

**2018**



CONFERENCE ON TEACHING LARGE CLASSES

**PROCEEDINGS**

## 2018 Conference on Teaching Large Classes

*Planning Committee*

**Kim Filer**

**Danielle Lusk**

**Tiffany Shoop**

**Leslie Williams**, *Conference Chair*

*Hosted by*

## **The Center for Excellence in Teaching and Learning**

**Kim Filer**

*Director*

**Liesl Baum**

*Associate Director*

**Danielle Lusk**

*Associate Director*

**Tiffany Shoop**

*Associate Director*

**Leslie Williams**

*Coordinator*

**Anne-Lise Velez**

*Postdoctoral Associate*

**Katie Ayers**

*Professional Development Fellow*

**Joanie Banks-Hunt**

*Professional Development Fellow*

**Jenna Haynes**

*Professional Development Fellow*

**Bonnie Alberts**

*Office Manager*

## **Letter from the Conference Planning Committee**

Welcome to the 2018 Conference on Teaching Large Classes! This conference provides a unique opportunity for teachers, scholars, and administrators in higher education to come together for a day focused on teaching and learning in the large class environment. We are excited that you are here to participate in the sharing of research, best practices, and experiences related to teaching large classes.

“How do you define a large class?” This is a question that we hear often as we plan for the conference and as we work to support large class instructors at Virginia Tech. While we find it difficult to define a large class in terms of numbers alone, our discussions with large class instructors have led us to define a class as “large” when it becomes challenging to engage with students as individual learners.

Teaching in the large class environment presents many challenges. However, through our work with this conference and at Virginia Tech, we have seen instructors from a variety of disciplines engaging students in large classes with creative learning experiences. It is our hope that this conference will serve as a point of knowledge, encouragement, and inspiration as you interact with others dedicated to excellence in large class instruction.

We look forward to engaging with you throughout the conference!

### **Kim Filer**

*Director, The Center for Excellence in Teaching and Learning, Virginia Tech*

### **Danielle Lusk**

*Associate Director, The Center for Excellence in Teaching and Learning, Virginia Tech*

### **Tiffany Shoop**

*Associate Director, The Center for Excellence in Teaching and Learning, Virginia Tech*

### **Leslie Williams**

*Conference Chair and Coordinator, The Center for Excellence in Teaching and Learning, Virginia Tech*

## Table of Contents

<i>Keynote Addresses</i> .....	5
THINK BIG: Moving from “My Class to Our Institution” Through Learner-Centered Pedagogy .....	6
Creating the Greatest Opportunity for Success for the Greatest Number of Students.....	6
 <i>Research Sessions</i> .....	7
Using Collaboration Sessions to Motivate Students.....	8
Exploring Automated Qualitative Analysis of Institutional Data to Inform Reflective Teaching in Large Classes .....	10
Engaging Students in a Large Consumer Finance Course: Moving Toward Hands-on Experiences.....	12
 <i>Practice Sessions</i> .....	13
Lessons Learned from the "Virginia Tech Signature Course" .....	14
Teaching Techniques: Beyond Lectures.....	15
Facilitating Reflection to Enhance Understanding and Knowledge Retention in the Higher-Ed Large Classroom .....	17
Strategies for Effectively Engaging Students in Large Classes II.....	20
Bodies and Bytes: Leveraging Exponential Technologies to Integrate Writing in Large Classes.....	21
Making Projects Productive in Large Classes: Lessons Learned from Across Disciplines.....	24
Using iBooks for Integrated and Interactive Content Delivery.....	25
Whose Class Is It Anyway? The Power of Improvisation and Public Speaking Performance to Engage Large Student Audiences.....	27
Promoting Academic Integrity in Large Classes: Strategies and Techniques.....	29
Creative Ways to Select Teams and Utilize Semester Long Teams in Large Classes .....	30
Tips and Tricks for Teaching Large Courses in Canvas.....	33
 <i>Conversation Sessions</i> .....	34
Conversation: On the Front Lines of Building Community in the Large Chemistry Classroom.....	35
Conversation: Making the Large & Impersonal Seem Small & Engaging.....	36
Conversation: Is Not a Spectator Sport. How Might We Incorporate Role-Play in Large Classes?.....	37
Conversation: The Wicked Problem in Large Classes – Cheating: Teaching and Assessment Strategies That Either Minimize or Encourage Cheating .....	38
Conversation on Clickers: What Do You Use? Tell Us About It! .....	41

<i>Poster Sessions</i> .....	42
Freedom of Choice in a Large Organic Chemistry Class: Outcomes and Challenges .....	43
Analysis of the Effect of Body Weight and Physical Activity Levels on Perceived Critical Thinking Skills in College-level Students .....	43
Engaging Students in a Large Consumer Finance Course: Exploring Innovative Pedagogical Strategies to Provide an Interactive Budgeting Experience.....	43
Digital Large Classroom Simultaneous Testing.....	44
Examining Communication Structure in a Peer-based Online Learning Community.....	44

# Keynote Addresses

## Opening Keynote Address

### **THINK BIG: Moving from “My Class to Our Institution” Through Learner-Centered Pedagogy**

**Jill Sible, Ph.D.**

Associate Vice Provost for Undergraduate Education  
Professor of Biological Sciences  
Virginia Tech



Through effective teaching practices, we can impact lives, one student at a time. When we bring those practices to scale in large classes, we may reach hundreds. But how can we as faculty catalyze campus-wide changes in the learning experiences of our students? Follow the journey of one professor-turned-administrator to discover strategies for scaling up student engagement in your large classes and becoming an effective champion for institutional change. How can you influence decisions about curriculum, space, and budget? How can you play a bigger role in the learning revolution?

---

## Closing Keynote Address

### **Creating the Greatest Opportunity for Success for the Greatest Number of Students**

**Brian H. Lower, Ph.D.**

Associate Professor, School of Environment & Natural Resources  
The Ohio State University

A large-enrollment class provides a unique opportunity to offer rewarding educational experiences to a large number of students. In fact, large classes offer several advantages to students. These include providing students with a greater number of peer-to-peer interactions, exposing students to diverse ideas and views, and allowing students to participate in different active learning environments. These experiences can have a profound impact on a student’s development and ultimately help shape her or him into a responsible citizen and well-respected professional. When teaching a large-enrollment class, an instructor must develop creative ways to engage all students. This can be challenging, especially given the number and diversity of students. In this talk, Dr. Lower will describe the strategies he and his colleagues have used in their large-enrollment, general education science course, “Introduction to Environmental Science.” He will describe their endeavors in detail, discuss the outcomes, and talk about the challenges that they present for both live and distance-education courses.



# Research Sessions

## Using Collaboration Sessions to Motivate Students

Jeannine Eddleton, Brett Jones, and Stephen Biscotte, *Virginia Tech*

**Abstract:** Because it can be difficult to motivate students in a large chemistry course, we conducted an action research project in an attempt to improve students' motivation in chemistry courses. To do so, we did the following: (1) we assessed students' levels of motivation in a spring semester chemistry course, (2) we used the assessment to consider changes that could improve students' motivation, and (3) we implemented collaboration sessions intended to improve students' motivation in a fall chemistry course. We used the MUSIC Model of Academic Motivation Inventory (Jones, 2016) to assess students' motivation-related beliefs and compared students' responses in the spring class to those in the fall class. One purpose of this presentation is to share the results obtained from the MUSIC Inventory in the spring and fall semesters. Another purpose is to explain how we implemented the collaboration session and how it affected students' motivation. Because the collaboration session can be used in any type of large course, this session will be of interest to any instructor interested in increasing students' motivation in large courses.

### Literature

The purpose our study was to implement an in-class thinking activity in a large undergraduate chemistry course to increase students' motivation. To meet our goal, we conducted an action research project (Stringer, 2007), which involves identifying a problem, collecting data relevant to solving the problem, analyzing and interpreting the data, and developing an action plan (Mills, 2011). Action is a key component of the action research model, which is why we redesigned the chemistry course after analyzing and interpreting the data that we had collected. In this presentation, we will explain the process we used and our major findings after having implemented collaboration sessions in the class. We believe that our findings can be generalized to other types of large college courses.

We used a framework that was designed to help instructors design instruction based on current motivation theory and research: the MUSIC Model of Motivation (Jones, 2009, 2015). In the MUSIC model, the instructor needs to ensure that students: (1) feel empowered by having the ability to make decisions about their learning, (2) understand why the topic is Useful for their goals, (3) believe that they can Succeed in the course, (4) are Interested in the course content and activities, and (5) believe that the instructor and others in the learning environment Care about their learning (Jones, 2009, 2015; [www.theMUSICmodel.com](http://www.theMUSICmodel.com)). Other researchers have also used the MUSIC model to examine the motivation of students in courses (Jones, Epler, Mokri, Byrant, & Paretti, 2013; Jones, Watson, Rakes, & Akalin, 2012; Tu & Jones, 2017).

Our primary research question for this study was: To what extent does implementing a collaboration session each class affect students' motivation in a first-year chemistry course?

### Session Goals

Students enrolled in a large chemistry course were asked to complete a questionnaire that included the five scales of the MUSIC Model of Academic Motivation Inventory (Jones, 2016): empowerment, usefulness, success, interest, and caring. We administered the inventory in a spring introductory chemistry course and in a fall introductory chemistry course. Most of the students in the course completed the questionnaire in the spring course (n = 166) and 229 students were enrolled in the fall course.

The collaboration sessions implemented in the fall semester were designed to motivate students to engage in learning during the middle of a 75 minute class. In the spring semester, this time in the middle of the class had been used as a five-minute break time, in which students typically relaxed or went to the bathroom. In the fall, this five-minute break was replaced with a 15-20 minute collaboration session activity in which students were asked to address a question. Students were placed in groups and given one question to think about each class meeting. Every group worked on a similar questions on the same day. The questions were open-ended without a clear correct answer. Students were required to provide evidence to support their answer. Students posted the answer on the course learning management system at the end of the 15-minute collaboration session. The instructor used the activity to segue into the topics covered during the remaining class time. The collaboration session was designed to meet the five components of the MUSIC model.

### Session Description

We will use a t-test to compare the results of the MUSIC Inventory from students in the spring and fall semester. We will also conduct a content analysis to analyze the responses to the open-ended items. Responses from the spring class survey provided the following results on a scale ranging from 1 (strongly disagree) to 6 (strongly agree): empowerment (M = 4.8), usefulness (M = 4.1), success (M = 5.1), interest (M = 4.6), and caring (M = 5.3). At the end of the fall semester, we will compare these scores to the scores obtained in the fall course (n = 229) in which we implemented the collaboration sessions. We hypothesize that the mean scores on the MUSIC Inventory will increase due to the collaboration sessions, which were designed to meet each of the five components of the MUSIC Model of Motivation (Jones, 2009, 2015) as highlighted here.

**Empowerment:** Because the question topics were open-ended, students had choices in how to proceed as long as they supported their answers with evidence. Thus, students were given some control within the task.

**Usefulness:** Students were given current question topics and told that their question responses had implications for voting decisions on many levels.

**Success:** Students were told that if they fully participated, they would receive full credit for the activity. Thus, students believed that they could succeed if they put forth effort.

**Interest:** The task required students to interact and converse with their peers, which can trigger interest. And, the task added variety to the typical format of the lecture class, which can spark interest. And, the task topics were frequently “ripped from the headlines” to active their interest.

**Caring:** The instructor cared enough to give up lecture time to listen to what students had to say during the activity.

### Session Discussion

We will discuss the challenges and successes we faced in implementing the collaboration sessions. This will include a comparison of students' scores on the MUSIC Inventory from the spring and fall semesters. In addition, we will present students' responses to open-ended items about what could be changed to improve the course. We will consider how the collaboration session activities implemented each class affected students' perceptions of empowerment, usefulness, success, interest, caring, and effort in the course. Based on these findings, we will provide suggestions for implementing collaboration session activities in other large courses.

### References

- Jones, B. D. (2009). Motivating students to engage in learning: The MUSIC Model of Academic Motivation. *International Journal of Teaching and Learning in Higher Education*, 21(2), 272-285.
- Jones, B. D. (2015). *Motivating students by design: Practical strategies for professors*. Charleston, SC: CreateSpace.
- Jones, B. D. (2016). User guide for assessing the components of the MUSIC Model of Academic Motivation. Retrieved from <http://www.theMUSICmodel.com>
- Jones, B. D., Epler, C. M., Mokri, P., Bryant, L. H., & Paretto, M. C. (2013). The effects of a collaborative problem-based learning experience on students' motivation in engineering capstone courses. *Interdisciplinary Journal of Problem-based Learning*, 7(2), 34-71. doi:10.7771/1541-5015.1344
- Jones, B. D., Watson, J. M., Rakes, L., & Akalin, S. (2012). Factors that impact students' motivation in an online course: Using the MUSIC Model of Academic Motivation. *Journal of Teaching and Learning with Technology*, 1(1), 42-58.
- Mills, G. E. (2011). *Action research: A guide for the teacher researcher* (4th ed.). Upper Saddle River, NJ: Pearson.
- Stringer, E. T. (2007). *Action Research* (3rd ed.). Los Angeles: SAGE Publications.
- Tu, H.-W., Jones, B. D. (2017). Redesigning a neuroscience laboratory course for multiple sections: An action research project to engage students. *The Journal of Undergraduate Neuroscience Education*, 15(2), A137-A143.

## Exploring Automated Qualitative Analysis of Institutional Data to Inform Reflective Teaching in Large Classes

Michelle Soledad, *Ateneo de Davao University*

Sreyoshi Bhaduri, Jacob Grohs, Jennifer Doggett, Jaime Williams, and Steven Culver, *Virginia Tech*

**Abstract:** This research session will report on the results of an ongoing effort to leverage institutional data on student perceptions of teaching (SPOT) in large classes to inform reflective teaching practices. The dimensions of the MUSIC Model of Academic Motivation (Jones, 2009) were used as a framework for presenting student perceptions of their learning experience. In this study, we will elaborate how text analytics can be used to help researchers automate analysis of responses to open-ended items included in SPOT surveys provided by students taking Mechanics courses (Statics, Dynamics, and Strength of Materials) in the large class setting. We will present manually-generated codes based on the MUSIC model, and follow up by detailing output of an automated classification algorithm which will be able to mimic the researcher's manually developed codes. In this session, we offer key findings from this study; discuss future work towards developing a system that will quickly analyze text-based survey data from large classes and present the results in a systematic, organized, constructive and concise manner; and encourage participants to consider how qualitatively analyzed responses to open-ended items course evaluation surveys will help faculty reflect on their teaching and inform the design of future course offerings.

### Literature

Large classes have become a necessity among higher education institutions, influenced by the need to accommodate increasing student populations while maximizing resources and managing costs (National Science Board, 2014; Parry, 2012). Unfortunately, the learning experience in the large class setting has been described as challenging for both instructors and students; it is associated with situations that are detrimental to student learning (Cuseo, 2007). Peter Doolittle, former director of the Center for Instructional Development and Educational Research at Virginia Tech, expressed the following reality: "We're better off learning how to teach well in large classes, rather than trying to avoid them" (Parry, 2012). Barr and Tagg (1995) also suggest that quality learning is possible regardless of class size if instructors create a learner-centered environment. Shifting to a learning paradigm requires knowing how students learn and understanding barriers to student learning (Stage, Muller, Kinzie, & Simmons, 1998). For large classes, a possible source of this information is the course evaluation survey.

Institutions collect data on student experiences through course evaluation surveys. Ideally, student perceptions of their learning experiences may be used to inform the design of future course offerings and aid in reflective practice; unfortunately, this potential is usually not maximized (Blair & Valdez Noel, 2014). For large classes, the inability to maximize this data may be partly due to the challenge of analyzing and large volumes of text data such that information is presented constructively. Such a challenge may potentially be addressed using text analytics to qualitatively analyze text-based SPOT data, in the same way that it has been applied to content analysis in other contexts (e.g., Scharkow, 2013).

### Session Goals

In this study we use a sequential (QUAL ? QUANT) mixed methods approach (Creswell, 2014) to analyze text responses to SPOT surveys. The qualitative analysis follows a deductive approach to coding the text responses. The text-based data will then be quantitatively analyzed through statistical modelling of phrases to determine a basis for classifying unlabeled responses. SPOT data for Statics, Dynamics, and Strength of Materials for Fall 2014, Spring 2015, Fall 2015 and Spring 2016 terms are included in the analysis. A purposefully-selected sample (Neuendorf, 2002) of 1,271 responses was selected from a dataset that contained 3,917 responses. The sampling criteria ensured each course offering and semester was represented in the sample, and responses contained an answer to at least one of the following survey items: 1) What did the instructor do that helped the most in your learning? 2) Please add any additional comments regarding the course and/or instructor here. Two investigators conducted a manual qualitative analysis using two dimensions of the MUSIC Model (Jones, 2009) as the coding framework (Success and Caring). The manually-analyzed datasets were then used to train the classifier algorithm. Training runs will primarily use a bag-of-words model to automate the classification process. Ultimately, this session will demonstrate how natural language processing algorithms used in conjunction with machine learning techniques can be successfully used to mimic researcher codes to automate the qualitative analysis of open-ended items to SPOT surveys of three Mechanics courses in a large public research university.

### Session Description

The manual qualitative analysis is currently being conducted and will be followed by trial runs of the automated process; all analysis will be completed prior to the Conference. Initial analysis of data identified 628 responses related to success and 180 responses related to caring. Both positive and needs improvement experiences were noted during coding. Examples of word/phrase choices related to success include “willing to help students” (positive) and “don’t get tests back” (needs improvement). Examples of word/phrase choices related to caring include “wants all students to succeed” (positive) and “did not respect students” (needs improvement). Once completed, automated analysis will classify and provide counts of responses according to Success and Caring, identify frequently used words and phrases, and provide an accuracy level.

### Session Discussion

This study seeks to explore the use of text analytics to qualitatively analyze large volumes text-based responses to course evaluation surveys. It continues efforts to leverage institutional data to inform reflective teaching practices in large classes. For this research session, we will give a brief overview of the study and discuss the key findings that emerged from the analysis. These results will then be used as impetus for a reflective conversation on (1) ways that instructors of large classes may use constructively and meaningfully-presented information derived from course evaluation surveys; (2) suggestions for further refinements to an automated system as explored in this study; and (3) perspectives on the potential usefulness of the qualitative analysis of course evaluation surveys in the long-term.

### References

- Barr, R. B., & Tagg, J. (1995). From Teaching to Learning: A New Paradigm for Undergraduate Education. *Change*, 27(6), 12–25.
- Blair, E., & Valdez Noel, K. (2014). Improving higher education practice through student evaluation systems: is the student voice being heard? *Assessment & Evaluation in Higher Education*, 39(7), 879–894. <https://doi.org/10.1080/02602938.2013.875984>
- Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed methods approaches* (4th ed). Thousand Oaks: SAGE Publications.
- Cuseo, J. (2007). The empirical case against large class size: adverse effects on the teaching, learning, and retention of first-year students. *The Journal of Faculty Development*, 21(1), 5–21.
- Jones, B. D. (2009). Motivating Students to Engage in Learning: The MUSIC Model of Academic Motivation. *International Journal of Teaching and Learning in Higher Education*, 21(2), 272–285.
- National Science Board. (2014). *Science and Engineering Indicators 2014*. National Science Foundation.
- Neuendorf, K. A. (2002). *The Content Analysis Guidebook*. Sage Publications.
- Parry, M. (2012, April 29). “Supersizing” the College Classroom: How One Instructor Teaches 2,670 Students. *The Chronicle of Higher Education*. Retrieved from <http://chronicle.com/article/How-One-Instructor-Teaches/131656/>
- Scharkow, M. (2013). Thematic content analysis using supervised machine learning: An empirical evaluation using German online news. *Quality and Quantity*, Dordrecht, 47(2), 761–773. <http://dx.doi.org.ezproxy.lib.vt.edu/10.1007/s11135-011-9545-7>
- Stage, F. K., Muller, P., Kinzie, J., & Simmons, A. (1998). *Creating Learning Centered Classrooms. What Does Learning Theory Have To Say?* (ASHE-ERIC Higher Education Report No. Volume 26, No. 4). Washington, D.C.: The George Washington University, Graduate School of Education and Human Development. Retrieved from <http://eric.ed.gov/?id=ED422778>

## **Engaging Students in a Large Consumer Finance Course: Moving Toward Hands-on Experiences**

Oscar Solis, Micah Roedger, and Jianguang Huang, *Virginia Tech*

**Abstract:** This research session will present on the results of an effort to provide active learning activities for students enrolled in large classes. The purpose of this study is to evaluate the budgeting behaviors of college students enrolled in a large introductory consumer finance class and to evaluate what influence interactive budgeting assignments had on students' financial behavior. In this session, we offer key findings from the research study and encourage participants to consider opportunities in their respective disciplines to incorporate hands-on experience even in the large class setting.

### **Literature**

Students' financial behaviors in colleges and universities are a topic of importance considering the accumulation of college student debt in America. Research has highlighted the need to improve college students' personal finances knowledge and financial literacy skills (Bianco & Bosco, 2012; Hanna, Hill & Perdue, 2010; Mandell, 2008). Additionally, researchers have found college students have difficulty understanding budgeting (Henry, Weber, & Yarbrough, 2001; Gutter & Copur, 2011) and credit. Finding effective and innovative ways to teach course activities in personal finance is of importance to meet the growing need for teaching these courses and to identify pedagogy that works for increasingly large-sized financial education classes.

### **Session Goals**

The introductory course consisted of 224 undergraduate students who were enrolled during the 2017 Spring Semester. Students were asked to fill out a pretest survey consisting of the eleven-item Budgeting Behavior Scale and basic demographic questions. Later in the semester, students completed a long-term hands-on personal budgeting assignments. The hands-on budgeting assignment required students to project their monthly budget prior to the beginning of the month, track their income and expenses for one month, and compare their projected budget with the actual budget at the end of the month. In addition, students projected the following month's budget based on what they learned from the previous month. Following the hands-on assignment, students were asked to complete a posttest measure consisting of the eleven-item Budgeting Behavior Scale.

### **Session Description**

A total of 190 students responded to the pre- and post-test surveys. A paired sample t-test for mean differences showed a significant increase between the participants' pre ( $M = 2.74$ ,  $SD = .49$ ) and posttest ( $M = 3.12$ ,  $SD = .43$ ) budgeting behavior  $t(189) = 10.9$ , with  $p\text{-value} = 4.44833e-22 < .05$ . These results suggest incorporating an interactive budgeting activity complementary to consumer finance lectures provides actionable classroom opportunities for students to improve their financial behaviors. Significant findings will be presented, and implications for future teaching and learning techniques will be discussed.

### **References**

- Bianco, C.A., & Bosco S.M. (2012). Financial (IL)literacy of college students. *The Journal of American Academy of Business*, 18(1), pp.75-81.
- Gutter, M., & Copur, Z. (2011). Financial behaviors and financial well-being of college students: Evidence from a national survey. *Journal of Family and Economic Issues*, 32(4), 699-714.
- Hanna, M.E., Hill, R.R., & Perdue. (2010). School of study and financial literacy. *Journal of Economics and Economic Education Research*, 11(3), pp. 29-37.
- Henry, R.A., J. G. Weber, & D. Yarbrough. (2001). Money management practices of college students. *College Student Journal*, 35, 244-247.
- Mandell, L. (2008). *The financial literacy of young American adults*. Washington, DC: The Jump\$tart Coalition for Financial Literacy.

# Practice Sessions

## **Lessons Learned from the "Virginia Tech Signature Course"**

Nahum Arav, *Virginia Tech*

**Abstract:** From 2010 to 2015 I taught the "Virginia Tech Signature Course": an introductory course to Astronomy (PHYS 1055 and 1056). This course was taught to 600+ students and had a team of 10 learning assistants and a full time TA as the supporting pedagogical team. This session will cover the following aspects of these courses: designing effective instruction for large classes, implementing innovative/creative technologies in a large class, assessing student learning in large classes, managing a large class, employing innovative pedagogies in a large class, teaching for individual differences within a large class, implementing effective strategies in a large class, integrating technology effectively within a large class, case-based and problem-based instruction in a large class, and creating domain specific pedagogy.

### **Session Goals**

I will cover the following aspects of these courses:

- Designing Effective Instruction for Large Classes
- Implementing Innovative/Creative Technologies in a Large Class: iClickers and multi-media
- Assessing Student Learning in Large Classes: using iClickers and standardized tests
- Managing a Large Class: An all inclusive rigid syllabus as your portal to sanity; weekly meeting with learning assistants, restricting direct e-mailing to the professor, using iClickers
- Employing Innovative Pedagogies in a Large Class: recitation sessions for small groups, lots of extra credit opportunities, discussing current topics chose by students
- Teaching for Individual Differences within a Large Class: recitation sessions for small groups, lots of extra credit opportunities
- Implementing Effective Strategies in a Large Class: controlling late arrivals and early departures, minimizing students disturbance...
- Integrating Technology Effectively within a Large Class: Smart use of iClickers, automated grading methodology.
- Case-Based and Problem-Based Instruction in a Large Class: questions to student during the lecture, challenging extra credit opportunities
- Creating Domain Specific Pedagogy: Using the Prices Fork observatory as an experience enhancer.

### **Session Discussion**

This workshop presentation will be fully interactive, and hand outs will be supplied.

## **Teaching Techniques: Beyond Lectures**

Chessica Cave, *Lincoln Memorial University*

**Abstract:** As the dynamics of education change so does the way our students learn and respond to classroom strategies. The traditional way of teaching through lecture is no longer sufficient nor effective. Students today prefer learning through a combination of lecture and interactive teaching. However, when making instructional decisions within higher education, the question must be asked: “Are we modeling good instructional practices?” This presentation examines how to revitalize instruction through the integration of active learning strategies that facilitate interaction with students. A hands-on approach will demonstrate teaching techniques that have multiple benefits and are more efficient than a typical lecture for elevating students’ attention and engagement.

### **Literature**

As the dynamics of education change so does the way our students learn and respond to classroom strategies. The traditional way of teaching through lecture is no longer sufficient nor effective. Students today prefer learning through a combination of lecture and interactive teaching. However, when making instructional decisions within higher education, the question must be asked: “Are we modeling good instructional practices?” This presentation examines how to revitalize instruction through the integration of active learning strategies that facilitate interaction with students. A hands-on approach will demonstrate teaching techniques that have multiple benefits and are more efficient than a typical lecture for elevating student’s attention and engagement.

### **Session Goals**

Upon completion of the session, participants will be able to:

1. Define and describe active learning
2. Reflect upon the learning process
3. Recognize the multiple benefits of active learning
4. Develop teaching techniques to keep their students attentive and engaged during class

### **Session Description**

This practice session will focus on several aspects of active learning: thinking critically, small group work, videos with guided questions, and promoting a positive, interacting classroom. I will model teaching strategies that demonstrate how to keep your students attentive and engaged through the integration of active learning strategies. Participants will be encouraged to participate in the different teaching strategies that focus on getting students to participate in class discussions and activities actively.

### **Session Discussion**

Moving to higher education after teaching 13 years in public education was a challenge. One of the hardest things was learning to lecture. After a couple of chapters, I realized that lecturing was not for me. I asked myself, “Is teaching college students foundationally different than teaching elementary students?” So I went back to the way I used to teach using groups, projects, games, making posters, creating skits and songs. It was not long after, I realized college students enjoy learning the same way my elementary students. These strategies may appear elementary, but when compared to lecturing, these achieve more effective active learning and student achievement of learning objectives.

### **References**

- Centre for Teaching Excellence. (2016). Nine alternatives to lecturing. Retrieved from <https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/alternatives-lecturing/active-learning/varying-your-teaching-activities>
- de Vise, Daniel. (2012). Colleges looking beyond the lecture. The Washington Post. Retrieved from [https://www.washingtonpost.com/local/education/colleges-looking-beyond-the-lecture/2012/02/03/gIQA7iUaGR\\_story.html](https://www.washingtonpost.com/local/education/colleges-looking-beyond-the-lecture/2012/02/03/gIQA7iUaGR_story.html)
- Drummond, Tom.(2008). A brief summary of the best practices in college teaching. The Center for Teaching and

- Learning. Retrieved from <http://sphweb.bumc.bu.edu/otlt/teachingLibrary/Teaching%20Activities/bestpractice.pdf>
- Hanford, Emily. (2016). Rethinking the way college students are taught. American Radioworks' The Tomorrow's College Series, Episode: Don't Lecture Me. A production of American Public Media. Retrieved from <http://www.columbia.edu/itc/hs/CUMC-Summer-Institute/SI-2012/PrintMaterials/LeahHooper--Handout2.pdf>
- Lambert, Craig. (2012). Twilight of the lecture. Harvard Magazine. Retrieved from <http://harvardmagazine.com/2012/03/twilight-of-the-lecture>

## **Facilitating Reflection to Enhance Understanding and Knowledge Retention in the Higher-Ed Large Classroom**

Chelsea Corkins, Jeremy Elliott-Engel, and Donna Westfall-Rudd, *Virginia Tech*

**Abstract:** Research has shown that reflection improves: conceptual reasoning and critical thinking; writing and speaking abilities across curriculum; and exam performance. However, integration of significant and continual reflection into a higher-education large classroom can be daunting, even for the simplest of engagement activities. As a result, reflection activities are not commonly utilized in large higher-education classrooms that can range from 200 to 1,000 or more students – jeopardizing the understanding and knowledge retention opportunities for many students. Compounding this issue is the reality that large classrooms are a result of the increased pressure for higher enrollment and the existence of large classroom facilities, and this need for education of large numbers of students in one setting will not soon decrease. This international issue drives an increased interest in new and innovative strategies previously undiscovered or underutilized. In the workshop, strategies - outside, inside, and in the virtual classroom - will be analyzed through a hands-on candy activity. Each participant will leave with a more holistic view of how to implement and facilitate large classroom reflection as well as a wide range of activities that can be integrated throughout the learning process.

### **Literature**

Reflection is the process of a learner using their metacognition to expose what they know and what gaps they still have to fill. This process is beneficial for learners and should be embedded in the large-classroom as often as it is in smaller educational spaces. As higher-education educators we cannot override inherent barriers of the current academic structure that is pressured to increase enrollments (Mulryan-Kyne, 2010) - which has led to an increase in number of students per class. Even with a push for greater engagement in the higher-education classroom to improve educational attainment (Boyle & Nicol, 2003), a large number of students in one class can limit student engagement due to the time required to grade assignments and the complexity of facilitating large group movement. Class discussion is a time to process through explanation and analysis (Nicol & Boyle, 2003). Practitioner assumption is often that reflection is the final stage of the learning process. Reflection does not have to be facilitated as the final step of facilitated learning. The process of reflection can be embedded throughout the educational process. Through many discussion activities, the higher-education educator can utilize a wide-range of strategies to enhance student reflection on the subject matter throughout the education process.

Within those confines, student engagement through reflection can be utilized to increase conceptual reasoning and critical thinking (Hamann, Pollock, & Wilson, 2012; Boyle & Nicol, 2003; Nicol & Boyle, 2003; Crouch & Mazur, 2001; Garside, 1996; Dufresne et al., 1996), writing and speaking abilities across curriculum (Dallimore, Hertenstein, and Platt, 2008), and exam performance (Lyon & Lagowski, 2008; Caldwell, 2007; Crouch & Mazur, 2001) using a variety of external, internal, and virtual strategies.

### **Session Goals**

There is a myriad of strategies commonly and uncommonly utilized to emphasize reflection. This workshop will focus on modeling and highlighting some of these strategies for reflection in large-classrooms. The goal of the workshop is to help the higher-education educator recognize opportunities in their instruction to incorporate and facilitate reflection. When the workshop is completed, the attendees will be able to:

- 1) identify the difference between engagement and reflection
- 2) choose appropriate reflection strategies for their courses, no matter their domain.
- 3) and, have a plan for how they will incorporate reflection in their classes.

### **Session Description**

Reflection is turning experience into learning (Boud, Keogh, & Walker, 2013). In the large higher-education classroom the historically didactic format has not readily fostered heavy use of facilitated reflection. A new emphasis on improved teaching strategies has lead educators in higher-education and in large-classrooms to improve their pedagogical practice. Acts of facilitated reflection are a part of the improvement puzzle. In order for the educator to facilitate reflection, there are three locations for students to engage: outside of the classroom, within the classroom, and virtually.

Outside of classroom: Using time outside of the classroom for reflection requires carefully crafting assignments to have students engage with the topic. Many of the strategies for reflection focused on creating space and connectivity for discussion, such as study-pairs, study-groups; conversation pairs. These types of verbal processing structures can be formalized with guiding questions, and completed writing reflections as a documented result of the interaction. An outside of the classroom activity that Genereux and Thompson (2008) identified is digital story creation.

In-Classroom: Activities for reflection include both silent written reflection and verbal reflection or combination of the two. Strategies include: think-pair-share or the snowball fight, end of class written response (Francis, 2012), Clicker quizzes (Caldwell, 2007); group discussion (Francis, 2012; Nicol & Boyle, 2003; Dallimore, Hertenstein, & Platt, 2008).

Virtual: Virtual is occurring outside of classroom. Strategies towards reflection include: quizzes; forum posts (Higdon and Topaz, 2009); instructor mediated discussion boards (Durrington et al., 2006); and, learner moderated discussion boards (Durrington et al., 2006).

### Session Discussion

Using the context of evaluating different types of candy, the facilitators will help participants work through the strategies outlined in the description of practice. To start the workshop the participants will be asked to participate in an engagement strategy to highlight the difference between engagement and reflection. The facilitators will use in-classroom reflection strategies like think-pair-share, snowball fights, and open-ended response to engage participants in the act of reflection. Participants will have an opportunity to experience the reflection strategies and then discuss their experience. They will be asked to reflect on:

- How did they experience the reflection activity?
- How would they adapt this activity for their personal use in their classroom?
- And, where in their curriculum can they see implementation?
- Participants will end the seminar with an activity where they are able to set goals and plan how they are going to implement reflection in their coursework.
- Additionally, there will be resources provided to the attendees on additional reflection techniques that were not covered in this abstract for further investigation.

### References

- Boud, D., Keogh, R., & Walker, D. (Eds.). (2013). *Reflection: Turning experience into learning*. Routledge.
- Boyle, J. T., & Nicol, D. J. (2003). Using classroom communication systems to support interaction and discussion in large class settings. *ALT-J: Research in Learning Technology*, 11(3), 43-57.
- Caldwell, J. E. (2007). Clickers in the large classroom: Current research and best-practice tips. *CBE-Life Sciences Education*, 6, 9-20.
- Crough, C. H. & Mazur, E. (2001). Peer instruction: Ten years of experience and results. *American Journal of Physics*, 69, 970-977.
- Dallimore, E. J., Hertenstein, J. H., & Platt, M. B. (2008). Using discussion pedagogy to enhance oral and written communication skills. *College Teaching*, 56(3), 163-172.
- Dufresne, R. J., Gerace, W. J., Leonard, W. J., Mestre, J. P. & Wenk, L. (1996). Classtalk: A classroom communication system for active learning. *Journal of Computing in Higher Education*, 7, 3-47.
- Durrington, V. A., Berryhill, A., & Swafford, J. (2006). Strategies for enhancing student interactivity in an online environment. *College Teaching*, 54(1), 190-193.
- Francis, R. W. (2012). Engage: Making large classes feel small through blended learning instructional strategies that promote increased student performance. *Journal of College Teaching & Learning*, 9(2), 147-152.
- Garside, C. (1996). Look who's talking: A comparison of lecture and group discussion teaching strategies in developing critical thinking skills. *Communication Education*, 45(3), 212-227.
- Genereux, A. P., & Thompson, W. A. (2008). Lights, camera, reflection! Digital movies: A tool for reflective learning. *Journal of College Science Teaching*, 37(6), 21-25.
- Hamann, K., Pollock, P. H., Wilson, B. M. (2012). Assessing student perceptions of the benefits of discussions in small-group, large-class, and online learning contexts. *College Teaching*, 60, 65-75.

- Higdon, J., & Topaz, C. (2009). Blogs and wikis as instructional tools: A social software adaptation of just-in-time teaching. *College Teaching*, 57(2) 105-109.
- Lyon, D. C., & Lagowski, J. J. (2008). Effectiveness of facilitating small-group learning in large classes. *Journal of Chemical Education*, 85(11), 1571-1576.
- Mulryan-Kyne, C. (2010). Teaching large classes at college and university level: Challenges and opportunities. *Teaching in Higher Education*, 15(2), 175-185.
- Nicol, D. J., & Boyle, J. T. (2003). Peer instruction versus class-wide discussion in large classes: A comparison of two interaction methods in the wired classroom. *Studies in Higher Education*, 28(4), 457-473.

## Strategies for Effectively Engaging Students in Large Classes II

Gary Green and Joseph Dahlen, *University of Georgia*

**Abstract:** Growing research indicates that passive learning strategies are often less effective at promoting learning than active approaches. Unfortunately, many of the instructional options developed to engage students appear to decrease to those who teach large classes due to practical issues, such as classroom management and the impracticalities of grading. Thus, traditional lecturing becomes the default practice for large classes, the practice will likely continue as pressure to increase class sizes continues. Hence, this practice session will share, through examples, new and additional active learning strategies and tools that are effective in engaging students and also manageable in large class settings.

### Literature

Large classes at most universities are often viewed as a rite of passage for many students at the undergraduate level in introductory classes. These large classes also present many logistical and structural challenges for the faculty who teach them. In fact, the sheer number of students in a large class is often perceived as a major barrier or constraint to many of the pedagogical and assessment approaches that many faculty attempt to utilize. For some, these perceived barriers or constraints often lead to the use of traditional, power-point lectures and multiple-choice examinations as the standard default practice. With that said, research has clearly indicated that students learn more in active learning environments if rich, active, and diverse pedagogical approaches are employed versus passive learning techniques (e.g., Freeman et al., 2014; Hake, 1998; Light, 2001; McKeachie, Pintrich, Lin, Y.G. and Smith, 1987).

### Session Goals

Given the complexities and constraints of teaching a large number of students in a single class, what does or could active learning look like in a large class setting? This practice session will describe and share hands-on strategies, tools and applied experiences as answers to this question. In fact, attendees of this session can expect to leave with concrete, manageable and active learning practices that may be successfully utilized in any size classroom.

### Session Description

This session will provide attendees with a selection of effective teaching strategies aimed at initiating and building relationships with students (before, during and outside of regular class), enhancing communication and creating greater class participation by students (both inside and outside of class), methods for recognizing, acknowledging and documenting student's class participation, methods for removing perceived barriers or constraints to active teaching and increasing and maintaining class attendance. These strategies will be actively demonstrated with attendees along with a discussion on their strengths and weaknesses, and the underlying rationale for using them.

### Session Discussion

Strategies, tools, applied examples and materials will be shared with attendees along with a discussion concerning the strengths and weaknesses of their ability to successfully engage students in large classes. Attendees will also be encouraged to create their own strategies and examples during mini-break-out sessions.

### References

- Freeman, S., Eddy, S.L., McDonough, M., Smith, M.K., Okoroafor, N., Jordt, H., & Wenderoth, M.R. (2014). Active learning increases student performance in science, engineering, and mathematics. *Proceedings of the National Academy of Sciences of the United States of America*, 111(23), 8410-8415.
- Hake, R.R. (1998). Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American Journal of Physics*, 66(1), 64-74.
- Light, R.J. (2001). *Making the most out of college*. Harvard University Press: Cambridge, MA.
- McKeachie, W.J., Pintrich, P.R., Lin, Y.G., & Smith, D.A.F. (1987). *Teaching and learning in the college classroom: A review of the research literature*. Ann Arbor, MI: National Center for Research to Improve Post-secondary Teaching and Learning.

## **Bodies and Bytes: Leveraging Exponential Technologies to Integrate Writing in Large Classes**

Lindsey Harding, Matt Goren, and William McLane, *University of Georgia*

**Abstract:** In the classroom, writing has been linked to a myriad of benefits for students, including an enhanced educational experience, increased engagement, better writing, and improved learning outcomes. For large classes, formal writing assignments are practically difficult to implement and assess. Digital peer assessment offers an effective strategy for responding to student writing with minimal increase to instructor workload. Peer assessment, among other exponential technologies and associated practices, can facilitate a writing-intensive pedagogy. This session will present a case study to demonstrate how a writing project can be integrated into a large enrollment course (i.e., 300 students per section) to support student learning and class engagement. Presenters will share the writing project prompt, scaffolding used to support students during the writing process, and a digital peer assessment procedure designed to streamline grading. Participant engagement will be threefold: 1) discuss the impetus and implications for adopting a writing-intensive pedagogy in large lecture courses, 2) identify strategies, support, and tips for adding a writing requirement to their own classes, and 3) develop and peer review plans for integrating a formal writing project into their large lecture courses.

### **Literature**

Integrating writing into the curriculum improves student learning, engagement, and performance (Boyd, 2010; de Caprariis, 1996). Writing projects help students develop knowledge and skills to be successful in both their coursework and post-graduation careers (Hilgers, Hussey, & Stitt-Bergh, 1999).

Modern organizations use exponential technologies (i.e., those fostering exponential growth or impact) and related practices to improve quality, flexibility, scalability, and diversity (Ismail, 2014). Crowdsourcing, for instance, enhances worker and customer experience while improving business outcomes (Brabham, 2013; Buettner, 2015). Examples of successful crowdsourcing include online product reviews and Wikipedia.

Exponential technologies that support practices like crowdsourcing can empower students to be collaborative and self-directed learners (Lai, 2011). Writing assignments and peer grading increase learner autonomy by giving students more choice in how they engage course material and demonstrate understanding. Greater autonomy is associated with increased intrinsic motivation, and, in turn, better school and work performance, learning outcomes, and satisfaction (e.g., Ryan & Deci, 2009; Ilardi, Leone, Kasser, & Ryan, 1993).

Peer assessment makes writing in large classes more feasible by reducing time spent grading and highlights the work, feedback, and perspectives of peers as a key resource (Henderson & Buising, 2000). Peer assessment of writing supports learning and performance as much as teacher assessment (Topping, 1998) while nurturing self-assessment practices (Reinholtz, 2016) and deep learning (Wessa and Holliday, 2012). Exponential technologies and practices used by instructors to integrate peer-assessed writing in large classes have been shown to improve student learning (i.e., Ishiyama & Watson, 2014).

### **Session Goals**

Participants will explore the benefits, challenges, sources of support, research-based principles, planning procedures, and instructional practices and materials associated with adopting a writing-intensive pedagogy in large lecture courses. Specifically, the session's opening discussion will synthesize insights from writing studies, educational technology research, and organizational psychology to describe how and why instructors might harness approaches used by exponential organizations to bring writing into the large-enrollment classroom without over-taxing instructor workload. This initial conversation will contextualize the teaching strategies presented to help participants explain how writing assignments and peer assessment enhance student learning and preparation for the modern workplace.

Next, participants will encounter a case study—a large personal finance course—that employs exponential technologies and practices such as peer assessment. From this presentation, participants will identify practical guidelines and specific suggestions for adding a writing requirement to their own classes.

By the end of the session, participants will have formulated plans for integrating a formal writing project into their

large lecture courses. Engagement in a peer review process will provide participants the opportunity to give and receive feedback on these writing project plans and experience the benefits of crowdsourcing to support assessment procedures in a learning environment.

### Session Description

For a personal finance course that enrolls 300 students per section and ~2,000 students per year, time is a scarce resource for integrating writing into the curriculum. How can a single instructor assess 15,000 pages of writing each semester, let alone adequately facilitate the writing process? This practical barrier is weighed against the benefits of asking all students to write their own financial plans: students will be more engaged with the material, retain more details, and apply their learning to their own lives. To access these benefits, instructors might start by rethinking their approach to teaching large-enrollment courses.

Two key considerations emerge: integrating writing into the curriculum and crowdsourcing assessment. The practice described in this session attends to the first consideration through 1) scaffolding the writing project over the semester with related discussion questions, 2) directly applying course content to students' lives, and 3) focusing explicitly on the greatest values the content confers to students' goals and personal finances. Implementation would not be possible, however, without the second consideration to streamline assessment. At 15-minutes-per-project, grading would take a single person 228 hours per semester—over 28 full-time working days. To eliminate this burden, the practice outlined here utilizes digital tools that support student engagement and communication (i.e., online surveys and a Learning Management System) and a peer-assessment protocol that makes students responsible for grading their peers' work. Total instructor-grading-time is a mere 5 hours a semester. And, perhaps more importantly, student graders benefit from learning additional financial solutions among the other psychological and educational benefits afforded by peer review.

### Session Discussion

In this session, participants will first watch a demonstration of a digital peer review process that utilizes exponential technologies. Participants will then identify professional objects (Zitter, de Bruijn, Simons, & ten Cate, 2012) to form the basis for formal writing projects in the large courses they teach (e.g., a financial plan in a personal finance course). Participants will then develop plans for integrating these projects into their classes in multiple stages sequenced to build students' competencies and skills throughout the semester and with opportunities for collaboration, practice, and feedback. With these plans, participants will have the opportunity to test a protocol for peer assessment with other session participants.

After creating their plans, participants will give and receive feedback on their writing project implementation plans through a process of sharing and assessing their work similar to the procedures outlined in the demonstration. In this way, participants will experience crowdsourcing as a strategy to enhance engagement and improve their project implementation plans. At the end of the session, participants will work together to brainstorm general and locally-available digital resources to support writing-intensive pedagogies in large classes and troubleshoot potential challenges and sources of student resistance.

### References

- Boyd, J. (2010). The best of both worlds: The large lecture, writing-intensive course. *Communication Teacher*, 24(4), 229-237.
- Brabham, D. C. (2013). *Crowdsourcing*. Cambridge, MA: The MIT Press.
- Buettner, R. (2015). A systematic literature review of crowdsourcing research from a human resource management perspective. *Hawaii International Conference on System Sciences*, 48, 4609-4618.
- de Caprariis, P. (1996). Writing exercises and teaching roles in large enrollment courses. *The Journal of General Education*, 45(1), 39-52.
- Henderson, L. & Buising, C. (2000). A peer-reviewed research assignment for large classes: honing students' writing skills in a collaborative endeavor. *Journal of College Science Teaching*, 30(2), 109-113.
- Hilgers, T., Hussey, E., & Stitt-Bergh, M. (1999). "As you're writing, you have these epiphanies" - What college students say about writing and learning in their majors. *Written Communication*, 16(3), 317-353.

- Ilardi, B. C., Leone, D., Kasser, T., & Ryan, R. M. (1993). Employee and supervisor ratings of motivation: Main effects and discrepancies associated with job satisfaction and adjustment in a factory setting. *Journal of Applied Social Psychology, 23*, 1789–1805. doi: 10.1111/j.1559-1816.1993.tb01066
- Ishiyama, J. & Watson, W. L. (2014). Using computer-based writing software to facilitate writing assignments in large political science classes. *Journal of Political Science Education, 10*(1), 93-101. doi:10.1080/15512169.2013.859085
- Ismail, S. (2014). *Exponential Organizations: Why New Organizations Are Ten Times Better, Faster, and Cheaper Than Yours (and What to Do About It)*. New York, NY: Diversion Books.
- Lai, K. (2011). Digital technology and the culture of teaching and learning in higher education. *Australasian Journal of Educational Technology, 27*(8), 1263-1275.
- Reinholz, D. (2016). The assessment cycle: a model for learning through peer assessment. *Assessment & Evaluation in Higher Education, 41*(2), 301-315. doi:10.1080/02602938.2015.1008982
- Ryan, R. M. & Deci, E. L. (2009). Promoting self-determined school engagement: Motivation, learning, and well-being. In K. R. Wentzel & A. Wigfield (Eds.), *Handbook on Motivation at School (171–195)*. New York, NY: Routledge.
- Topping, K. (1998). Peer assessment between students in colleges and universities. *Review of Educational Research, 68*(3), 249-276.
- Wessa, P. & Holliday, I. E. (2012). Does reviewing lead to better learning and decision making? Answers from a randomized stock market experiment. *Plos ONE, 7*(5), 1-14. doi:10.1371/journal.pone.0037719
- Zitter, I., de Bruijn, E., Simons, R., & ten Cate, O. (2012). The role of professional objects in technology-enhanced learning environments in higher education. *Interactive Learning Environments, 20*(2), 119-140. doi:10.1080/10494821003790863

## **Making Projects Productive in Large Classes: Lessons Learned from Across Disciplines**

Tom Hammett, *Virginia Tech*

**Abstract:** For many students, their experience with projects in class has not been rewarding. In short, they don't like them. For a long time, we have heard that using group projects in larger classes won't work. But, having students work together helps develop team skills, and prepares them for the work place where team work is common. Evidence shows that employers desire that students have team work experience and skills. Projects can be a valuable practice to help students gain confidence, and these needed skills. Why shouldn't team projects be appropriate in larger classes? Our experience is that there are several ways that project-centered learning can be a productive part of large classes. Using lessons learned from classes focused on global issues we developed methods to include all students in projects with high level of student involvement. We will show how examining key issues through self-directed learning, developing research skills, increasing students' confidence in presenting results of their work, and encouraging cross discipline learning can be added to larger classes through team projects. Several opportunities will be discussed that can be applied in several disciplines. Participants in this session will leave with examples to try and confidence that team-based learning can work in their classes.

### **Session Goals**

Why shouldn't team projects be appropriate in larger classes? Our experience is that there are several ways that project-centered learning can be a productive part of large classes. Using lessons learned from classes focused on global issues we developed methods to include all students in projects with high level of student involvement. We will show how examining key issues through self-directed learning, developing research skills, increasing students' confidence in presenting results of their work, and encouraging cross discipline learning can be added to larger classes through team projects.

### **Session Description**

Learning groups can be an effective way to help students develop team work skills. Several opportunities for including team work will be discussed that can be applied in several disciplines. Participants in this session will leave with examples to try and confidence that team-based learning can work in their classes.

### **Session Discussion**

Several exercises to engage the participants will be included in the session. These could include team building, peer review, and engaging with and reporting to colleagues for feedback.

## Using iBooks for Integrated and Interactive Content Delivery

Renee LaClair and Andrew Binks, *Virginia Tech Carilion School of Medicine*

**Abstract:** Providing engaging, concise and comprehensive class resources can be challenging. This obstacle can be overcome by generating an iBook which allows faculty to produce a resource that spans disciplines for integrated content delivery, can be specific to classroom sessions and can be readily modified. In our courses the accessibility and searchability of the iBook has led to its use superseding use of previously popular self-learning modules. The millennial student responds to technology-based, multiple format and highly focused content delivery. We will discuss approaches to producing a tailored iBook, from integrating numerous resources to writing a specific resource from scratch. The end product will be highly aligned with specified learning objectives and utilize iBook's multimedia delivery and ability to give feedback to engage the millennial student. We will discuss the logistics of delivering content via iBook and some of the obstacles and limitations.

### Literature

Providing focused and realistic resources for digital natives in evolving curricula poses challenges. First, evolving curricular design can also present resource issues. Multiple textbooks might be needed for a class that integrates different disciplines (e.g. a medical class that integrates biochemistry, physiology and pharmacology). These resources are often not appropriate for delivery of integrated disciplines and finding ideal reading becomes time consuming and expensive.

Second, increased use of student-centered pedagogy increases the need for student preparation, and so resources must be realistic and engaging. When working with millennial tech-savvy students, it is imperative your resources suit their study practices. The use of traditional textbooks clashes with the millennial students' attraction to multimedia presentation (Kron, Gjerde, Sen, & Fetters, 2010) and habit of reading less than any other prior generation (Becker, 2009). Conversely, constant and familiar access to web-based information can be overwhelming, and like textbooks, can include material outside of learning objectives. The millennial also prefers (Epstein & Brosvic, 2002) and learns best (Epstein et al., 2002) from instant feedback and immediate assessment that can be difficult to implement with a single or general resource.

Therefore, the millennial class resource should be highly focused, closely aligned with learning objectives, and capable of holding the student's attention through use of multiple formats and instant feedback (without being overwhelming). Presenting class material in an iBook can meet all these criteria and engage the millennial. Authoring an iBook also presents the opportunity to integrate material that spans different disciplines, tailor material to specific class sessions and is a resource that can be easily updated.

### Session Goals

- 1) Define the role of the generated resource within a specific course or program.
- 2) Effectively use iBook author to construct a course resource tailored to their integrated teaching format.
- 3) Evaluate the utility of various widgets and add-ins that can be incorporated into the iBook for student engagement.
- 4) Identify ways in which this resource could be adapted for their specific needs.

### Session Description

An iBook can provide an engaging, integrated and malleable content resource. It can be used to integrate previously disparate paper or electronic resources, or be used to generate a highly specific de-novo resource. Using iBook Author, previously generated material that is in other formats (e.g. Word, Powerpoint etc.) can easily be placed into an iBook. The iBook allows embedded multi-media presentations and other inactive features to engage the student. These 'widgets' can utilize previously generated resources and are easily incorporated from with the iBook Author application. Review quizzes can be embedded to provide immediate formative feedback.

Meeting another millennial characteristic, the iBook can be personalized. There is an effective note-taking mode and students can have their device read them their book out loud if they prefer auditory rather than written delivery. The

iBook can be delivered in a variety of modes, from distinct iBooks for separate learning objectives to one iBook covering a whole course chapter-by-chapter.

We have primarily used iBooks as pre-class resources to support a 'flipped' classroom environment. Being more accessible and searchable, the iBooks have superseded students' use of previously generated (and popular) self-learning modules. Embedded quizzes proved very popular and students consistently came to class prepared.

Use of iBook Author requires an Apple computer, but the application is free. Students will require an Apple OS compatible device (iPad, iPhone, Apple computer). Students can access the book through the iBookstore, but IT-based mechanisms to 'push' the iBook to students' devices exist and can keep the resource local. The iBook can be printed out as a PDF, and despite being technophiles, we found many students did use a paper copy.

### Session Discussion

Following a brief overview of the utility of the iBook (10 minutes), the workshop will be a series of small and large group discussions to generate ideas and resources that help faculty create new iBook based resources. For each of the topics below, small groups will be given 10 minutes to discuss opportunities and challenges and report back to the group. We will then take 5 minutes to illustrate what worked for us and address any pitfalls. We anticipate this being a 50-minute workshop.

- 1) 10 minutes: Target audience, utility and technology.
  - a. What do students want incorporated vs. what you see as being essential to the resource?
  - b. Will this be a 'replacement' for in class material, supplementary or preparative?
  - c. Does your university have the technology to support this type of resource?
- 2) 15 minutes: Professional development: What resources do faculty at your university need to be comfortable with generating an iBook?
  - a. Is a one-day professional development with Apple experts on iBook development realistic?
  - b. Is your local Apple store amenable to specific help topics or is your University a certified Apple site?
  - c. Are there other eBook reader platforms that may be more suitable for your institution?
  - d. Is there institutional support for add ins which come at an additional cost?
- 3) 15 minutes: iBook Development: This phase will be the longest and most iterative where review of content and structure, (i.e., weekly or chapter-based format) needs to be considered.
  - a. Who is responsible for text development?
  - b. Will the resource be de novo or will it be a compillation of available resources that will be cited?
  - c. Will it include video-based content?
- 4) 15 minutes: Launch of the iBook (or eBook) for use in the academic year.
  - a. How will this be distributed to students?
  - b. How will the resource be evaluated?

## **Whose Class Is It Anyway? The Power of Improvisation and Public Speaking Performance to Engage Large Student Audiences**

Steve Matuszak, *Virginia Tech*

**Abstract:** The goal of any class, no matter how many students, is student learning. And countless research indicates that student engagement impacts learning. But in large classes, student engagement can suffer because of a single, critical factor – the charisma of the instructor and his or her ability to hold the attention of a large audience. And let's be honest, this is not a common or easy skill because it involves excellence in public speaking and, quite literally, performing. Steve Matuszak, keynote speaker, VT instructor, and former award-winning Executive Trainer and professional SAG/AFTRA performer, will lead participants through an interactive and insightful session that helps illustrate the power and effectiveness of lessons and best practices from the performing and improvisational arts for instructors of large classes. Steve will help instructors understand the importance of their presentational skills on student engagement along with giving them hands-on examples of exercises they can do to better build and sustain their communication competencies for large audiences.

### **Literature**

There are numerous research studies that demonstrate the strong correlation between student engagement in the classroom and subsequent learning. There are far too many to cite here, examples include:

Ann Brown, Martin Rich, Clive Holtham, (2014) "Student engagement and learning: Case study of a new module for business undergraduates at Cass business school", *Journal of Management Development*, Vol. 33 Issue: 6, pp.603-619.

D. W. Ariani, "Relationship Model Of Personality, Communication, Student Engagement, And Learning Satisfaction," *Business, Management and Education*, vol. 13, (2), pp. 175-202, 2015.

Pera, Aurel. "The relationship between faculty practices and student engagement and learning." *Analysis and Metaphysics*, vol. 12, 2013, p. 160+.

Ambrose, Susan. 2010. *How learning works: seven research-based principles for smart teaching*. Jossey-Bass, San Francisco, CA.

### **Session Goals**

The goals for this session are as follows:

- 1) Participants will better define and understand "effective communication," as it relates to "learning."
- 2) Participants will become more comfortable with increasing their engagement capabilities in front of large student audiences.
- 3) Participants will identify and practice communication competencies for large audiences.
- 4) Participants will identify and learn strategies for overcoming Oral Communication Apprehension, a significant obstacle to communication competency.
- 5) Participants will learn and practice exercises designed to increase their ability to engage and sustain the attention of large audiences.
- 6) Participants will begin to build an internal VT network of interested instructors to collaborate on sustaining and sharing best practices for increasing instructors' abilities for engaging large classes (i.e. establishing a "toastmasters-like" community for instructors of large classes.

### **Session Description**

Steve Matuszak will lead the participants through a strategically coordinated series of exercises which help them identify and overcome obstacles to excellence. In addition, in an equally fun, engaging, and interactive series of exercises, Steve will help the participants experience the power and effectiveness of building their own large-class engagement competencies. I.E. - first we will identify and work getting past the obstacles and then work on excelling at the competencies.

### Session Discussion

There are many techniques (beyond lecture) which will be used in this session, most of which center on interactive and expertly guided entire group exercises that help participants build large audience engagement competencies. These include addressing concepts such as:

- 1) How students must "buy" you first before they "buy" what you're teaching i.e. the content is driven by their perception of the speaker/sender).
- 2) How instructors can create environments in their classroom which foster more engagement through how they carry themselves as speakers (oral communicators).
- 3) The ability to listen to and "read" a large room versus just talking TO them.
- 4) The power of leveraging improvisational moments - and how to actually create and invite them.
- 5) How to increase awareness of students' feeling and responses in a large room.
- 6) Controlling reactivity and emotionality. 7) How the instructors body and voice can be used to create better engagement. And much more.

## **Promoting Academic Integrity in Large Classes: Strategies and Techniques**

James Orr, *Virginia Tech*

**Abstract:** This presentation will elucidate strategies that can be used to create an effective ethos in a large classroom environment. It will discuss the importance of the shared responsibility for upholding and maintaining academic integrity on campus. Unique techniques for monitoring academic integrity in large classrooms will be provided. Faculty members across all disciplines can take these techniques and implement them in their large classrooms.

### **Literature**

Teaching in large classrooms poses unique challenges, one of which is that academic misconduct is more difficult to monitor. Tricia Gallant (2008) states that students in larger classes experience feelings of “isolation and anonymity” that ultimately contribute to academic misconduct (Gallant, 2008).

Large universities are now seeking to answer the question, “How do we ensure students are learning?” as opposed to “How do we stop students from cheating?” (Bertram, 2008). Instances of cheating are lesser at institutions that have an honor code, as opposed to institutions that do not. By ensuring students understand the Honor Code and the presence it has on campus, the culture of academic honesty is enhanced (Roig and Marks, 2006). Additionally, students become more aware of their peer’s behavior in this type of environment (McCabe, Tevino and Butterfield, 2002). Incoming students who are immersed into a culture of honor and integrity are less likely to engage in academic misconduct behaviors. Once an action is identified as academic misconduct, students and faculty tend to have differing perspectives on the severity of certain types of academic misconduct, along with students’ rationale for engaging in academic misconduct (Yazici et.al, 2011). Hence, it is important that students be educated on what constitutes academic misconduct, as well as the severity of those actions.

Large classroom instructors can utilize the processes provided in the Honor Code, as well as specific tactics such as changing their exams year to year, having students sit every other seat if possible, ensuring that the exams are proctored and illustrating to the students how important integrity is in their classroom, among other tactics.

### **Session Goals**

Significant involvement of faculty and students in efforts to deter academic dishonesty is critical to both the effective implementation of an Honor Code and the deterrent of academic dishonesty in the classroom. Instructors will leave this presentation with a strong understanding of the University’s Honor Code, as well as practical ideas on how to approach academic misconduct in their large classroom environments.

### **Session Description**

This presentation will elucidate strategies that can be used to create an effective ethos in a large classroom environment. It will discuss the importance of the shared responsibility for upholding and maintaining academic integrity on campus. Unique techniques for monitoring academic integrity in large classrooms will be provided. Faculty members across all disciplines can take these techniques and implement them in their large classrooms.

### **Session Discussion**

This presentation will focus on the teaching and implementation of specific academic integrity strategies for large classroom environments. Those in attendance will be encouraged to engage in this conversation and share their own tactics, as well as commonly seen academic dishonesty issues. There will also be situational scenarios provided to facilitate open discussion among attendees.

Overall, this presentation will provide an interactive session that offers practical strategies for faculty to promote a culture of academic honesty among their students.

## Creative Ways to Select Teams and Utilize Semester Long Teams in Large Classes

Barbara Rule, *Appalachian State University*

**Abstract:** For a large course redesign, semester long teams were implemented to improve community, engagement and learning. The Principles of Marketing course is a core class for College of Business students and for majors outside the College of Business. A team learning format with semester long teams was implemented. Teams were assigned to enhance diversity within teams. Teams are selected based on information collected from the students, as well as personality/style input. A feedback instrument was implemented at the end of the semester. Initially done as extra credit, feedback is now collected using a team assessment instrument, utilizing open-ended questions, for all students at the end of the semester in their peer review process. This instrument shows evidence that students are gaining both content and soft skills - such as assessing team member strengths/weaknesses, working with others different from themselves, how to work with others long term, etc. Several improvements to the overall course design have come from this feedback. More frequent peer assessment, fine tuning individual vs team assignments have been implemented. Of course not all students prefer this format, comments such as prefer to do individual work only, and not full control of their grade have been seen. However, overall, the students like the format and feel that they get skills relevant for the work world out of the experience.

### Literature

The literature reviewed was somewhat varied as the original project was to redesign the course, not specifically to implement team based learning. Team-Based Learning: a transformative use of small groups in college teaching, by Michaelsen, Knight and Fink, discusses the pros and cons of utilizing team based learning at the college and graduate levels as well as the differences in self-selected vs. selected teams. The focus is on the level of commitment desired (is it a one-time activity, or will the team be together longer term) and using relevant variables to select teams. The decision to use semester long teams to build community, influenced the decision to have the professor select the teams rather than allowing students to self-select their own teams. By doing this, it is hoped that more diverse teams are created, with more varied perspectives. This seems to help the students to learn and apply concepts in greater depth.

The concept of relevant variables to select teams was very interesting. Initially gender, year, and major were used to select teams. This did not prove to be enough to ensure that most groups had a positive team experience in the course. The second time the course was taught this aspect was revisited and an additional variable was added – that has made all the difference in the team experience. The team development process now also includes the True Colors personality test as a means to ensure diversity of approach/work style to the teams.

### Session Goals

The goals of this session will be:

1. Present the structure of the re-designed Principles of Marketing Course to understand the individual vs team components to this course and how the team learning concept enhances student learning, engagement and community.
2. Discuss and have audience members share some benefits and limitations of a team learning environment that they have experienced.
3. Present a unique methodology for team selection in hopes that others may think more broadly about how they might use relevant variables to select teams for their class. Discuss what others use in their team selection process (or choose to use self selection).
4. Actually go through a selection process given student examples/profiles.  
After this session, individuals should have a broader concept of how teams can be used in the classroom to enhance student engagement, community and learning.  
After this class each attendee will hopefully leave with an expanded perspective on ways to select teams and how to identify relevant variables to use in selecting teams.

### Session Description

To improve student engagement, learning, and community in a large classroom, a Principles of Marketing Class was re-designed. Team selection was used to encourage community and engagement over the semester. Teams are chosen based on information gathered from students – name, major, year, work style and True Colors personality test. This seems to increase the sense of community and engagement in the class. The class seems smaller because each student gets to know 3/4 other students well. Teams are assigned to increase diversity within each team. Variables used to select teams are Self identified “planner” vs “under pressure”, major, gender identification and grade strategy. Although the goal is to increase diversity, the first variable, “planner” vs “under pressure” is implemented in a homogeneous method. This was very risky to do in the beginning due to an assumption (by a planner) that those “under pressure” students would not complete the work, but it has helped to alleviate several of the typical issues with team dynamics.

Students have been asked to provide feedback on their team based learning experience. Initially this was offered as an extra credit assignment, but it has been changed to an end of semester evaluation/feedback form to provide for more consistent and inclusive feedback. Feedback comments from students includes the following: Communication is important get to know group members contact early and often, hold your weight in the group and hold others accountable, easier to learn material, complete assignments, and take test, learning to work in a group, improved communication skills/ Teammate Strengths & Weaknesses, learned how to work with other people/ long term, how to address issues that arise when working in groups/compromise.

### Session Discussion

As stated under the goals for the session, audience members will be encouraged to share their experiences and ideas about using, selecting and encouraging team learning in larger classrooms. In addition, scenarios will be provided to have audience member “take a stab” at making team selections based on some relevant variables and mocked up student data.

### References

- Anderson, L. & Krathwohl, D.A. (2001). *Taxonomy for Learning, Teaching and Assessing: A Revision of Bloom’s Taxonomy of Educational Objectives*. New York: Longman.
- Bain, K. (2012). *What the Best College Students Do*. Cambridge, Mass: The Belknap Press of Harvard University Press.
- Bain, K. (2004). *What the Best College Teachers Do*. Cambridge, Mass: President & Fellows of Harvard College.
- Bloom, B.S., Englehart, M.D., Furst, E.J., Hill, W.H., & Krathwohl, D.R. (1956). *Taxonomy of Educational Objectives: The Classification of Educational Goals; Handbook I: Cognitive Domain*. New York: Longmans, Green.
- Brookfield, S. (2012). *Teaching for Critical Thinking, Tools and Techniques to Help Students Question Their Assumptions*. San Francisco, CA: Jossey-Bass, a Wiley Imprint.
- Bronack, S., Sanders, R., Cheney, A., Riedl, R., Tashner, J., & Matzen, N. (2008). Presence Pedagogy: Teaching and Learning in a 3D Virtual Immersive World. *International Journal of Teaching and Learning in Higher Education*. 20:1, 59-69.
- Cousin, G. (December 2006). An Introduction to Threshold Concepts. *Planet*, 17, pgs. 4-5. Retrieved from [http://asulearn.appstate.edu/file.php/44694/threshold\\_concepts.pdf](http://asulearn.appstate.edu/file.php/44694/threshold_concepts.pdf)
- Farber, S. (2004). *Radical Leap*. Chicago: Dearborn Trade.
- Fincher, R. M. & Work, J.A. (2006). Perspectives on the Scholarship of Teaching. *Medical Education*, 40: 293-295.
- Gleason, P. ( ) Meeting the Needs of Millennial Students. *California State University Long Beach In Touch with Student Services Newsletter*. 16. Retrieved from [http://www.csulb.edu/divisions/students2/intouch/archives/2007-08/vol16\\_no1/0](http://www.csulb.edu/divisions/students2/intouch/archives/2007-08/vol16_no1/0).
- Hills, H. (2001). *Team-Based Learning*. Burlington, VT: Gower Publishing Co. (2001)
- Michaelsen, L.L., Knight, A.B., and Fink, L.D. (2004) *Team-Based Learning: a transformative use of small groups in college teaching*. Sterling, VA: Stylus Publishing
- MWSU 5 E Learning Cycle Model. Retrieved from <http://faculty.mwsu.edu/west/maryann.coe/coe/inquire/inquiry.htm>.

- Rieke, R., Sillars, M., & Peterson, T. (2009). *Argumentation and Critical Decision Making* – 7th Ed. Boston, MA: Pearson.
- Simpson et al. (2007). Advancing educators and education by defining the components and evidence associated with educational scholarship. *Medical Education*. 41:1002-1009
- Troisi, J.D. (2014). Making the Grade and Staying Engaged: The Influence of Student Management Teams on Student Classroom Outcomes. *Teaching of Psychology*, 41(2), 99-103.
- University of Portland Statement on Scholarly Teaching, July 2003.
- Westin, C. & Alpine, L. (2001). Making Explicit the Development Toward the Scholarship of Teaching. *New Directions for Teaching and Learning*. Issue 86, 89-97.
- “What is Just in Time Teaching,” G. Novak, <http://webphysics.iupui.edu/jitt/what.html>

## **Tips and Tricks for Teaching Large Courses in Canvas**

April Danielle Thacker and Aaron Bond, *Virginia Tech*

**Abstract:** The Learning Management System provides many tools to communicate, collaborate, and facilitate courses with your students. Often, we overlook the simplest tools when exploring strategies for teaching large classes. This session will explore the many options, tools, and strategies available in Virginia Tech's instance of Canvas.

### **Session Goals**

Participants will be able to identify tools and strategies within Canvas to help teach their large classes. Participants will describe best practices for implementing tools in Canvas.

### **Session Description**

As a professor, how do you provide the best feedback and communication to make your students feel engaged in the course? The session will explore the use of the following communication and feedback tools in Canvas: Messages, Rubrics and Assignments, Peer Review, Announcements, and Inbox. Each tool presented highlights a way to facilitate communication and student engagement.

### **Session Discussion**

Participants will engage in informal discussions about their class issues and share tips and tricks they have used in Canvas.

### **References**

- Gunderson, B., Johnston, J. (2015 June). Strategies for Teaching Very Large Course in Canvas. Conducted at InstructureCon 2015, Park City, Utah. Retrieved from <https://community.canvaslms.com/videos/1487>
- Raible, J., Howard, W. (2015 June). Canvas Communication Strategies for Large Classes. Conducted at InstructureCon 2015, Park City, Utah. Retrieved from <https://community.canvaslms.com/videos/1586>
- Salter, A. (2015, October 1). 5 tips for handling grading in large online classes [Blog post]. Retrieved from: <http://www.chronicle.com/blogs/profhacker/5-tips-for-handling-grading-in-large-online-classes/61131>

# Conversation Sessions

## **Conversation: On the Front Lines of Building Community in the Large Chemistry Classroom**

Maggie Bump, Jeannine Eddleton, and Mike Berg, *Virginia Tech*

**Abstract:** Having taught large classes of up to 500 students, with over 60 years of combined experience, we find great value in building a sense of community during a course, even when challenged with large student enrollment. We will be facilitating a discussion of best practices. Classroom engagement can be cultivated in many ways, and a teacher must find the approach that works for their course as well as their personality. At the 1000-level, Jeannine Eddleton addresses first year students, majors and non-majors, to facilitate the beginnings of multi-leveled and healthy relationships at and with Virginia Tech. In organic chemistry, Mike Berg relates to the students by tying chemistry course material to students' peer-learning groups. Maggie Bump engages with students in and out of the classroom using select assignments designed to build community by sharing information and outreach experiences.

### **Session Goals**

From this session, participants will

- gain strategies to use with their students including ideas for assignments, activities, teaching assistants, and interactions with students in and out of the classroom space
- discuss the value of engaging students to specifically build community
- explore methodologies that lend themselves best to their courses and personal teaching style

### **Session Description**

We begin this session with an overview of our classroom atmosphere in the large lecture course, including techniques used before, during, and after class meeting times. These methodologies vary for each of us in order to successfully increase engagement and the sense of community in our classroom. Techniques range from music before class and current events during class to effectively using our grading platform to allow written assignments to be submitted and graded in a timely manner.

### **Session Discussion**

The conversation will begin with our story, a brief description of how we came to our best practices, and how these differ for each of us. We will cover techniques that we use before, during, and after class. We will then have each table discuss

- 1) successful and unsuccessful activities they have used to engage students
- 2) how would a community of learners affect an activity

From this starting point, we will guide the conversation to the topics that our discussion group finds most valuable.

## **Conversation: Making the Large & Impersonal Seem Small & Engaging**

Buddy Howell, *Virginia Tech*

**Abstract:** We've all heard the criticisms of large lecture courses (e.g., active student involvement is reduced, quality and frequency of faculty-student interaction is limited, and so on). Indeed, Kuh, Schuh, Whitt, and Associates (1991) described a perceived "compact of disengagement" between faculty and students in which each seemed to be more interested in leaving each other alone during class. Perhaps many of us have had the awkward experience of trying to generate class discussion with a question only to stare into the abyss of blank, silent faces. Can we "prime the pump" and get students actively involved inside the classroom at the beginning of class in ways that prompt them to engage and interact with the instructor and their peers about course content during class? One way of doing this might be CAREing—Connecting, Asking, Responding, and Expressing—in ways that demonstrate faculty interest in students' larger college experiences (rather than just as learners in our classrooms). This session seeks to generate discussion about how ways of CAREing at the beginning of class about what's important to students might help us keep them actively engaged and interacting with the instructor during class about important course content.

### **Literature**

Cuseo, J. (2007, January). "The empirical case against large class size: Adverse effects on the teaching, learning, and retention of first-year students." *Journal of Faculty Development*, 21(1), 5-21.

### **Session Goals**

Facilitate discussion about (1) the value of beginning class with a student-focused, transaction approach, rather than a faculty-centered, transmission approach, and (2) specific ways of practicing a student-focused, transaction approach as an introduction to each class session. By the end of the session, participants should be able to choose from among a list of possible ways to engage with students at the beginning of a class that can be helpful to generating student involvement/engagement later during a class.

### **Session Description**

How can we get students to talk to us in large courses? Perhaps it is by getting them talking at the beginning of class about what's important to them:

Connect (with a positive greeting)

Ask (for announcements or birthdays)

Respond (by restating important aspects and, later, requesting follow-up info)

Expressing (interest in their larger college experience, rather than just in their learning in the classroom experience)

### **Session Discussion**

Pair-Think-Share

Group brainstorming

Group discussion (pros-cons)

## Conversation: Is Not a Spectator Sport. How Might We Incorporate Role-Play in Large Classes?

Jane Machin, *Radford University*

**Abstract:** Simulations are hands-on activities that bring course material to life. This conversation focuses on strategies to effectively and efficiently introduce simulated experiences into the large classroom. Special attention will be paid to non-digital simulation activities (i.e. role-play) because of the unique logistical and financial challenges they present in large classes. Strategies to develop customized, budget-friendly simulations will be discussed.

### Literature

Research in a variety of fields recognizes the value of simulating real world experiences to bridge the gap between theoretical knowledge and practical application (Asal 2005; Lantada et al 2013; Pettenger, West and Young 2014). From nursing and law to business and engineering, classroom simulations provide an efficient and effective way to bring textbook concepts to life (Asal 2005; Kolb 2014). Drawing on theories of experiential learning (Kolb 2014), simulations emphasize the process of learning, as opposed to the outcome. Virtual and dramatic role play are also widely used in business, government and the military to practice skills such as communication, empathy and problem solving (e.g. Tiffany and Hoglund 2016). Simulations have also been shown to increase student participation and encourage collaborative learning (Asal 2005; Kolb 2014).

Running simulations is not without cost, however. Designing and preparing simulated experiences requires a lot of effort on the part of the educator and running simulations demands a large portion of limited class time. Furthermore, “off-the-shelf” commercial simulations can be prohibitively expensive for academics but cheaper “home-made” versions often forgo authenticity. All these issues are magnified in large classes, effectively discouraging the use of both virtual and dramatic role-play activities.

### Session Goals

After attending this session, participants will recognize a variety of simulation activities and comprehend the benefits they bring to pedagogy. By hearing practices adopted in different disciplines, participants will learn novel ways to find, plan, run and debrief simulations in their own large classes. Participants will also discuss strategies to develop their own authentic simulation activities on a tight budget. The conversation will focus on dramatic simulation activities (as opposed to digital games) because of the unique logistical and financial issues they present for large classes.

### Session Description

The conversation will cover the following areas:

1. Types of simulation activities used in different disciplines.
2. The benefits and challenges of bringing simulations into the mass classroom.
3. Best practices, from planning and set-up through motivating, moderating and debriefing the experience.
4. Ways to adapt commercial simulations into “home-made” budget friendly equivalents.

More specifically, the session will be broken into three sections.

Introduction and Example (5-10 minutes)

- Overview of different types of simulations and the benefits they bring to the classroom.
- Overview of how a commercial simulation intended for use in small groups, was successfully adapted and implemented into a class of 120 students.
- Overview of how an expensive commercial aging experience kit can be cheaply replicated.

Conversation Part One (10-15 minutes)

- Participants will share simulation activities they have considered or practiced in their field.

- Participants will share best practices they have experienced using these activities, from planning and preparation to implementation, moderation and debriefing.

### Conversation Part Two (5-10 minutes)

- For one simulation activity that interests them, participants will identify ways to customize the experience for their own class.
- Participants will brainstorm ways to produce budget-friendly versions of various activities.

### Conclusion (10-15 minutes)

- Participants discuss key take-aways and review the ideas discussed.

## Session Discussion

The conversation will be facilitated using the following techniques:

### Pre-Meeting

- Objectives and outline written on a whiteboard or flipchart.
- Draw table on whiteboard with lines by each seat to record participant names.
- Types of simulation activities are written in columns on flipchart paper.

### Meeting

- Participants introduce themselves and their names are written on the whiteboard.
- Remind participants to talk to everyone in the group, not just the moderator.
- Remind participants to keep comments short and to the point.
- Participants use post-it notes to briefly describe the simulation(s) they have tried, or considered trying, and place them on under the appropriate columns on the flipchart.
- Pose open questions to stimulate discussion. For example,
  - What are the most common simulated experiences used in your field?
    - If you have tried them, discuss the successes and failures
    - If you have not tried them, identify the biggest barriers preventing you
- Monitor group to touch on all areas of running a simulation (from planning to setting up to debriefing). Use the post-it notes to make sure all simulations have been covered.
- Record answers on a whiteboard in a mindmap, making connections between comments.
- Move participants to the second part of the conversation using a “pair then share” format:
  - In pairs, please choose 1-2 activities you are interested in trying.
  - Brainstorm ways in which you might implement this activity.
  - Participants then share their ideas with the broader group.
- Throughout, keep track of participants who are speaking a lot and those who have not spoken at all, and direct the conversation accordingly.
- Ask participants to share their main take-away from the session to conclude.
- Thank participants for coming.

## References

- Asal, V. (2005). Playing games with international relations. *International Studies Perspectives*, 6(3), 359-373.
- Lantada, A. D., Morgado, P. L., Munoz-Guijosa, J. M., Sanz, J. L. M., Otero, J. E., Garcia, J. M., & Ochoa, E. D. (2013). Study of collaboration activities between academia and industry for improving the teaching-learning process. *International Journal of Engineering Education*, 29(5), 1059-67.
- Tiffany, J. M., & Hoglund, B. A. (2016). Using virtual simulation to teach inclusivity: A case study. *Clinical Simulation in Nursing*, 12(4), 115-122.
- Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*. FT press.
- Pettenger, M., West, D., & Young, N. (2014). Assessing the impact of role play simulations on learning in Canadian and US classrooms. *International Studies Perspectives*, 15(4), 491-508.

---

## Conversation: The Wicked Problem in Large Classes – Cheating: Teaching and Assessment Strategies That Either Minimize or Encourage Cheating

Greg Tew, *Virginia Tech*

**Abstract:** Cheating is common in Higher Education, and the relative anonymity and mechanical grading in large classes seems to exacerbate the problem. Learning Management Systems (LMS) provide useful tools to make cheating more difficult (question pools, timed quizzes, lockdown browsers, video monitoring, and others) but far from impossible. My efforts to control cheating have prompted a rethinking of my pedagogical strategies and priorities. Since cheating is likely impossible to eliminate, the following questions (and many more) deserve consideration: Are there ways to eliminate the temptation to cheat by emphasizing learning rather than assessment of learning? What are the best assessment strategies? How much effort should we dedicate to managing cheating, and at what cost? Do anti-cheating efforts undermine the quality of learning among students that want to learn? Fortunately, there seem to be good answers to these questions that we will discuss.

### Literature

This topic is presented primarily from personal experience with eight years teaching large lecture courses. However, a review of articles and essays produced the following article that reinforced my observations.

Ubell, Robert. February 6, 2017. Online Cheating. Inside Higher Ed. (Robert Ubell is Vice Dean Emeritus of Online Learning at New York University's Tandon School of Engineering. A collection of his essays on virtual education, *Going Online: Perspectives on Digital Learning*, was recently published by Routledge.)

### Session Goals

The goal of this session is a frank conversation on best practices to manage and minimize cheating with particular focus on avoiding undue stress for students that are not inclined to cheat. Additionally, I will open a more philosophical discussion of where to draw lines in the efforts to control cheating. In my experience, efforts to control cheating, and then reporting cheating when it is discovered, negatively shifts the attention away from learning, toward bureaucratic enforcement of rules.

### Session Description

Cheating is common in Higher Education requiring careful consideration of teaching strategies to engage and assess in a way that minimizes the likelihood of cheating. In this arena I have had successes and failures, I will present both. Focusing the course grade on a few automatically graded quizzes requires the least amount of faculty time, but this high value, high stress assessment strategy invites cheating. Monitoring test taking in the classroom is hard, and it is all but impossible if tests are taken online outside of the classroom. In both settings the motivation to cheat is high if each test has a high value in the semester grade. Written assignments if thoroughly graded are prohibitively time consuming as enrollment moves into the hundreds.

Robert Ubell, Vice Dean Emeritus of Online Learning at New York University's Tandon School of Engineering, described a testing strategy I have used that works better. He advocates many low-stakes quizzes rather than a few high-stakes quizzes (His Inside Higher Ed article listed in the literature review is a worthy read.) For most students, daily quizzes lower the stakes and lower the stress, thus lowering the motivation to cheat. By combining many quizzes with writing assignments that earn bonus points, I've found a reasonable balance in assessment types and the time for grading. The quizzes measure factual knowledge with right and wrong answers and verifiable scores. Writing assignments drawn from the lectures and evaluated for bonus points encourage attendance and reflective time with the course content. And as bonuses, the points for writing assignments can be quickly granted with a cursory review, based to a large extent on effort rather than careful reading. This mix of factual quizzes and thoughtful writing works well to engage students in the course content and minimize cheating.

### **Session Discussion**

I will open the session with details of my efforts to minimize cheating using LMS administered quizzes and writing assignments. I will then provide a brief summary of my experience with a mass confession to cheating (54 students on a single quiz) in my large lecture course.

After my opening remarks, I would invite the audience to share their best practices for minimizing cheating as a first topic of discussion followed by a discussion of the pedagogical costs (faculty time, distraction from teaching/learning, etc.) incurred if efforts to control cheating become a focus in the course experience.

## **Conversation on Clickers: What Do You Use? Tell Us About It!**

Steve Trost, *Virginia Tech*

**Abstract:** While large class teaching methods and techniques may vary considerably across disciplines, the use of “clickers” (or classroom response systems) is something that seems to have taken hold in large classes in nearly every department. As more and more clicker-type products enter the market, it gets increasingly difficult to assess all of the options. As a teacher of very large classes, I get several phone calls per semester from salespeople telling me about some new or improved classroom response system. It seems nearly impossible to keep up with all of the new products and changes to existing products. And as we all know, salespeople telling you about a product or system is very different than using it in a classroom setting (especially a large class setting!) As a result, many instructors (including myself) simply stick with what they know – even if it doesn’t do everything they might want it to. To really get information about how a product performs in a large class, I find it much more useful to talk to other instructors about what they use and how it works for them. Through these conversations you can learn the costs and benefits of actually using the product. In a nutshell, this conversation is an opportunity to bring large-class instructors together to share their clicker experiences with their peers.

### **Literature**

There are many papers that assess the effectiveness of Classroom Response Systems. But they all focus on just one system (often iClickers). I would like this to be a more practice-based discussion that compares and contrasts different options based on real-world teaching experience.

### **Session Goals**

The goal of this session is to share information with other instructors about in-class polling and assessment tools (“clickers”). Participants will hopefully come away with a better idea of what options are out there, how well those options work for their peers, and most importantly, what might work well for their own courses.

### **Session Description**

This Conversation session will be a round-table style discussion of instructors’ experiences with the different types of classroom response systems that are available. For me and many instructors I talk to, the most useful part of any pedagogy conference is talking to other instructors about what they do in their classes. Simply put, the idea of this “Conversation” is for instructors to share their experiences and ideas about all of the different products that are in the “clicker” universe. Through the sharing of experiences, I hope we’ll touch on topics like, “What works in different sized classes?”, “When is simpler better?”, “Pros and cons of cell-phone-based options.” and “What is the best ‘cheap’ alternative to iClickers?” Before the conference, I plan to prepare a list and brief description of all of the classroom response systems that I can find. I will bring copies of this summary to the session.

### **Session Discussion**

Basically we will go around the room and find out what clicker system everyone uses (if any). Each person can share their impressions of and experiences with the system they use and answer questions from fellow participants. I find that at most of these conferences, the two things people like doing the most are talking about what they do in their class and hearing about what others do in their classes. So I don’t imagine it will be hard to get people talking.

# Poster Sessions

### **Freedom of Choice in a Large Organic Chemistry Class: Outcomes and Challenges**

Maria Gallardo-Williams, *North Carolina State University*

**Abstract:** Students in a large introductory organic chemistry class were given the freedom to choose an organic compound of interest and were challenged to develop an educational object (physical or digital) designed to be shared with the broader public via social media. Analysis of the project results shows that most students appreciated the open nature of the assignment, and engaged in self-regulated learning by reflecting and improving on their educational object design along each step of the project. Subjects varied widely depending on the students' personal interests, and many different educational objects were produced and shared using diverse social media outlets. As a result of this project, students reported positive outcomes including increased interest in organic chemistry and science in general as well as the acquisition of practical skills such as science communication and visual representation of science. These skills were perceived by students as being beneficial for future professional endeavors. This report describes the design and outcomes of the project, including the choice of subjects, representations, and social media channels.

---

### **Analysis of the Effect of Body Weight and Physical Activity Levels on Perceived Critical Thinking Skills in College-level Students**

Deborah Good, *Virginia Tech*  
Angela Anderson, *Colorado College*

**Abstract:** For K-12 students, obesity has been linked to student educational achievements. In a previous study, we asked if healthy body weight also was associated with course grade and problem-solving skills in college students. The results of the study, published this year, showed a direct correlation between low body mass index (BMI) and improved academic performance. As a follow-up to our published study, students in one semester of a large enrollment nutrition course were given a pre- and post-course survey of 20 questions to determine if perceived critical thinking skills were improved with the use of a blended classroom format. The impact of both BMI, and leisure-time physical activity frequency on any perceived gains in critical thinking skills were also assessed. A total of 167 students consented and were part of both surveys in the study. In 5 areas, student's perception of their critical thinking skills increased over the semester. Students that exercise often, came into the class with a higher perception of their critical thinking skills in 6 areas. Those that perceived that one can memorize rather than understand the material had higher BMIs, and were less likely to perceive themselves as thinking logically. Significant gains were made for less frequent exercisers in 3 areas of critical thinking skills, bringing them to match often exercisers over the semester.

---

### **Engaging Students in a Large Consumer Finance Course: Exploring Innovative Pedagogical Strategies to Provide an Interactive Budgeting Experience**

Oscar Solis, Micah Roediger, and Jiangueng Huang, *Virginia Tech*

**Abstract:** The purpose of this study is to highlight the teaching strategies used to offer an interactive budgeting experience to college students enrolled in a large introductory consumer finance class. The teaching strategies included budgeting lectures, hands-on experiences, and peer-to-peer learning. The budgeting lectures involved PowerPoint slides, national statistics about budgeting behaviors among young adults, and the importance and benefits of budgeting. The hands-on budgeting assignment required students to project their monthly budget prior to the beginning of the month, track their income and expenses for one month, and compare their projected budget with the actual budget at the end of the month. Peer-to-peer learning sessions were incorporated during class sessions to encourage students to learn positive budgeting strategies and techniques from their peers. Delivering the interactive budgeting experience through a variety of pedagogical strategies served to heighten the students' engagement in course content and improve their individual budgeting behaviors.

---

### **Digital Large Classroom Simultaneous Testing**

Elizabeth Spingola and Devin Ketchum, *Virginia Tech*

**Abstract:** The push for digital education and digitally mediated education has led to an increase in blended and digitally mediated classes. In order to support online classes, learning management systems (LMS) have developed and have become more complex. Systems, such as Canvas, allow instructors to test and quiz through the LMS in a meaningful, innovative, effective, and time-saving manner. While there are some difficulties to navigate, the online exam is easy to distribute to teaching assistants, co-teachers, and/or graders, making it easy to distribute grades to the students, and expediting the grading process for the professor. This proposed conversation will talk about the advantages of large classroom simultaneous testing, the pitfalls to avoid, and facilitate a further conversation as to best practices in online testing in large classrooms.

---

### **Examining Communication Structure in a Peer-based Online Learning Community**

Qing Zhang, *Virginia Tech*

**Abstract:** This study is conducted to investigate the communication structure and identify characteristics of a large online learning community using social network analysis approach. Data were collected from Yahoo!Answers, which is a public asynchronous discussion forum that allows users to interact with one another by posting questions and responding to others' questions. Results show that both the question resolution rate and density of the network are quite low, which indicates insufficient communication and low-quality interaction among the participants. The social network graphs reveal that twenty-four sub-groups were formed spontaneously within this large online community. Those findings imply that online discussion forum could be utilized in teaching large classes, as it provides an online space for students to communicate and collaborate with their peers in addition to participating in formal instructional activities, e.g. attending lectures and doing homework. To improve the quality of interaction and learning outcomes, instructors and teaching assistants could assign learners into smaller groups and facilitate the communication and interaction process.