Arkansas Science Assessment Prescreener

DIVISION OF ELEMENTARY & SECONDARY EDUCATION

Introduction

The purpose of the equity-focused Science Assessment Prescreen is to conduct a quick review of assessments to determine whether they might be designed for standards based on the *Framework for K-12 Science Education*, like.the Arkansas K-12 Science Standards. Additionally, this Prescreen will also determine whether these assessments are equitably designed to elicit student thinking from diverse learners. The Prescreen is intended to reveal whether assessments include "red flags"—i.e., challenges commonly found in science assessments.

Evaluating assessments using the Prescreen questions will guide educators in deciding whether an assessment is worth diving into more deeply. Those interested in pursuing a more rigorous evaluation of assessments should use the Science Task Screener; which assumes a deeper understanding of *A Framework for K–12 Science Education* and the Arkansas K-12 Science Standards. The Prescreener and the Task Screener are tools particularly relevant for assessments that are used as major components of a lesson or unit; used across multiple classrooms or schools; or used in other higher-stakes assessments as part of district or state-wide assessment systems. The Prescreen serves as a bridge to understand the key features of assessments developed for three-dimensional standards like the Arkansas K-12 Science Standards.

Because the Prescreen is a quick screen tool as opposed to a comprehensive evaluation tool, the questions in the Prescreener focus on features that are non-negotiable, easily identified, and reflect the most consequential weak points seen in the assessments. While there are many other critically important features of science assessments, they are excluded here for the purposes of screening and are addressed in the Task Screener.

Equity-focused design requires collaborative conversations

While it is possible for the Prescreen to be applied by an individual, attending to equity requires using the Prescreen as part of a collaborative professional learning community (PLC) where diverse perspectives are invited, heard, and understood. Additionally, the PLC process helps to build a common understanding of the Prescreen questions and what constitutes as evidence to address them. These high-level questions can drive very meaningful conversations about equitable science assessments and help reviewers come to a common understanding of features of assessments designed for the Arkansas K-12 Science Standards. Reviewers should carefully discuss their answers to the questions and the evidence in the assessment that led them to a common understanding of language and expectations. Some guiding questions are provided on page 3.

Using the Assessment Prescreen to evaluate science assessments

The Prescreen is organized around a short series of yes-or-no questions. In applying the Prescreen to an assessment, follow these simple steps:

1. Read through the assessment and complete the assessment as though you were a student who is a confident, on-grade level science learner.
2. Read through the assessment and complete the assessment as though you were a student who may feel left out from science learning (e.g., marginalized students, students in poverty, students for whom English is not their only language, students who experience disrupted learning, etc.).
3. Read through any additional support materials for the assessment.
4. Answer the questions in the Prescreen regarding the assessment and note any red flags.
5. Discuss the answers to the questions and evidence to support those answers with other reviewers.
6. Use your analysis to determine the next steps for the assessment.

Because the Prescreen is applied at the level of the assessment rather than individual questions, reviewers will need to answer the questions based on evidence from the assessment as a whole. After reviewing the assessment using the Prescreen, reviewers should consider the red flags they have identified and determine, based on their needs, whether the assessment is:

A. **Recommended for use.** If the assessment has no red flags or if red flags are very minimal then the PLC can agree to use the assessment.
B. **Warrants further review.** If the assessment has a few red flags, it might be an effective assessment and would benefit from a deeper evaluation and potential revision before use.
C. **Should not be used.** Reviewers can use the red flags to determine that, for their current purposes, the assessment should simply not be used.

Before you begin: Complete the assessment as students would. *First* as a confident, on grade level or advanced science learner, *then again* as a student who might not be on grade level. Next consider any support materials provided to teachers or students, such as contextual information about the assessment and answer keys/rubrics.

Prescreen: Answer the following high-level questions to identify any major red flags ( ) in the assessment. If you find one or more red flags, consider the purpose of the assessment and the evidence gathered to determine whether the assessment warrants a deeper dive.

Science Assessment Prescreen

Task Title Grade Date

SEP: DCI: CCC:

Task Purpose: (FA, CFA, SA)

Question	Yes	No
1. Is there a **phenomenon or problem** driving the assessment?	☐	☐
2. Can the majority of the assessment be answered **without** using information provided by the assessment scenario?	☐	☐
3. Can significant portions of the assessment be answered successfully by using **rote knowledge** (e.g., definitions, prescriptive or memorized procedure)?	☐	☐
4. Does the assessment require students to **use sense-making** to successfully complete the assessment?	☐	☐
5. Does the assessment require students to use some understanding of **disciplinary core ideas** to successfully complete the assessment?	☐	☐
6. Do students have to use at least one **science and engineering practice** to successfully complete the assessment?	☐	☐
7. Does the assessment require students to bring their understanding of **CCC elements as reasoning tools** to respond to prompts?	☐	☐
8. Are the **dimensions assessed separately** in the majority of the assessment?	☐	☐
9. Is the assessment **coherent and comprehensible** from the student perspective?	☐	☐
10. Does the assessment allow students at **various points along a learning progression** to make their thinking visible?	☐	☐

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

☐ Recommended for use. ☐ Warrants further review. ☐ Should not be used.

Questions to guide your collaborative conversations

- How do students who feel left out of science perform compared to other students?
- How do phenomena and problem-driven assessments make assessments more equitable?
- What is the purpose of the scenario in supporting a more equitable assessment?
- In what ways does the connection between the assessment scenario and items enhance opportunities for student engagement with the task?
- In what ways do the scenario and items support attending to student interest, identity, and agency?
- In what ways does the assessment allow students with diverse abilities and experiences to demonstrate an understanding of science?

For more information about how the Prescreen was developed and its relationship to the Task Screener, please see these Frequently Asked Questions .

Summarize your evidence and reasoning:

Resources linked in this tool:

- A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas, Chapter 2 (NAP.edu) Arkansas K-12 Science Standards and Courses
- Coherence from the Students' Perspective: Why the Vision of the Framework for K-12 Science
- Developing Assessments for the Next Generation Science Standards
- Science Task Screener
- STEM Teaching Tools Practice Brief 15: Overview: How can we promote equity in science education?
- STEM Teaching Tools Practice Brief 37: Beyond "misconceptions": How to recognize and build on Facets of student thinking
- STEM Teaching Tools Practice Brief 47: How can I promote equitable sensemaking by setting expectations for multiple perspectives?
- STEM Teaching Tools Practice Brief 66: Why you should stop pre-teaching science vocabulary and focus on students developing conceptual meaning first
- Task Annotation Project in Science: Crosscutting Concepts
- Task Annotation Project in Science: Non-negotiables
- Task Annotation Project in Science: Phenomena
- Task Annotation Project in Science: Science and Engineering Practices
- Task Annotation Project in Science: Takeaways