KBS K-12 Partnership Workshop February 29, 2012

Our theme for this workshop is Citizenship and Using Data to inform your Decision Making. You can find abstracts and details below!

Agenda

8:00am Welcome, Introductions, and Announcements

8:15am Concurrent Session Teasers

8:30am Plenary: Joe Krajcik (MSU, Institute for Research on Mathematics and Science Education)

9:30am Break

9:45am Concurrent Sessions I

- Elementary: Invertebrate trap data. Stack 141.
- MS: Let's get into an argument. Stack 140.
- MS/HS: Nano ecology. Stack 145.
- MS/HS: What to do with all these data? Terrace Room.

11:00am Break

11:15am Concurrent Sessions II

- Elementary: Developing scientific thinking skills. Stack 141.
- MS/HS: Invaders: Total Takeover. Stack 139.
- HS: Let's get into an argument. Stack 140.
- All: BEST plots data entry. Terrace Room.
- All: GK-12 Partner Teacher Info Session. Auditorium.

12:30pm Lunch at McCrary

1:30pm Concurrent Sessions III

- Elementary: What makes it all go? Stack 141.
- MS/HS: Nano Ecology. Stack 145.
- MS/HS: Invaders: Total Takeover. Stack 139.
- Invitation only: Carbon Time. Auditorium.

2:45pm State of the BEST Plots (Tom)

3:00pm District Planning (Auditorium)

4:00pm Evaluation, Adjourn, and TAC Meeting

Concurrent Session Abstracts

Elementary Sessions:

Invertebrate trap data: exploring patterns and drawing conclusions. With Alycia and Christine in Stack 141. Session 1.

In this session, we'll practice the steps of scientific method with a focus on looking at graphs and interpreting the results. We'll make comparisons using the invertebrate sticky and pitfall trap data from the BEST plots. Some questions we'll ask include: Do sticky and pitfall traps catch different kinds of invertebrates? If so, why might that happen? We've designed Open Office spreadsheets that automatically organize data entered online by multiple schools and districts. You can use this in your classroom to quickly take online data and put it in a form appropriate for elementary students. Come share ideas with us about the questions your classes might want to think about so we can design data sheets for you to use in your classroom.

Developing scientific thinking skills. With Nick and Leilei in Stack 141. Session 2. Students at every level struggle with how to use scientific information to answer questions and evaluate claims. Often this is because they have not developed the necessary scientific thinking skills to perform such a task. In this session we discuss the critical skills required to answer questions in a scientific manner and we offer a lesson format that could be used to develop many of these skills at the elementary level. We will perform an activity that uses the lesson format to answer the question "How does nitrogen fertilizer management impact plat biomass?"

What makes it all go? With Tyler and Leila in Stack 141. Session 3

The goal of this lesson is to connect existing knowledge of energy to a new awareness of alternate sources of energy for use in our everyday lives. We start with a basic overview of what energy is – the ability to do work. That basic concept is expanded to describe how we use natural resources to do the work of heating our homes and businesses, providing electricity, and moving our planes, trains, and automobiles. We will describe the various sources of energy (coal, natural gas, nuclear, wind, solar, geothermal) and compare them to biofuels. Activities will be integrated throughout the presentation, including use of the BEST plots data to illustrate the energy potential of biofuels and a lab comparing the energetic yield of biomass to other fuels.

MS/HS Sessions:

Let's Get Into An Argument. With Jennifer and Marcia in Stack 140. Sessions 1&2.

In this session we'll dig into a three-day mini-unit designed to introduce students to scientific arguments as the way that we answer questions in science. Through reading about and discussing a socioscientific issue, they will learn that scientific arguments are useful in our day-to-day lives beyond the science classroom. Students will read arguments presented by stakeholders who represent different perspectives regarding a socioscientific issue. The students will come up with criteria they think are important for evaluating the arguments, and then the students will evaluate different arguments about the issue using their own criteria. Next, the class will be introduced to some criteria that the scientific community uses to evaluate scientific arguments. Through class discussion, arguments will be re-evaluated using several of the scientific criteria, and comparisons (similarities and differences) between science community criteria and students' criteria will be discussed. Finally, students will consider how and why scientific arguments may be important beyond the science classroom, and the limitations of scientific arguments for helping us decide what to do about socioscientific issues.

Nano Ecology. With Lisa Wininger and Sara Syswerda in Stack 145. Sessions 1&3.

In this session we will look at what a nanometer is and what it means for a technology to be classified as nanotechnology. We'll consider some examples of materials that we encounter everyday, but probably don't think much about. We will then talk about some of the unintended consequences of biotechnology, and how those consequences may manifest themselves in an aquatic food chain.

What to do with all this data? With Liz and Tomomi in Terrace Room. Session 1. What can we do with all this data we collected from the BEST plots? This session will provide teachers the tools they need to analyze data they collect on the plots – both graphically and statistically. Using treatments from the Long Term Ecological Research (LTER) sites at KBS that parallel our schoolyard BEST Plots, we will use raw data to answer scientific questions like: how does nitrogen fertilization affects plant productivity? We will compare nitrogen fertilization plots and control plots with no fertilization additions and analyze plant productivity, and how this relationship changes over time. During this session, we will cover the steps of the scientific method, including data collection, analysis, and interpretation.

Invaders: Total takeover. With Kate and Michael in Stack 139. Sessions 2&3.

In this concurrent session, participants will learn about a variety of different issues relating to the spread of invasive species. We will look at examples of local and non-local invasives, and use real data to assess the effectiveness of different methods of control. Participants will then have the opportunity to defend Michigan against total takeover in an invasive species game.

Sessions for All:

GK-12 Partner Teacher Info Session for 2012-2013. With Robin, Marcia, and Tom in Auditorium. Session 2. If you're considering applying to be a GK-12 Partner teacher for the 2012-2013 school year (hosting a Fellow in your district/classroom) please come to this informational session. We will discuss the roles and responsibilities of Partner Teachers, demonstrate the variety of Teacher-Fellow partnerships that have worked well in KBS K-12 Partnership classrooms, distribute the application, and welcome some of our newest Fellows (who will begin their fellowships in May). We encourage you to attend and ask questions – even if you're not quite sure yet!

GK-12 BEST Plots Data Entry. With available Fellows and Leadership Team members in the Terrace Room. Session 2.

If you've collected data on your district's BEST plots, but not had the time or opportunity to upload that data, take this opportunity to explore the BEST plots google docs forms, ask us questions, and enter data from your district. Fellows will be available to help. Bring your data sheets!

Participant List

Email Sara Syswerda (parrsar1@msu.edu) or Robin Tinghitella (hibbsr@msu.edu) if you would like to be added to this list.

Comstock: Emmy Kimmer, Shirley Gilland,

Delton-Kellogg:

Galesburg-Augusta: Mary Moreland, Teresa Blake

Gobles: Becky Drayton

Gull Lake: Bev Brown, Beth Rhodes

Harper Creek: Meredith Hawkins, Maria Farkas, Erik Crooks, Jim Eckert, Mishael Kunji, Joene Joostberns, James Remus, Sandy Erwin

Hastings: Marty Buehler, Jamie Dixon, Melissa Daniels, and Jill Withey

Kalamazoo Area Math Science Center: Cheryl Hach

Lawton: Holly Visich

Martin:

Olivet: Lauri Maurer, Jeremy Milarch, Vince Morrison, Terri Morton, Charles Bucienski

Parchment: Jodie Lugar-McManus

Plainwell: Lisa Wininger, Jackie Warners, Marty Green, Noel Muselin, Sandy Breitenbach

Vicksburg: Liz Ratashak,

Visitors: Robby Cramer, Van Andel Education Institute

KBS: Tom Getty, Andy Anderson, Phil Robertson, Robin Tinghitella, Sara Syswerda, Jonathon Schramm, Jennifer Doherty, Alycia Reynolds-Lackey, Nick Ballew, Leila Desotelle, Leilei Ruan, Elizabeth Schultheis, Tomomi Suwa, Michael Kuczynski, Tyler Bassett, Christine Nieman, Kate Steensma, Marcia Angle, Joe Krajcik, Anne Royer, Cara Krieg, Dustin Kincaid, Jake Nalley, Megen Larsen, Sara Garnett

WMU Evaluation Staff: Bob Ruhf