

## 2015 Opening Workshop Abstracts

### Oct. 1-2 @ Great Lake Lodge, Wisconsin Dells, WI

#### **Top Ten Tips for Implementing a Flipped Classroom**

*Benjamin Collins, UW Platteville*

The Eberly Center for Teaching Excellence and Educational Innovation at Carnegie Mellon University describes a flipped classroom thus: “In a ‘Flipped Classroom’ students’ initial exposure to content is shifted outside of the classroom via readings, instructional videos, individual or collaborative activities, or a combination of these. Then during class, rather than lecturing, all or a significant portion of the time is used for practice, application exercises, discussion-based activities, team-based learning or other active learning techniques.” This leaves a lot of room for a wide variety of practices that could be considered a “flipped classroom”. In this talk, I will outline some important considerations that I believe will be of interest to anyone planning to flip their classroom, regardless of their individual implementation.

#### **Active pedagogy in GIS classroom**

*Tim Kennedy, UW Stevens Point*

The traditional methods of course delivery include lecture, laboratory exercise and discussion; courses in Geographic Information Systems (GIS) are no exception. In the style of traditional course, students receive lectures on the theory of GIS and then apply GIS through laboratory exercises. Despite traditional methods of course delivery, it has been shown that students receiving active learning instruction have demonstrated better performance in STEM disciplines when compared to traditional lecture methods.

However, active learning can be challenging to implement in the classroom. In a first semester GIS course, we introduced techniques to engage students in the material outside of the traditional lecture class versus the flipped classroom, where students receive the customary lecture outside of scheduled class time and perform active learning techniques during class.

#### **Implementing iPads into the STEM Lab**

*Kitrina Carlson, Madison Area Technical College & Maleka (Polly) Hashmi, UW Stout*

#### **CURE the Teaching and Research Dilemma**

*Christopher Yahnke, Dept. of Biology, UW Stevens Point*

The author and English professor David Foster Wallace wrote that, “The more time and energy spent on teaching, which is extraordinarily hard to do well, the less time on your own work.” This idea has led to a widely held view that excellent teachers don’t have time to publish and excellent researchers don’t have time to teach. I call bulls#\*!.

Course-based Undergraduate Research Experience (CUREs) provide an opportunity to engage many students in research questions that interest you, while also meeting department and course learning objectives. Furthermore, I believe that the skills needed to engage CUREs are more important to employers and lead to more engaged future employees than cookbook labs or delivering more and more content in lectures. Finally, it is rewarding for both students and the instructor to be engaged in a semester-long project where the outcome is not known.

### **A price tag for classroom software?**

*Alexandru Tupan, UW River Falls*

We discuss several ideas regarding sustainable technology. Through the analysis of several examples we will try to determine a range for the student cost of classroom software and link with the broader concept of sustainability.

### **How to Grow a Scientist: teaching pedagogies that encourage meaningful, authentic and student-directed learning**

*Krista Slemmons, Kele Anyanwu & Perry Cook, UW Stevens Point*

*Collaborators: Nancy Shefferly, Josh Hames, Dave Grabski & Jeffery Mlsna*

A widely supported view in education is that students gain and retain more when learning experiences are self-directed, relevant and authentic. Educational strategies are evolving as a result and should encourage students to form questions and hypotheses about real-world problems of interest. Using the scientific method as a framework, students develop the ability to systematically analyze information to solve problems beyond the answers they have memorized. Strategists that encourage students to think like scientists include implementing inquiry based labs and relevant case studies are keys to growing scientists. We propose a variety of teaching pedagogies that can aid in facilitating these experiences such as implementing role reversals and flipping the classroom. We discuss a pilot study that investigations of these pedagogies related to how the length of video lectures affects student retention and engagement in a middle school classroom and discuss how these strategies can be implemented in a large, non-major college course. The need to diversify teaching strategies that focus less on content and more on thinking is paramount particularly in an era when content knowledge is just a search engine away.

### **Using Case Studies to Teach STEM Courses**

*Colleen McDermott, DVM, PhD, UW Oshkosh*

Everyone loves a story, and case studies are just stories that can help illustrate scientific and mathematical concepts using real-life experiences. This presentation will discuss types of case studies and their uses in a STEM classroom, as well as ideas about how to teach with a case. Additionally, forming groups and the benefits of small group work will be addressed. Last we will work

through a case in small groups and, as a whole, synthesize the important information to be learned from the exercise.

### **Using concept maps in a non-lab discussion based science course for non-science majors**

*Juk Bhattacharyya, UW Whitewater*

Concept maps are often used in classrooms for visualizing the interconnected nature of different concepts. Those can also be used for demonstrating cause-and-effect relationships between apparently unrelated events. I use concept maps in my discussion-based (non-lab) general education Environmental Geology course to generate student interest and stimulate student engagement and small group discussion. In this presentation/workshop we will discuss the basic elements of concept maps, create several concept maps in small groups and identify ways this strategy can be used in different courses.

### **Getting Near 100% Class Participation Using Clickers**

*Ken Menning, UW Stevens Point*

I will demonstrate how I use clickers to encourage active learning, to boost attendance and to encourage even the most timid students to participate. I will discuss both the benefits and the drawbacks of using clickers and will also describe in-class quizzing strategies that do not use clickers.