coordinator, NDE
- Roy Beven, Senior Content Specialist Science, NWEA



Agenda

- NSCAS Summative Science Overview
- Spring Pilot Overview
- Science Pilot Administration
- Science Pilot Preparation
- Resources
- Questions & Answers





Development Timeline





3 Dimensional Standards

NEBRASKA'S COLLEGE AND CAREER READY STANDARDS FOR SCIENCE

DISCIPLINARY CORE IDEAS

SCIENCE AND ENGINEERING PRACTICES

CROSSCUTTING CONCEPTS

Nebraska
Civics
Computer Science
CONNECTIONS



SECOND GRADE

The second grade standards and indicators help students gather, analyze, and communicate evidence as they formulate answers to questions tailored to student interest and current topics that may include but are not limited to:

How are materials similar and different from one another and how do the properties of the materials relate to their use?

An understanding of observable properties of materials is developed by students at this level through analysis and classification of different materials.

What do plants need to grow?

Students are expected to develop an understanding of what plants need to grow and how plants depend on animals for seed dispersal and pollination.

How many types of living things live in a place?

Students are expected to compare the diversity of life in different habitats.

How does land change and what causes it to change?

Students are able to apply their understanding of the idea that wind and water can change the shape of land to compare design solutions to slow or prevent such change.

What are different kinds of land and bodies of water?
Students are expected to identify different land and water models.

SC.2.3 Structure and Properties of Matter

SC.2.3.1 Gather, analyze, and communicate evidence interactions of matter.

SC.2.3.1.A Plan and conduct an investigation to describe and classify different kinds of materials by their physical and chemical properties.

SC.2.3.1.B Analyze data to determine which materials have the same properties.

SC.2.3.1.C Analyze data to compare the same problem to compare materials.

SC.2.3.1.D Make observations and measurements to identify materials based on their properties.

SC.2.3.1.E Construct a simple model to represent a material or a mixture.



SC.2.7.2.A Plan and conduct an investigation to describe and classify different kinds of organisms by their physical and chemical properties.



Approved by the Nebraska State Board of Education on September 8, 2017

THIRD GRADE

The third grade standards and indicators help students gather, analyze, and communicate evidence as they formulate answers to questions tailored to student interest and current topics that may include but are not limited to:

How do equal and unequal forces on an object affect the object?

Students are able to determine the effects of balanced and unbalanced forces on the motion of an object and the cause and effect relationships of electrical or magnetic interactions between two objects not in contact with each other.

How can magnets be used?

Students are able to apply their understanding of magnetic interactions to define a simple design problem that can be solved with magnets.

How do organisms vary in their traits?

Students are expected to develop an understanding of the similarities and differences of organisms' life cycles. Students develop an understanding that organisms have different inherited traits and that the environment can also affect the traits that an organism develops. In addition, students are able to construct an explanation using evidence for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

How can the impact of weather-related hazards be reduced?

By applying their understanding of weather-related hazards, students are able to make a claim about the merit of a design solution that reduces the impacts of such hazards.

SC.3.1 Forces and Interactions: Motion and Stability

SC.3.1.1 Gather, analyze, and communicate evidence of forces and their interactions.

SC.3.1.1.A Plan and conduct an investigation to describe and classify different kinds of materials by their physical and chemical properties.

SC.3.1.1.B Analyze data to determine which materials have the same properties.

SC.3.1.1.C Analyze data to compare the same problem to compare materials.

SC.3.1.1.D Make observations and measurements to identify materials based on their properties.

SC.3.1.1.E Construct a simple model to represent a material or a mixture.

SC.3.1.1.F Plan and conduct an investigation to describe and classify different kinds of organisms by their physical and chemical properties.

SC.3.1.1.G Analyze data to determine which materials have the same properties.

SC.3.1.1.H Analyze data to compare the same problem to compare materials.

SC.3.1.1.I Make observations and measurements to identify materials based on their properties.

SC.3.1.1.J Construct a simple model to represent a material or a mixture.

SC.3.1.1.K Plan and conduct an investigation to describe and classify different kinds of organisms by their physical and chemical properties.

SC.3.1.1.L Analyze data to determine which materials have the same properties.

SC.3.1.1.M Analyze data to compare the same problem to compare materials.

SC.3.1.1.N Make observations and measurements to identify materials based on their properties.

SC.3.1.1.O Construct a simple model to represent a material or a mixture.

SC.3.1.1.P Plan and conduct an investigation to describe and classify different kinds of organisms by their physical and chemical properties.

SC.3.1.1.Q Analyze data to determine which materials have the same properties.

SC.3.1.1.R Analyze data to compare the same problem to compare materials.

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FOURTH GRADE

The fourth grade standards and indicators help students gather, analyze, and communicate evidence as they formulate answers to questions tailored to student interest and current topics that may include but are not limited to:

What are waves and what are some of the things they can do?

Students are able to use a model of waves to describe patterns of waves in terms of amplitude and wavelength, and that waves can cause objects to move.

What is energy and how is it related to motion?

Students are able to use evidence to construct an explanation of the relationship between the energy of that

How can water, ice, wind and vegetation change the land?

Students are expected to develop an understanding of the effects of weathering or erosion by water, ice, wind or natural Earth processes to generate and compare multiple solutions to reduce the impacts of such processes on humans.

What patterns of Earth's features can be determined with the use of maps?

In order to describe patterns of Earth's features, students analyze and interpret data from maps.

How do internal and external structures support the survival, growth, behavior, and reproduction of plants and animals?

Students are expected to develop an understanding that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. By developing a model, students describe that an object can be seen when light reflected from its surface enters the eye.

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FRAMEWORK INSPIRED



To remain true to the intent of the *Framework*, indicators are 1 **EXAMPLE** of how to put the 3 dimensions together.

Students can and should use multiple CCCs and SEPs to engage in *figuring out* phenomena related to any DCI.



Learning
about

Figuring



ut

3 Prioritized Instructional Shifts



Shift #1: 3-D Teaching and Learning

Instruction should allow students to...
Apply science knowledge through three dimensional learning.

The **Disciplinary Core Ideas** are the focused, limited set of science ideas necessary for ALL students to achieve scientific literacy. The **Disciplinary Core Ideas**, **Science and Engineering Practices**, and **Crosscutting Concepts** each build coherently K-12 to allow for deeper understanding of integrated concepts. When the three dimensions of science knowledge is acquired and applied, and how science is connected through a series of concepts, rather than memorizing facts devoid of context.

How will this shift benefit student learning?

Shift #2: Integrated Science

Instruction should allow students to...
Connect ideas across science domains by explaining natural phenomena and

The **Crosscutting Concepts** are used to organize and make sense of **disciplinary core ideas**. They serve as tools that bridge domain boundaries and deepen understanding of content. The **Crosscutting Concepts** provide structure for synthesizing knowledge from various fields into a coherent and scientifically based view of the world as students explain natural phenomena and design solutions using the **es**. Natural phenomena of both scientists and engineers, and **tion**; empowering **r** everyday lives.

ent learning?

Shift #3: Interdisciplinary Teaching and Learning

Instruction should allow students to...
Use overlapping skills to investigate, evaluate, and reason scientifically

The **Science and Engineering Practices** are used by students to demonstrate understanding of the **disciplinary core ideas** and **crosscutting concepts**. The **Science and Engineering Practices** connect science with mathematics, English Language Arts, and other disciplines through meaningful and substantive overlapping of skills and knowledge.

ent learning?

Goals for Student Learning



**Exploring
unknown/novel
situations**

**Transfer of
understanding**

***Flexible &
logical thinkers***

**Science
learning in *all*
*grades***

***Integrated
application of
knowledge &
skill***

***Reasoning and
evidence in all
content areas***

**Cross-
content
integration**

**Problem solving
& *critical*
*thinking***

**Learning
science by
*doing science***

Grade-Appropriate, Progressive Three-Dimensional Learning



Nebraska's Claims

Overall Claim

Students can demonstrate the scientific literacy necessary to be civic minded decision makers and demonstrate readiness for college, career, and lifelong learning through application of science and engineering practices and crosscutting concepts within and among the disciplines of science.

Critical Consumers of Information

Students can gather, analyze, and communicate information from multiple sources to use as evidence to make sense of familiar and unfamiliar phenomena and problems.

Interconnectedness of Science

Students can make connections between disciplinary core ideas within the physical science, life science, and Earth and Space sciences domains, across multiple science domains, and across multiple content areas (such as mathematics and English language arts) to make sense of familiar and unfamiliar phenomena and problems.



Features to Maintain Consistency

Phenomena
and Problem-
focused

Engage
diverse
sense-
making

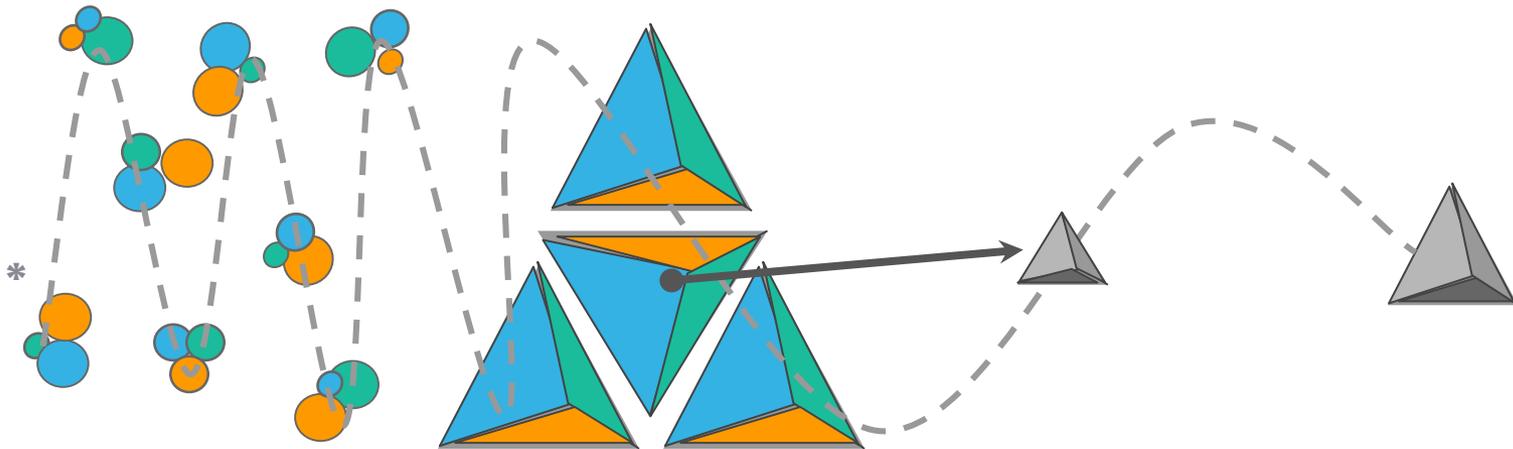
Require
reasoning
with
evidence

Grade
appropriate
3D
targets

Demonstrate
science
under-
standing by
doing science



Assessment System Components



Common Thread: Professional learning for educators

**Curriculum
Embedded
Tasks**
(K-12)

**Task
Library**
(K-12)

**Monitoring
Tasks**
(3,4,6,7,9,10)

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

**ACT for 3rd year cohort

Variable Features

(Adjusted for Purpose and Goals)



Formative/
Summative

Integration
across
domains

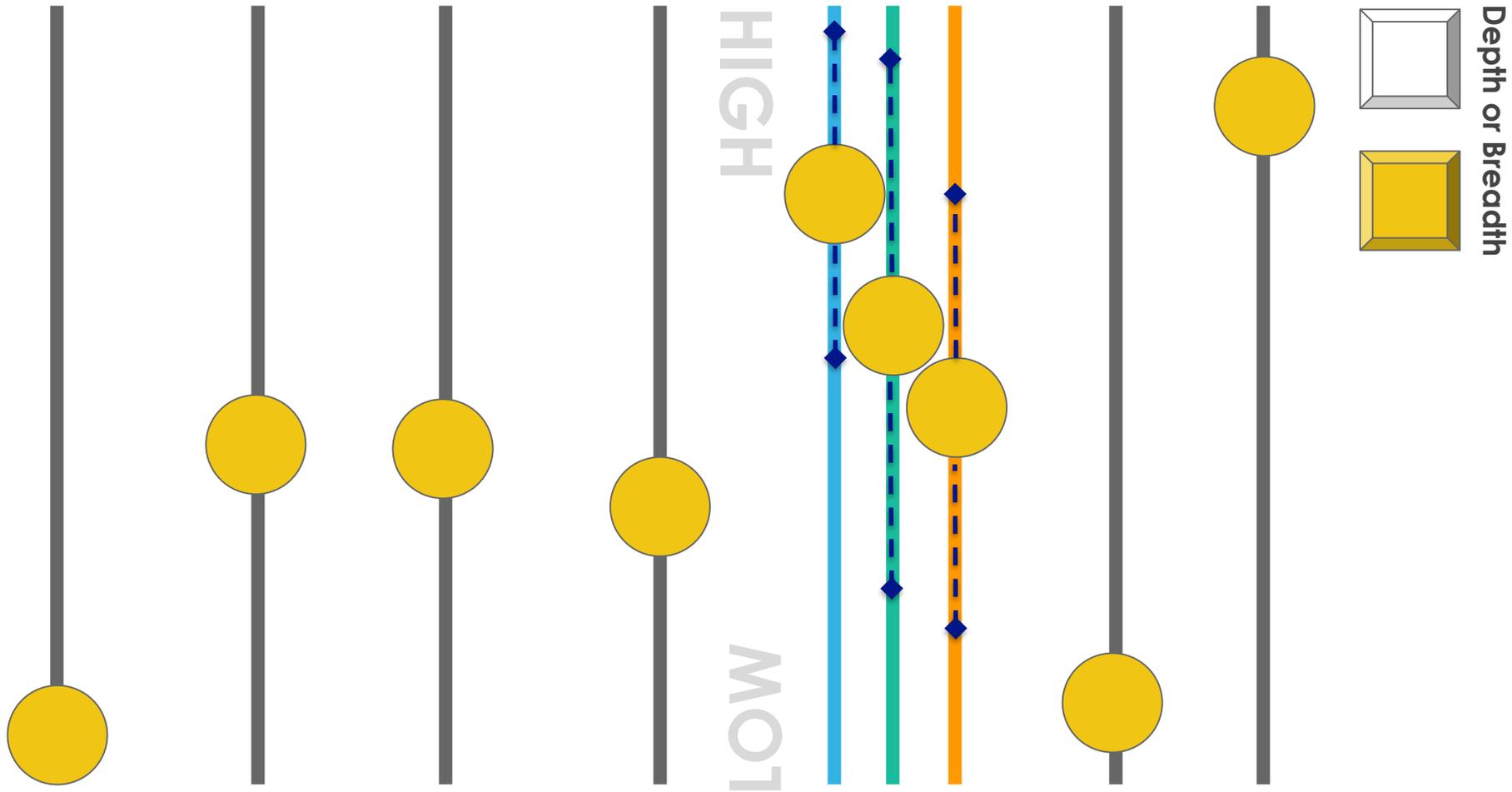
Inter-
disciplinary
connections

Familiar/
unfamiliar
phenomena

SEP/CCC/DCI
Sophistication

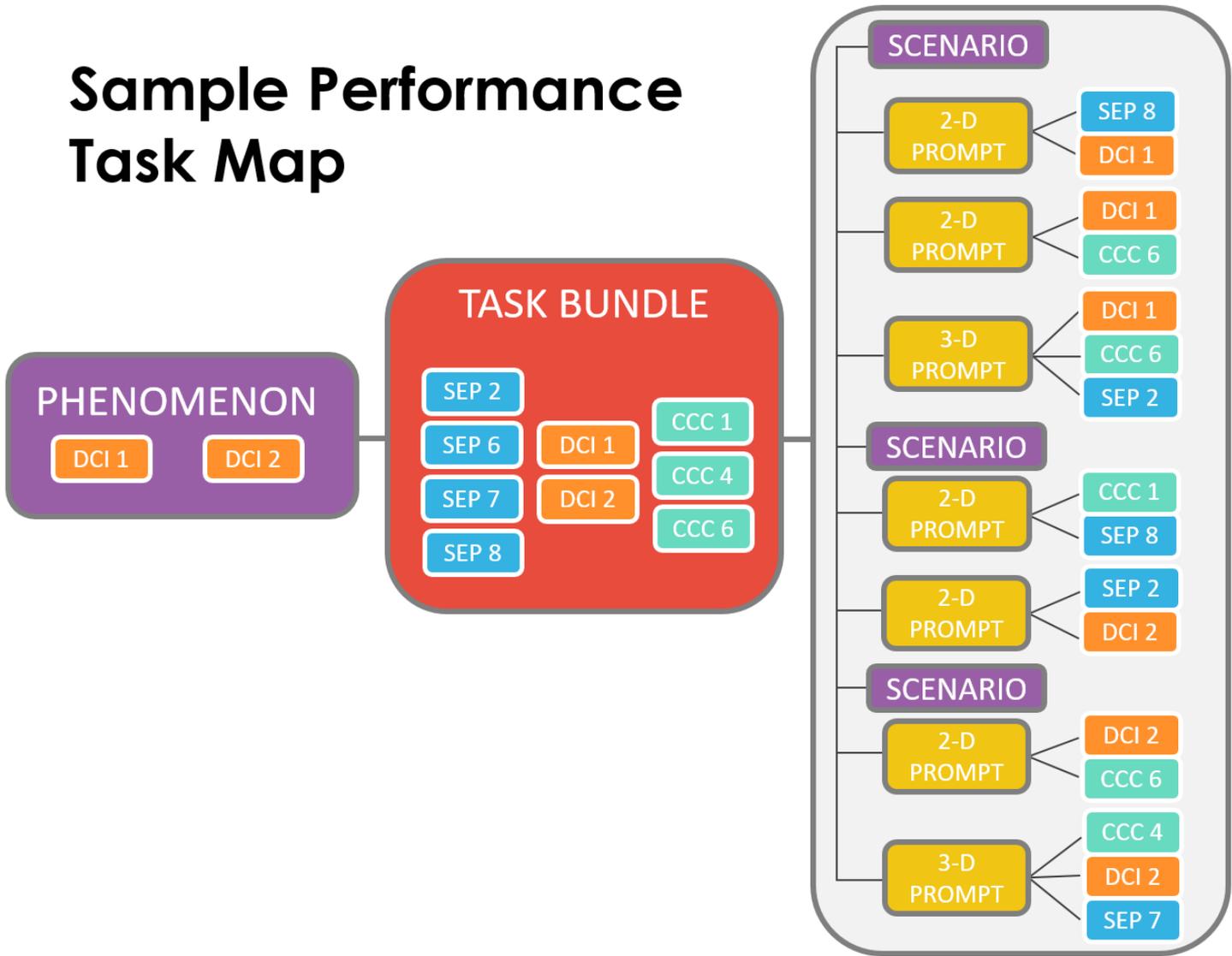
Student
Agency

Transfer



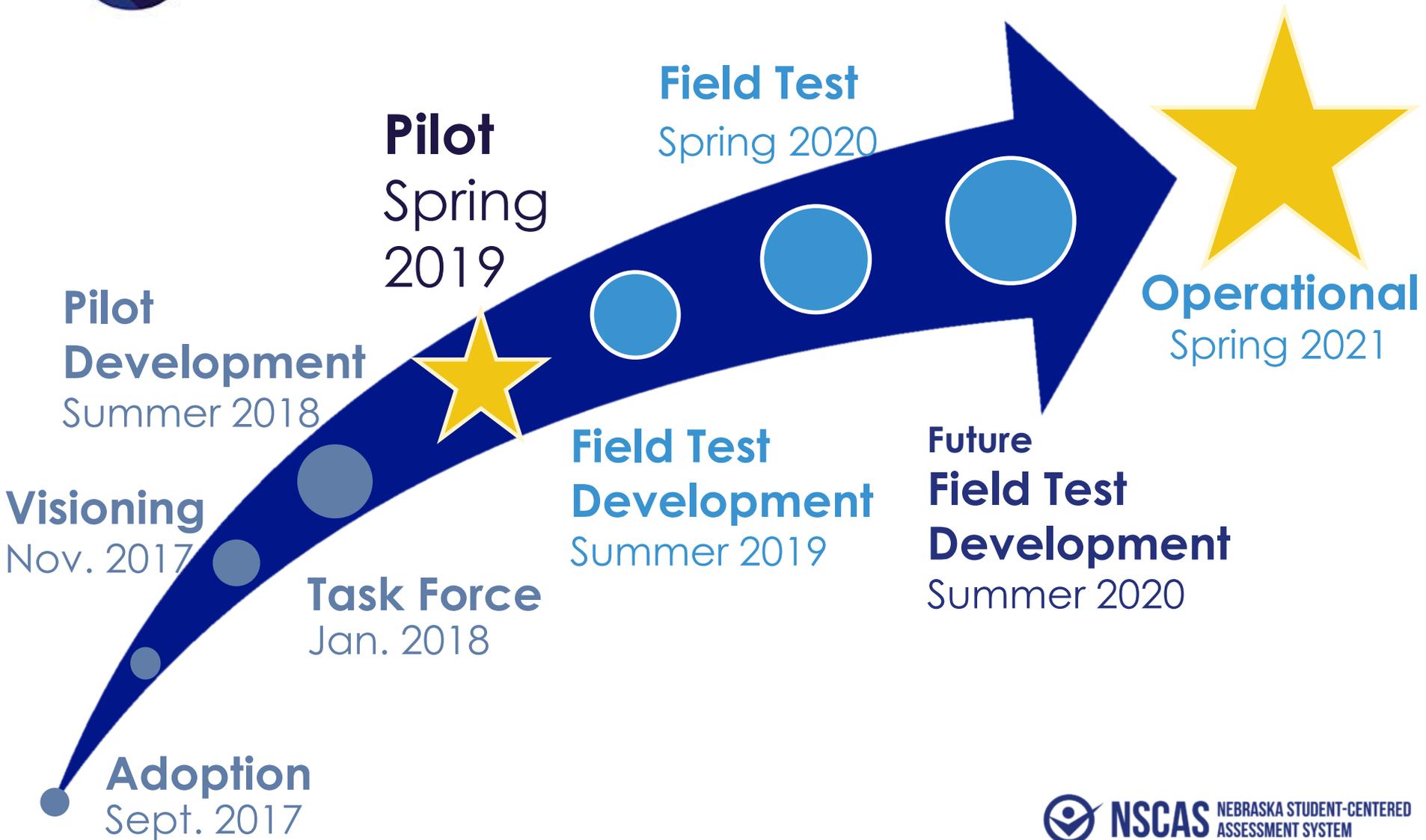


Sample Performance Task Map





Development Timeline





Spring 2019 Science Pilot Overview

Purpose:

- Gather feedback on the new science tasks with new types of questions
- Inform task development in the Summer of 2019 by evaluating the new style and question types
- **Not** to predict performance on the Nebraska College and Career Ready Standards for Science. As a result, student scores will not be provided.

Participants:

- All districts were encouraged to participate. Participation is voluntary.
- All students in grade 5 and 8 are eligible to participate.

Pilot Test Window: March 4 – March 15, 2019



Administration

Administration Platform:

- The science pilot assessment will be administered through Qualtrics, a web-based assessment system
 - Supported browsers include:
 - Apple Safari
 - Google Chrome
 - Microsoft Edge
 - Microsoft Internet Explorer
 - Mozilla Firefox
- For more information on the Qualtrics platform and technical support, please visit: <https://www.qualtrics.com/support/survey-platform/getting-started/help-and-feedback/#LoginBrowserCompatibility>



Administration Information

Forms:

- There are **two** forms at each grade level.
 - Grade 5 form A
 - Grade 5 form B
 - Grade 8 form A
 - Grade 8 form B

Links to the forms will be posted on the NDE Student Assessment website

- Students should be randomly assigned to a form.
 - Recommendation: For any group of students in either grade 5 or 8, assign half of the students form A and the other half form B



Administration Information

Forms:

- The first question will require the student enter his/her 10-digit state ID. No additional student information will be required.
- Each form has two tasks, each with one or two scenarios.
- Each task includes from 5 to 8 questions.
- After each task, students will be asked to provide feedback on their interest, the difficulty of the questions, as well as how well they understood the task.

Test Duration and Scheduling:

- The pilot assessment is not timed. The majority of students should complete a form within 45 minutes.
- Students should complete the entire form in one test session.



Administration - Accessibility

All students should be provided scratch paper and a calculator

There are no standard embedded accommodations/accessibility supports provided through the Qualtrics platform.

- Students may use approved non-embedded resources, such as multiplication charts or noise buffers, as specified by NDE policy.
- Zoom/magnifier – students should use the native device zoom feature to magnify the content on the page.
- Text-to-speech – students should use native screen readers or read aloud in accordance with the NDE accessibility manual

A complete list of non-embedded universal tools, linguistic supports, and accommodations is included in the [*NSCAS General Summative & Alternate Accessibility Manual*](#).



Preparation Tips

- ❑ Ensure device browsers meet the technical requirements
- ❑ Provide students with an opportunity to practice using the sample tasks. This provides students with an opportunity to gain familiarity with the Qualtrics interface and exposes students to the various types of questions on the pilot assessments
- ❑ Review the Science Pilot Test Administration Manual
- ❑ Determine procedures for student assignments of Form A or Form B
- ❑ Ensure students know or have access to their state ID to participate in the pilot



Administration Resources

Sample Tasks:

- Two tasks are available for students and districts to review prior to the administering the pilot assessments.
 - Grade 5 Changing Coral: <http://bit.ly/prepilot5>
 - Grade 8 Blue Skin: <http://bit.ly/prepilot8>
- Recommendation: All students participating in the pilot should complete the appropriate practice task prior to participating in the pilot.

Pilot Administration Manual:

- Includes all procedures and proctor script
- Posted to the Assessment Portal

Feedback



-
- **Embedded Student Feedback Questions**
 - After each task, students will be prompted to provide feedback
 - **Cognitive Labs**
 - A subset of districts will be participating in cognitive labs during the administration. This will be used to gather additional student feedback.



Help Desk

- Policy questions: Contact NDE
 - Phone: 402-471-2495
 - Email: nde.stateassessment@nebraska.gov

- Science Pilot inquires or support: Contact NWEA
 - Phone: (855) 225-9926
 - Email: NWEANebraska@nwea.org
 - 7:00 a.m. – 5:00 p.m. Central Time (CT), Monday – Friday



Questions & Answers