October 2015

Dear Educator,

The Regional Math and Science Center cordially invites you to the 3rd annual Fall Science Update conference to be held on the GVSU Allendale campus this year!

This year's theme is "Integrating STEM by Design". Through attending this conference, we hope you will better understand how to integrate Science, Technology, Engineering and Math (STEM) activities and skills into your classroom, engage students with real-world applications, and develop an appreciation for the career opportunities that science and technology offer.

We are honored to have two of MSTA's (Michigan Science Teachers Association) 2015 winners as our keynote speakers:

- Holly McGoran, Jenison Junior High Science Teacher, MSTA Middle School Science Teacher of the Year
- Ashley Meyer, Hamilton Middle School Science Teacher, MSTA Teacher of Promise award winner

In addition to the keynotes, Fall Science Update will offer 28 elementary and/or secondary breakout sessions on topics including technology, science content, standards, pedagogy, and informal science. Lunch is included in the conference registration fee.

All registration is online this year at www.gvsu.edu/s/DX.

Whether you are new to the conference or a returning teacher, Fall Science Update provides the opportunity for you to grow as a professional and network with colleagues. We look forward to your participation. Please call 616.331.2267 with any questions.

Best regards,

Karen Meyers
Director
Regional Math/Science Center

Kathy Agee
Science Program Coordinator
Regional Math/Science Center
1 A1 Ready, Set, Go! Resources to Support the New Michigan Science Standards
Jim Arnsward, MSTA/Ionia Public Schools
In this fast-paced session participants will explore local, state, and national resources to support the implementation of the new Michigan Science Standards. Please bring an internet ready device.
Grades K - 12

2 A2 Integrating STEM through Science Olympiad
Sue West & Michele Szwaba, Michigan Science Olympiad Directors
See examples of how to apply Science Olympiad tasks to STEM and NGSS objectives. Sample lessons will be provided. Event overviews and suggestions for team formation will be provided.
Grades K - 12

3 A3 Engagement Through Authenticity: How a gold-standard PBL class connected their love of the outdoors to the community.
Nathan Alkire, SciMed Education, STREAM School
STREAM School offers a rigorous PBL experience that places students in the outdoors. Students learn valuable science and math content alongside everyday skills needed for success in today's society.
Grades 6 - 12

4 A4 Molecular Visualization Programs: An Interactive Approach to Teaching Chemistry and Biology
Paul Cook, GVSU Chemistry Department
Freeware computer programs such as PyMOL and Coot enable the viewing and analyzing of protein, DNA, and small molecule structures. Learn strategies for implementing their use in science classes.
Grades 6 - 12

5 A5 Energizing the Classroom Through Programming and Circuit Design
Susan Jan Brown, Hope College
Attendees will explore hands-on, inquiry-based electronics and programming projects that encourage students to use math/science knowledge while introducing them to engineering concepts and applying those skills in the NGSS.
Grades K - 12

6 A6 The Chemistry of 3D Printing
Rick Musling, Kent Intermediate School District
Explore student lessons connecting the science of chemistry and the 3D printing process.
Grades 8 - 12

SESSION B: 9:45—10:45 a.m.

1 B1 KEYNOTE for Elementary Teachers (K-8)
Engage & Energize Students through STEM
Holly McGoran, Jenna Richards, Kent State University
How do we use science, technology, engineering, and mathematics to engage and energize our students? Together we will take a look at some key components to consider when integrating STEM into our classrooms. Be ready to actively engage in STEM practices as we look at examples of implementation at the elementary and middle school levels.
Grades K - 8

2 B2 CS Unplugged: Hands-on Activities to Introduce Computing to K-12 Students
Scott Grissom, GVSU School of Computing & Information Systems
CS Unplugged is a collection of free learning activities that introduce computational thinking to K-12 students through engaging games. Participants will experience the activities. No computer needed.
Grades 3 - 12

3 B3 Go with the Flow
Kelly Heid & Natalie Armstrong, GVSU Geology Department
Engage in simple activities that will help demonstrate the dynamics of ocean and air currents. Join us as we explore density, convection, and currents.
Grades 6 - 9

4 B4 Immersing Your Secondary Students in NGSS Practices with NexGen Inquiry
Bill Dinkelmann & Jim Nicollet, Van Andel Education Institute
NexGen Inquiry’s web-based student journal and teacher classroom tools are built to support implementation of an inquiry-based curriculum. Bring your technology device to create an account and get started.
Grades 6 - 12

5 B5 Water Quality Monitoring: Exploring Time-Series Data
Janet Hell, Irk Koopmans, & Fallon Janjac, GVSU-Ann’s Water Resources Institute
Lakes have lots of personality. Using the Muskegon Lake Observatory as an example, see how scientists use this through long-term monitoring. A lesson from the MSTA journal will be presented.
Grades 6 - 12

6 B6 Mathematics in Aviation
Elin Nukgba, Kent Intermediate School District
Teach your students to use real world math through the demonstration and application of vector addition and basic algebraic manipulations applied to flight planning.
Grades 9 - 12

7 B7 Engineering a Car with Physics...and Chemistry!
Michelle Mason & Katherne A. Frizelle, Northern Michigan University
This session will show how Physics and Chemistry students worked together to save an egg in a car by focusing on the engineering process, core content ideas, and communication between scientists.
Grades 9 - 12

SESSION C: 11 a.m.—12 noon

1 C1 Immersing Your Elementary Students in NGSS Practices with NexGen Inquiry
Bill Dinkelmann & Jim Nicollet, Van Andel Education Institute
NexGen Inquiry’s web-based student journal and teacher classroom tools are built to support implementation of an inquiry-based curriculum. Bring your technology device to create an account and get started.
Grades K - 5

2 C2 Great Children’s Earth Science Tradebooks
Steve Mattos, GVSU Geology Department
Sara Dave, GVSU Integrated Science Program
We will review 30 of the best Geology, Weather, and Astronomy children’s trade books to use in your classroom.
Grades K - 5

3 C3 Collaborating Classrooms: Year-round STEM Connections
Norm Lownds, Michigan State University
Discover how to connect your classroom to the 4-H Children’s Gardens and MSU scientists to enhance and expand STEM learning. Explore integrating technologies including Wonder Wall, Wikis, Smart Signs and iPads.
Grades K - 12

SESSION E: 2–3 p.m.

1 E1 Sound Science
Karen Gipson, GVSU Physics Department
This session will introduce and explain a variety of hands-on activities to use with elementary school students to teach basic physics concepts of vibration and sound.
Grades K - 5

2 E2 Defining STEM
Karen Meyer & Kathy Agee, GVSU Regional Math and Science Center
Through examining current definitions of STEM, active discussion, and reflection, develop your own working definition of STEM to share with parents and stakeholders and guide classroom instruction.
Grades K - 12

3 E3 Made in Michigan - Professional Learning for New Standards
Sarah Coleman, Muskegon Regional Math/Science Center
Ami Oliver, Allagian/VanBuren Math/Science Center
The Michigan Mathematics and Science Centers Network has developed materials to help introduce teachers and administrators to the Michigan Science Standards. Join us as we explore “WHY” our standards are changing and explore available professional development materials.
Grades 7 - 12

4 E4 Teaching Evolution and other Contentious Issues: An Informal Education Perspective
Trisha Smrecak, Museum of the Earth
Integration of informal museum activities with formal classroom provides a wealth of resources, knowledge, and activities to help incorporate the teaching of evolution, deep time, climate change, and even unconventional natural gas resources (fracking).
Grades 4 - 8

5 E5 The Biodiversity Invasion
Christopher Dobson, GVSU Biology Department
Explore how scientists measure biodiversity and consider the potential impact of invasive species on diversity. A detailed SE lesson plan is provided.
Grades 4 - 8

6 E6 Modeling in Science
Laura Sloma, East Kentwood High School/Michigan Modeling Instruction
Jan Reinhard, Spring Lake High/Michigan Modeling Instruction
Always dreamed of modeling? Learn how to apply structured inquiry techniques using award winning Modeling Instruction. Incorporate mathematical modeling, proportional reasoning, data collection, graphing, and analysis into class.
Grades 6 - 12