Fall Science Update
November 19, 2014

“Celebrating Science Education: Past, Present, Future"
*Keynote Speaker

Larry Fegel
A Celebration and Exploration of Quality Science Education: Why Teach Elementary Science? (K – 6)
A Celebration and Exploration of Quality Science Education: Why Do we Teach Science? (7 – 12)

Program

8:00 am - Registration
Refreshments available

8:00 am – 3:00 pm - Rock and Mineral Sale
Steve Tchozeski of Great Lakes GeoScience will offer rocks, minerals, fossils, and ready-made classroom teaching kits to help bring hands-on earth science to the classroom.

8:30 am - Break-out Session A
A1
A2
A3
A4
A5
A6
A7

9:45 am - Break-out Session B
B1  201 Auditorium*
B2
B3
B4
B5
B6

11:00 am - Break-out Session C
C1
C2
C3
C4
C5
C6

12:00 pm - Lunch
Seating available in all classrooms except 201

12:45 pm - Break-out Session D
D1  201 Auditorium*
D2
D3
D4
D5
D6
D7

2:00 pm - Break-out Session E
E1
E2
E3
E4
E5
E6
### Break-Out Session A
**8:30 – 9:30 am**

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| A1      |      | K-12   | **Using the Achieve EQuIP Rubric to Evaluate Lessons and Units to Meet the Requirements of the Next Generation Science Standards**  
*Jen Arnswald, Kent Intermediate School District*  
In this session participants will be introduced to the EQuIP Rubric. Participants will hear stories of how the rubric has helped the NGSS @ NSTA Curators, and also practice using the EQuIP rubric. |
| A2      |      | K-12   | **Citizen Science!**  
*Joy Funk, Outdoor Discovery Center Macatawa Greenway*  
Use citizen science in your classroom to get students involved in real life environmental issues. Teach them that they can make an impact on the world around them right now! |
| A3      |      | 4-7    | **Live "MAS" (Math & Science)**  
*Sonna Pohlson and Amanda Hicks, Godfrey-Lee Public Schools*  
Come experience a variety of activities integrating math and science. Leave with ready to use materials you can easily adapt to fit into your classroom. |
| A4      |      | 4-8    | **Leveraging Community Partnerships in Placed-based Education**  
*Kristine Bersche, West Michigan Environmental Action Council*  
Using WMEAC's Teach for Watershed as an example, this presentation will offer ideas on how to develop relationships with various non-profits, governmental organizations, and corporate partners to support and facilitate environmental education experiences in a classroom. |
| A5      |      | 5-12   | **Spork & Beans: Addressing Evolutionary Misconceptions**  
*Christopher Dobson, GVSU Biology Department*  
This inquiry based predator/prey simulation addresses documented evolutionary misconceptions and is aligned with the NGSS. Detailed 5 E lesson plan provided. |
| A6      |      | 6-12   | **Community Resources as Inspiration for Inquiry-Based Projects**  
*Susan Ipri Brown, Hope College*  
Hope College teacher programs provide innovative, inquiry-based projects focusing on local dunes, watersheds, and other community resources to inspire students. Participants have access to equipment for use in classrooms. |
| A7      |      | 9-16   | **How Tyrannosaurus rex Got it's Big Bite and Other Tales About Why Size and Timing Matters**  
*Gary Greer, GVSU Biology Department*  
This session is an exploration of allometry (size-dependent shifts in development) that is the basis for a substantial amount of ecologically and evolutionarily important variation in plants and animals. |

### Break-Out Session B
**9:45 – 10:45 am**

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| B1      | 201  | K-6    | **KEYNOTE for Elementary Teachers (K-6)**  
*A Celebration and Exploration of Quality Science Education: Why Teach Elementary Science?**  
*Larry Fegel, GVSU Geology Department*  
Keynote speaker, Larry Fegel, will discuss and guide questions about the teaching of elementary science over the years. What has been the norm for science education? Why is science instruction a vital part of the elementary curriculum? What does good science instruction look like? How do we maintain the sense of wonder in students? What is the role of “standards” in our curriculum and instruction?  
Come to explore why we teach science. We will discuss current practices and hurdles, as well as predict what the future may hold. |
| B2      | 6-12 |        | **Interactive Science**  
*Craig Steenstra, Kent Intermediate School District*  
Come to this session to explore tech-based tools and ideas that can be used to get students to interact with science and each other in various ways. |
### Break-Out Session B (continued)
**9:45 – 10:45 am**

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| B3      |      | 8-12   | **Meeting State Standards Using Free Engineering Design Software**  
*Rick Mushing and Ebiri Nkugba, Kent Intermediate School District*  
This session offers an overview of free engineering software and lessons aligned to state standards. Demonstrations include software from Autodesk and ESRI's ArcGIS online spatial analysis software. |
| B4      |      | 9-12   | **Chemistry Activities Using Household Chemicals**  
*Deanna Cullen, Whitehall High School*  
Participants will have the chance to try some chemistry activities that use household chemicals and everyday materials. These NGSS aligned activities will include topics like thermochemistry, solubility, equilibrium, acid/base and more. |
| B5      |      | 9-12   | **Introducing High School Students to Advanced Scientific Instrumentation: An Opportunity to Partner with Grand Rapids Community College**  
*Jennifer Batten, GRCC Physical Science Department*  
GRCC is home to dynamic science faculty and interesting equipment used in scientific investigations. We would welcome groups of high school students to conduct experiments that use scientific instrumentation at GRCC. Options and ideas for onsite lab experiments will be presented. |
| B6      |      | 9-12   | **Inspiring STEM Through Engineering in the High School Classroom**  
*Susan Ipri Brown and Eric Mann, Hope College*  
Engineering design projects complement math and science instruction for all ability levels. Hope College brings teachers together with students for engineering workshops and provides materials to continue projects in class. |

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### Break-Out Session C
**11:00 am – 12:00 pm**

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| C1      |      | K-12   | **Exploring Your Vision for Science Education**  
*Megan Schrauben, Michigan Department of Education*  
What have we learned from past and present science opportunities? With a seemingly unending stream of educational changes, let's add our voice to education improvement and the vision for science education. |
| C2      |      | K-12   | **Environmental Education: Networks & Partners**  
*Thomas Occhipinti, Michigan Department of Environmental Quality*  
If you think nothing has changed, you haven't talked to a child lately. Students and teachers are facing a new world challenge. There is a way forward to help us emerge stronger than ever. |
| C3      |      | 3-8    | **Student-led Environmental Stewardship MS-LS2**  
*Janet Staal and Jessie Shulte, Blandford Nature Center*  
*Mary Lewandoski, CA Frost Environmental Academy Educator*  
Participants will be equipped with best practices in student-led environmental stewardship projects and tools needed to provide strength of inquiry, rigor, and relevance to capitalize on key NGSS components. |
| C4      |      | 3-8    | **NASA: Using Challenges to Teach Force and Motion to Inquiring Minds**  
*Susan Kohler, NASA Education Specialist*  
Inquiry-based lessons around real-world engineering challenges will encourage students and ignite their curiosity. The Engineering Design Challenge, incorporating teaching strategies, will be introduced. This session is one of a two-part series. Registering for both sessions is recommended, but optional (note session E2). |
| C5      |      | 6-12   | **Air Quality**  
*Janet Vail, GVSU Annis Water Resources Institute*  
Engage your students in tracking air quality in west Michigan. Real-time online resources help them relate to Clean Air Actions Days to predicted local weather conditions. Participants will receive a resource CD with activities. |
| C6      |      | 6-12   | **STEM in Transportation**  
*Ebiri Nkugba, Kent Intermediate School District*  
Attendees will be introduced to STEM content-area applications in the transportation industry with a focus on ground and air transportation. Lesson ideas and resources available for classroom teachers will be shared. |
### LUNCH
12:00 – 12:45 pm

### Break-Out Session D
12:45 – 1:45 pm

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| D1      | 201  | 7-12   | **KEYNOTE for Secondary Teachers (7-12)**  
          |       |        | A Celebration and Exploration of Quality Science Education: Why Do we Teach Science?  
          |       |        | *Larry Fegel, GVSU Geology Department*  
          |       |        | Keynote speaker, Larry Fegel, will discuss and guide questions about the teaching of secondary science.  
          |       |        | What is the purpose of teaching science? This session will explore the teaching of science over the past 40 years or more. We will identify the accepted “norm” for science education as well as recognize quality teaching and learning. Current practices and hurdles as well as predictions for the future will be discussed. Secondary teachers will leave this session with a deeper understanding of what a science-literate person needs to know. |
| D2      | K-2  |        | Thinking, Acting and Writing Like Scientists: First Grade Investigators Explore the Causes and Effects of Sounds and Vibrations  
          |       |        | *Robby Cramer, Michigan Science Teachers Association*  
          |       |        | *Michele Nelson, Van Andel Education Institute*  
          |       |        | Young student researchers explore their world of sound and vibrations occurring when they play and sing! Science and writing standards (NGSS & CC) are seamlessly bundled throughout fourteen investigations for teachers to use in their classrooms. |
| D3      | K-12 |        | Rainforest Ecology, Conservation, and Indigenous People: Lessons for a Changing Climate  
          |       |        | *Christopher Shaffer and Gwyn Madden, GVSU Anthropology Department*  
          |       |        | In this session, we will demonstrate lessons that can be used to teach students about rainforest ecology in light of climate change, emphasizing the importance of indigenous people to the rainforest ecosystem and conservation. |
| D4      | 3-5  |        | Unpacking and Moving to NGSS  
          |       |        | *Nancy Karre and Mary Lindow, Battle Creek Area Math & Science Center*  
          |       |        | This session will help unpack Performance Expectations in NGSS and evaluate alignment of an inquiry focused activity. This will prepare teachers and students to make the move from scientific inquiry and performance assessment to solving problems through scientific inquiry and engineering. |
| D5      | 3-8  |        | Native Plants in the School Curriculum  
          |       |        | *Michelle Serreyn, Huron-Clinton Metroparks*  
          |       |        | Find out how you can incorporate native plants into your school curriculum. This session will explore ideas for activities, experiments and other projects using the current GLCE science (and some social studies) standards for grades K-12. Also some information on schoolyard gardens will be shared. |
| D6      | 6-8  |        | Who Else Wants Biomaterials? Incredibly Wonderful Uses for Common Forest Plants  
          |       |        | *Alexandra Locher, GVSU Biology Department*  
          |       |        | Forests would not be replaced by urbanization if their value was widely recognized. Scientists are discovering new ways to use forest plants for biomaterials. Biomaterials are sustainable products extracted from forests such as glue, dye, fiber, and fuel for energy. |
| D7      | K-5  |        | Activities of SMEE – Continued  
          |       |        | *Shannon Long, Integrated Science Instructor, Lansing Community College*  
          |       |        | *Lansing Community College Students*  
<pre><code>      |       |        | We’re back! This session features science activities useful for family science nights or community events. They will engage you and help you plan your family science nights and events. |
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| E1 | K-12 | Field Studies in Belize: An Interdisciplinary Study/Travel Experience  
*Kathy Pollock and Katherine Tosa, Muskegon Community College*  
Rainforest Ecology…Mayan Civilization…a life changing experience. This session will provide step by step instructions so you can organize a study/travel experience like the one to Belize designed at Muskegon Community College. |
| E2 | 3-8 | NASA: Using Challenges to Teach Force and Motion to Inquiring Minds  
*Susan Kohler, NASA Education Specialist*  
Inquiry-based lessons around real-world engineering challenges will encourage students and ignite their curiosity. Come and design a balloon powered crew exploration vehicle. This session is part two of a two-part series. Registering for both sessions is recommended, but optional (note Session C4). |
| E3 | 3-8 | Building Bridges  
*Mike Fillman, Lowell Area Schools*  
Using nothing but toothpicks, dental floss, and engineering skills, this session will teach how students can build bridges to support 7-10 pounds of weight without collapsing. He will explain how to guide this NGSS engineering activity that is a favorite of 5th grade students, and supply teachers with all the ideas and handouts needed to do this lesson in the classroom. |
| E4 | 7-12 | Ideas for Teaching the Geologic History of Michigan  
*Stephen Mattox, GVSU Geology Department  
Abigail Vandermeulen, GVSU Student*  
This session will use maps, rock samples, and cross-sections to help teachers (and students) reconstruct the geologic history of Michigan. |
| E5 | 9-16 | An Easy Path to Visible Absorption Data  
*Blair Miller and Andrew Lantz, GVSU Chemistry Department*  
The Vernier SpectroVis Plus is a relatively simple, inexpensive spectrometer that may be used for basic visible absorbance measurements in the science lab. We will discuss and demonstrate the details. |
| E6 | 10-12 | Modeling in Physics and Chemistry  
*Laura Sloma and Kendra Gallert, East Kentwood High School*  
The modeling method of science is taking over Michigan. Come to learn about this inquiry based pedagogy that will solve your struggles with how to implement NGSS! |