2018 Spring Conference

Three Dimensional NGSS Instruction and Assessment

Saturday April 7, 7:45 AM – 3:00 PM

New England Institute of Technology – East Greenwich Campus

REGISTER Today! www.rista.us

Opening remarks - *Morning Keynote Okhee Lee RM N106 8:30-9:50		
Session A - 10:00-10:50		
A1	**KEYNOTE-Breakout** **Science and Language Assessment of All Students Including English Learners** **Okhee Lee** (K-8)  RM - N106	*The Next Generation Science Standards (NGSS) three-dimensional instruction and assessment present both opportunities and challenges to teachers, especially involving student diversity and equity. This session will address how to design science instruction that incorporates formative assessment of science and language with all students including English learners. After engaging in a science investigation, participants will assess student-developed models in terms of both science and language, and consider how to use the assessment to inform instructional next steps.*
A2	**Why are we learning this? Engaging Middle School Students in the Practical Application of Waves With the NGSS** Stephanie Brunnett, Lab-Aids (6-8) RM - N213	*Waves is a new content area for many middle school teachers. This lesson engages students with a "glow in the dark" phenomenon as the start of an investigation of wave properties to gather evidence that energy varies with different colors of light. Participants then experiment with colors and energy levels using a phosphorescent material. This hands-on activity is from the SEPUP middle level Waves unit and is designed for the NGSS and works toward MS-PS4-2. Participants will receive sample materials and temporary access to digital curriculum.*
A3	**Linking Models, Discourse & Assessment** Caroline Stabile, URI GEMS-Net (K-5) RM - N323	*Explore the phenomenon of magnetism to develop and revise models. Engage in discourse that promotes academic language and conceptual understanding. Analyze student notebook artifacts to formatively assess student thinking and guide instructional decisions. Leave with practical strategies that will enhance your teaching practice.*

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A4	**Data Literacy & Assessment Utilizing Hands-on and Virtual Labs** Dr. Bob Gilmore, Woodland Elementary Dr. Michael Sao Pedro, Apprendis (4-10) RM - S216	*This interactive session will streamline 3D learning and assessment to help your students master science practices and data literacy. You will learn how these competencies develop, and ways to assess skills in a consistent, quick, and informative way. From a scaffolded hands-on lab that differentiates for learners at all levels - to helping students learn data literacy skills using Inq-ITS Virtual Labs - to a final hands-on project, you will walk away with lesson plans, assessments, and rubrics you can use in your classroom immediately. BYOD!*
A5	**Science GIS Storymaps: A New Way to Present** Peter Stetson, Educational Mapping Services (K-12) RM - N214	*The Science of Where: Geospatial Technology. Geographic Information System [GIS] is one of the fastest growing career areas in the country. GIS is a STEM activity which can be used to evaluate the world around you. GIS is one off the three pillars in Geospatial Technology. Storymaps are a way to utilize GIS to display information. Middle and high school students who learn to create Storymaps have the opportunity to enter a statewide mapping competition and win $100.*
A6	**Peer Assessment: A Tool for 3D Learning** Briana Gustaitis Scott Macbeth, Classical High School (9-12) RM - S302	*Come learn about the exciting world of peer review! Peer review can be a powerful tool for student learning in an NGSS classroom. Maximizing the effectiveness of peer feedback requires teachers to breakdown misconceptions about the purpose of peer feedback, construct new norms together with their students, and guide students to develop their skills as thoughtful peer reviewers. In this session we will discuss strategies for engaging students in thoughtful and robust peer review as well as tools for scaffolding peer review into instruction.*

Session B - 11:15-12:05		
B1	**Jumping in: Experiences of Early Career Science Teachers** Sarah Zawatsky Alisha Iafrate, Science Teacher, Hugh B. Bain Middle School Audrey Miguel, Science Teacher, Woonsocket High School (6-12) RM - N103	*This panel discussion will focus on the experiences of three beginning science teachers as they work to implement the NGSS in their classrooms. Members of the panel teach in a variety of contexts and will share the story of how they learned about the NGSS in their teacher preparation program, their successes and struggles as a beginning teacher implementing the standards, the resources that they have found most helpful, and tips for future beginning science teachers on how to be successful in implementing the NGSS.*

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B2	**Engineering Design Cycle and its Effect on Students' Critical Thinking Skills** Dr.Hanan Mogawer (K-12) RM - N213	*Engineering Design Cycle, if implemented can change the way students think. The cycle helps students to ask, imagine, plan, create, reflect or improve, which are the key words to think critically. It helps teachers to implement NGSS. Encouraging students to use the cycle across the discipline, will get them interested and engaged in their learning experience.In this workshop participants will practice using the cycle to create a product.*
B3	**Examining Students Assessment Results and Negotiation Skills from Two Engineering Design Studies** Elaine Silva Mangiante PhD, Salve Regina University Elizabeth Carpenter, Student Researcher, Salve Regina University, Julia Pfister, Student Researcher, Salve Regina University, Amy Semerjian, Research Analyst, Boston College (K-8) RM - N323	*We will present the results of two studies that examined the implementation of engineering design units in middle and upper elementary schools. For the first study, we designed a middle school assessment to gauge students' understanding of the three engineering disciplinary core ideas after completing an engineering design unit. We will share assessment results from 7th graders in suburban and urban districts. Next, we will present our analysis of 3rd and 4th grade students' discourse to negotiate potential design proposals when solving an engineering problem. This presentation will inform teachers of essential elements for engineering design units and potential challenges.*
B4	**Aligning Traditional Labs With NGSS** Frank Lenox Erin Woulfe, Chemistry Chris Wren, Biology Jill Ayala, Bio/Physical (9-12) RM - S216	*A challenging aspect of moving towards NGSS is moving away from our tried and true traditional labs… not true! Traditional labs can be valuable tools for teaching skills and concepts when coupled with explorations that are aligned with three-dimensional learning. The goal of this workshop is to share with educators our experience in moving towards NGSS-aligned labs in our subject areas. Utilizing NSTA and NGSS resources, along with our experiences, we have learned to create labs to incorporate engineering practices and cross-cutting concepts that provide a three dimensional learning experience. Exemplars will be presented in Biology, Chemistry, and Physics.*

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B5	**Using the Outdoors to Engage and Assess** Kelly Shea, URI GEMS-Net Lisa Maloney - Urban Education Coordinator, Audubon Society of Rhode Island, Jeanine Silversmith - Project Manager, Rhode Island Environmental Education Association (K-12) RM - N214	*Engage in an outdoor lesson led by the Rhode Island Environmental Education Association (RIEEA) 2018 Environmental Educator of the Year. Learn management strategies that encourage successful outdoor exploration and reflect on experiences that build inquiry and problem solving skills. Discover ways to use your schoolyard and/or community to address scientific practices and crosscutting concepts and develop tools to formatively assess your students.*
B6	**Prompting Student Responses Using Crosscutting Concepts** Peter McLaren, Next Gen Education, LLC (K-12) RM - S302	*This presentation is designed to provide educators with meaningful insights into how to use the crosscutting concepts to structure prompts that engage students in reasoning the hows and whys phenomena occur. Educators will come away with an understanding of how using consistent and clear prompts structured around crosscutting concepts will positively impact the ways that students and teachers interact within classrooms and set the stage for meaningful formative assessment events.*
	Afternoon Keynote 1:00-1:55	
	Transitioning to the Next Generation Science Standards: Shifting classrooms to support students in science practices **Katherine McNeill**  **RM N106**	Recent science standards offer a transformative vision for science classrooms in which students actively engage in science practices as they apply disciplinary core ideas to make sense of the natural world. This includes a focus on 8 science practices that may be the most significant challenge for teachers in terms of the successful implementation of the new standards. A classroom culture prioritizing science practices can require a shift away from *science as a body of facts* that students need to memorize to *science as a way of thinking, talking and acting* that students need to engage in to make sense of the natural world. During the talk, I will present the Science Practices Continuum and instructional activities utilizing student examples (writing and video) to illustrate how to support the development of a classroom culture prioritizing science practices.

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Session C - 2:05-3:00		
C1	**NGSS in the Life Science Classroom** Claire Lacquerre (6-12) RM - N103	*Come engage and learn how to apply the three dimensions from NGSS in your biology, life science, chemistry and biotechnology classrooms. Using size exclusion chromatography as an anchoring and exploratory phenomenon, gain practical insights and develop strategies to integrate NGSS into your classroom. This interactive learning opportunity will guide you through modeling, explanation, argumentation, and engineering practices while aiding you through a deep dive into your core content connections.*
C2	**In Praise of the NGSS: Success Participants Share Success Stories** Comfort Ateh, Associate Professor, Providence College RI (K-12) RM - N323	*In Praise of the NGSS: An Open Forum for Ideas towards Effective Assessment.* *The presentation will begin with a model that shows the alignment of standards, curriculum, instruction and assessment within a brief discourse on the essence of the NGSS. This will be followed by participant discussion of examples of assessment tasks aligned to instructional tasks and performance expectations. An overview of assessment strategies will be presented followed by discussion on when to use various strategies. Participants will share success stories with implementing the NGSS. The presentation will culminate in discussing challenges for creating effective assessment for the NGSS.*
C3	**Integrating Technology Into 5E Science-Based STEM** Megan Wagner Kristen Buckman, STEM Scopes (K-8) RM - N213	*More than just digital delivery - Technology is about designing authentic solutions in a blended environment. Balancing hands-on with digital investigations is the perfect mix for STEM-based science classroom! Technology can be an integral part of observing phenomenon, gathering evidence and justifying conclusions. Join us to see how this balancing act is possible and needed for student achievement gains. Using the 5E instructional model for Inquiry, participants will be engaged in an engineering design hands-on session that incorporates the 3Ds for waves and Earthquake-proof buildings.*

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C4	**Sustainability in the Chemistry** Ann Lambert (6-12) RM - S216	*The NGSS call for students to analyze problems and create solutions. Green chemistry is the science of creating safe, energy efficient and non-toxic processes and products that provide sustainable solutions for the environmental problems facing our society. Green chemistry provides a framework and lens for learning, teaching and investigating chemistry concepts.* *This workshop will feature safer replacements to traditional chemistry labs aligned to state and national standards. Endothermic reactions, exothermic reactions, and Le Chatelier's Principle can all be demonstrated using household products. Participants will walk away with relevant open access resources that increase student engagement while increasing classroom safety.*
C5	**Pseudoscience: A Powerful Tool for Teaching to the NGSS** Lesley Shapiro (9-12) RM - N214	*Last spring the Heartland Institute sent out a package on climate change to science teachers across the United States. This prompted NSTA and other organizations of science teachers to encourage their members to dispose of the materials. This is the wrong approach, the resources provided in the package present a prime opportunity teach students to about science and pseudoscience while strengthening their skills at obtaining, evaluating, and communicating information. This session will provide teachers with strategies for using the Heartland Instituteâ€™s materials in their classroom to help students learn to differentiate between science and pseudoscience.*
C6	**Using Models to Teach, Assess and Build Student Discourse** Erin Conley, TIMES^2 Institute Director (K-12) RM - S302	*Modeling is a key component of Next Generation Science. This hands-on workshop will immerse you in a Next Generation Science classroom as a learner to explore how models are used to inform, assesses and build student discourse. Once you have experienced the shift from teaching about to figuring out, explore the process as a teacher and learn how to apply the pedagogical shifts required to embed modeling into instruction.*