Strand One

NGSS: The Next Generation of Science Teaching

Celebrate the vision of three-dimensional teaching and learning in the NRC Framework and Next Generation Science Standards (NGSS). This strand provides engaging and collaborative examination of the NGSS architecture to allow teachers to implement the changes necessary to construct a coherent program, including classroom practice and instructional sequence, as well as to build student skills. Bundling performance expectations connects the three key dimensions within a progression. This strand will focus on providing opportunities for students to collaborate as they develop and use science and engineering practices, communicate evidence of core scientific understanding, and apply real-world contexts. Alignment of assessments connecting core concepts, science and engineering practices, and crosscutting concepts is essential.

GOAL: Provide workshops and presentations focused on one or more of the following:

- Observing real-world science in three dimensions.
- Understanding the structure, design, and architecture of the NRC Framework and NGSS.
- Bundling Performance Expectations (PEs) to enhance conceptual understanding.
- Implementing instruction that supports three-dimensional learning.
- Providing evidence of learning in three dimensions.

CRITERIA: Proposals will be evaluated on the extent to which they:

- Align with one or more strand goals
- Support or identify specific goals from the NRC Framework, NGSS, or state standards.
- Are based on current and available research.
- Involve participants through engaging activities or discussion.
Strand Two
2017: A STEM Odyssey

Students’ science learning has changed dramatically from learning in the past. In a STEM environment, students’ understanding of the world around them is facilitated through the intentional connections between the four disciplines of science, technology, engineering, and mathematics. STEM curriculum provides research-based instructional strategies that engage diverse learners and highlights career pathways in STEM-related fields. More importantly, STEM provides opportunities for all students to place themselves in a 21st-century world. In this strand, participants will connect and collaborate to increase their understanding and ability to teach STEM-based lessons and instructional sequences.

GOAL: Provide workshops and presentations focused on one or more of the following:

- Demonstrating to teachers how multiple standards may be used in the teaching of a STEM lesson.
- Emphasizing lessons or instructional sequences that show how STEM connects to real-world or work-related issues.
- Providing exemplary lessons in which students engage in science, math, and engineering practices to develop an understanding of the core ideas within the disciplines.
- Using various partnerships to involve students in community service projects (e.g., partnerships with informal education and Project-Based Learning or Problem-Based Learning projects).
- Identifying connections between STEM lessons and STEM-based careers (e.g., green careers or tech industry).

CRITERIA: Proposals will be evaluated on the extent to which they:

- Align with one or more strand goals.
- Support or identify specific goals from the NRC Framework, NGSS, or state standards.
- Are based on current and available research.
- Involve participants through engaging activities or discussion.
Strand Three
Science & Literacy Reloaded

With the continued emphasis on mathematics and language arts, elementary teachers have not been encouraged or given opportunities to teach science. This strand will support these teachers in seeing the connections between science and literacy. Elementary science will be re-envisioned as an opportunity for authentic language learning and not just one more thing to squeeze into the curriculum. As students investigate natural phenomena, they collect data to then make claims from their evidence and explain their reasoning, arguing from their evidence. Teachers can then support their students’ language and literacy through science notebooks, technical writing, interactive journals, and e-portfolios. This strand will allow teachers to become advocates of literacy in science, blending oral and written communication skills within the science curriculum.

GOAL: Provide workshops and presentations focused on one or more of the following:

- Illustrating full integration of English language arts (ELA) or second language acquisition within science instruction.
- Using effective speaking, listening, reading informational text, and writing for sense-making to promote science learning.
- Creating opportunities for meaningful student-to-student collaboration and argumentation within science investigations of natural phenomena, making claims from evidence and explaining reasoning.
- Demonstrating authentic use of collection of data and recording of findings through science notebooks and technical writing.
- Modeling effective science teaching and learning at the elementary level to show how science can be a vehicle for mastering standards in ELA.

CRITERIA: Proposals will be evaluated on the extent to which they:

- Align with one or more strand goals
- Support or identify specific goals from the NRC Framework, NGSS, or state standards.
- Are based on current and available research.
- Involve participants through engaging activities or discussion.
- Provide relevant examples through active learning to support the integration of science with literacy and language in the curriculum.
Strand Four

Mission Possible: Equity for Universal Access

Access to science education is not a privilege; it is a right for students of all abilities, genders, languages, socioeconomic status, and geographic locations. A quality science education is essential in closing the skills gap in our current workforce. Science learning must start in early childhood and be sustained through postsecondary education to keep our nation as a leader in innovation. Current challenges provide opportunities for equitable access to science education. Some issues include maximizing student achievement for exceptional students while respecting cultural and linguistic diversity in order to celebrate those differences. The sessions in this strand will focus on pedagogical best practices to enhance learning for ALL.

GOAL: Provide workshops and presentations focused on one or more of the following:

- Illustrating effective practices to connect all learners to challenging real-world problems.
- Designing and implementing equitable and inclusive learning opportunities for diverse learners.
- Creating opportunities for collaboration and communication among diverse learners.
- Demonstrating how multiple learning styles can be addressed with the lesson.
- Promoting science education for underrepresented groups in science (e.g., students with special needs, females, American Indians, and English language learners).

CRITERIA: Proposals will be evaluated on the extent to which they:

- Align with one or more strand goals
- Support or identify specific goals from the NRC Framework, NGSS, or state standards.
- Are based on current and available research.
- Involve participants through engaging activities or discussion.