Nevada Educator Performance Framework
A Guide for SCIENCE Educators

STANDARD 1	STANDARD 2	STANDARD 3	STANDARD 4	STANDARD 5
New Learning is Connected to Prior Learning and Experience	Learning Tasks have High Cognitive Demand for Diverse Learners	Students Engage in Meaning-Making through Discourse and Other Strategies	Students Engage in Metacognitive Activity to Increase Understanding of and Responsibility for Their Own Learning	Assessment is Integrated into Instruction

Standard 5: Assessment is Integrated into Instruction

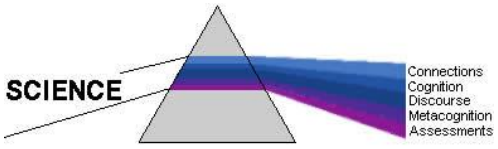
Indicator 1 - Teacher plans on-going learning opportunities based on evidence of **all** students' current learning status

Indicator 2 - Teacher aligns assessment opportunities with learning goals and performance criteria

Indicator 3 - Teacher structures opportunities to generate evidence of learning during the lesson of **all** students

Indicator 4 - Teacher adapts actions based on evidence generated in the lesson for **all** students

General Examples of Science Classroom Strategies:



- Use of Responders or Individual White Boards
- Engaging in One-on-One Discussions
- Use of Interactive Notebooks to Answer "Out" Questions
- Use of Laboratory Equipment to Solve a Problem or Task
- Use of a Graphic Organizer

Key Ideas from Theory and Research:

- Regular assessment (two to five times per week), with follow-up action, produces a substantial increase in student learning (e.g., Fuchs & Fuchs, 1986).
- Formative assessment, when effectively implemented, can impact student achievement as much or more than any other instructional intervention (e.g., Black & Wiliam, 1998; Hattie, 1999; Hattie & Timperley, 2007).
- Assessment "should focus on making students' thinking visible to both their teachers and themselves so that instructional strategies can be selected to support an appropriate course for future learning" (National Research Council, 2001, p. 4).
- Feedback to students that is descriptive and evaluative and engages students in mindful activity – in contrast to feedback that gives current achievement – has the greatest benefit in student achievement (Kluger & DeNisi, 1996; Tunstall & Gipps, 1996; Shute, 2008).

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Key Practice Examples for a Science Classroom:

Indicator 1 Example:

Ask students to demonstrate their understanding of a scientific concept or idea.

Ask the students to answer daily "in" and "out" questions, in their interactive science notebooks, based on the Big Idea of the day's lesson. While students are working, review student "in" and "out" questions for evidence of appropriate scientific understanding and adjust lesson planning as needed to support all students. Additional formative assessment strategies include: white boarding and using responders for quick content checks. Examples of "in" and "out" questions:

How does density of different rock types affect the position of the oceans?

How can Punnett Squares be used to make genetic predictions?

Why are cities in higher latitudes generally cooler than cities in lower latitudes?

What role do criteria and constraints play in the design and development of bridges?

Indicator 2 Example:

Ask students to perform a task or solve a problem.

Ask students to perform a task or solve a problem and describe their problem solving strategies in their interactive science notebook to determine the levels of understanding. Examining the student responses, written in their interactive science notebooks, will help the teacher determine if targeted learning goals or performance criteria were met. Examples of tasks or problem solving:

Students demonstrate the ability to accurately measure pH levels of various solutions, using available methods such as probeware or indicator paper, and describe their methods, and effectiveness of their method in their interactive science notebook.

Students demonstrate the ability to locate and identify cellular structures using a microscope and describe what they are seeing and why they are able to see the structures (how the light is transmitted).

Students demonstrate the ability to locate an earthquake epicenter on a map using data from three seismic stations recording the same earthquake, describe how they calculated the S-P wave interval, and describe why they needed three station's data.

Students demonstrate their ability to construct the tallest free-standing tower given limited materials and describe their design principles in terms of criteria and constraints.

Indicator 3 & 4 Example:

Ask students to demonstrate their understanding of a concept or idea during the lesson.

Ask students to demonstrate their comprehension of an idea throughout the lesson. Formative assessment probes take many forms, however, all are used to elicit students' ideas and provide valuable feedback to the teacher for lesson next steps. Based upon student feedback, the teacher may elect to continue with planned lessons or devise new strategies to reteach the concept or idea. Comprehension can be shown by solving a problem on an individual white board, surveying the class through the use of Responders, journaling in science notebooks, and one-on-one discussions by the teacher. Examples of student understanding include:

Teacher questions student directly on his understanding of the difference between velocity and acceleration.

In a one-on-one activity, students explain to each other (or teacher) their answers to a genetics problem.

Teacher conferences to check for understanding of location of the Earth, Sun, and Moon during solar and lunar eclipses.

In a teacher-lead discussion, students express their ideas on how to best design a roller coaster.