

NGSS Professional Development Workshop Series Using Systems and System Models to Make Sense of Phenomena

Wednesday December 16, 2020, 9:00 AM – 3:30 PM

Fee: \$125 Credits: 5.5 PDU Hours

The Science Education Institute at RVCC offers a series of workshops to support teachers and supervisors with implementation of the NGSS. These workshops follow recommendations of the latest National Academies of Sciences Report (more on other side) and incorporate what we are learning about NGSS implementation through our work with thousands of teachers in New Jersey and across the nation.

Participants engage in NGSS-aligned investigations driven by natural phenomena in a variety of science content areas. They experience how Practices, Crosscutting Concepts, and Core Ideas are meaningfully integrated in instruction and assessments and apply this as they plan NGSS-aligned investigations.

This workshop will focus on the Practices of Developing and Using Models and Analyzing and Interpreting Data, and the Crosscutting Concepts of Systems and Patterns. Participants will engage in NGSS-aligned investigations that are driven by natural phenomena in a variety of science content areas to deepen their understanding of these Practices and Crosscutting Concepts and how they mutually support each other. They will take away strategies to support students as they analyze and interpret data to investigate the natural systems that cause these phenomena. They will learn how to represent these systems using a variety of models to explain these phenomena. Participants will experience and reflect on how Practices, Crosscutting Concepts, and Core Ideas are meaningfully integrated in instruction and assessments using Performance Tasks. There will be time for reflection and to plan NGSS-aligned investigations.



The workshop will be held at Raritan Valley Community College in North Branch (NJ) and will begin promptly at 9 am and end at 3:30 pm. Light breakfast and lunch will be provided.

The workshop is led by Dr. Wil van der Veen, a nationally recognized expert in science education. Participants will work in small groups that are facilitated by experienced classroom teachers from our NGSS Teacher Leader Program.

For more information and to register online visit our website at www.raritanval.edu/ngss.

We recommend sending leadership teams of 3-7 teachers to at least three one-day workshops or the Summer Institute to develop a solid foundation for the NGSS.

Professional development provided by RVCC's Science Education Institute follows the recommendations from "Science and Engineering for Grades 6-12: Investigation and Design at the Center", National Academy Press, pages 275-278 (www.nap.edu/25216)

RECOMMENDATION 1: Science investigation and engineering design should be the central approach for teaching and learning science and engineering.

- Teachers should arrange their instruction around interesting phenomena or design projects and use their students' curiosity to engage them in learning science and engineering.
- Administrators should support teachers in implementation of science investigation and engineering design. This may include providing teachers with appropriate instructional resources, opportunities to engage in sustained professional learning experiences and work collaboratively to design learning sequences, choose phenomena with contexts relevant to their students, and time to engage in and learn about inclusive pedagogies to promote equitable participation in science investigation and engineering design.

RECOMMENDATION 2: Instruction should provide multiple embedded opportunities for students to engage in three-dimensional science and engineering performances.

- Teachers should monitor student learning through ongoing, embedded, and post-instruction assessment as students make sense of phenomena and design solutions to challenges.
- Teachers should use formative assessment tasks and discourse strategies to encourage students to share their ideas, and to develop and revise their ideas with other students.
- Teachers should use evidence from formative assessment to guide instructional choices and guide students to reflect on their own learning.

RECOMMENDATION 4: High-quality, sustained, professional learning opportunities are needed to engage teachers as professionals with effective evidence-based instructional practices and models for instruction in science and engineering. Administrators should identify and encourage participation in sustained and meaningful professional learning opportunities for teachers to learn and develop successful approaches to effective science and engineering teaching and learning.

- Professional development leaders should provide teachers with the opportunity to learn in the manner in which they are expected to teach, by using *Framework*-aligned methods during professional learning experiences. Teachers should receive feedback from peers and other experts while working throughout their careers to improve their skills, knowledge, and dispositions with these instructional approaches.
- Professional development leaders should prepare and empower teachers to make informed and professional decisions about adapting lessons to their students and the local environment.
- Administrators and education leaders should provide opportunities for teachers to implement and reflect on the use of *Framework* aligned approaches to teaching and learning.