Impact Grant Project: Questionnaire for Instructors   Name _Elizabeth Miller_____

Lessons learned from teaching with various technologies.

How frequently did you use the following technologies?						
1- Never, 2- Once or twice, 3- Occasionally- More than 3 times, but less than half the time, 4- Frequently – More than half the time, but not always, 5- Always	1	2	3	4	5	n/a
For lecture preparation:						
Slides					X	
Clicker Questions				X		
SmartNotebook Math					X	
In class						
Sympodium					X	
Internet				X		
Twitter				X		
Camtasia to record lectures					X	
Clickers	X					
Applets				X		
Other	X					
Software used	**Camtasia, Smart Notebook, OSU Math Clicker, Firefox**					

Learning outcomes: In your opinion (i.e. ignoring student poll data), which technology had the greatest impact on student learning in your course?

I am not sure I can isolate one technology as having the greatest impact on student learning. If I had to pick just one, I would say the Smart Podium. The ability to write on prepared slides in class made it easier for students to see my writing, made it so I could emphasize points with different colors, allowed me to use computer generated images to precisely show concepts, and allowed me to save my notes and post them for students. I also believe the interactive figures were more helpful to students then they seemed to think.

Challenges: What problems came up while implementing your new technology ideas? Were you able to address these issues during the course? What unanticipated positive outcomes occurred while implementing your new technology ideas? How did you leverage them during the course?

There were many small problems with the technology that needed to worked out at first, but the main and persistent problem was that the computer in the lecture hall was running extremely slowly. We had to arrive 10 minutes early just to open all the programs. This was finally addressed by replacing the computer.

An unanticipated positive outcome of the pilot was that international students told me that having access to the lecture videos was extremely helpful to them because they may not understand the English the first time when something is being explained, but with the videos they could listen to the lecture over and over again until they understood.

Feedback: Comment on the quality of the student feedback as a result of using various technologies. As a result of this feedback, how did you adjust your instruction?

The students really seemed to like most of the technology, but they did not like the twitter-clicker questions. As I result, near the end of the quarter I began picking and choosing which days I would start with clicker questions.

Teaching: Compare your experience of teaching this technology-enhanced course to teaching a standard math course that is similar in content. Comment on prep time, technology training, student engagement, etc. From a pedagogical perspective what aspects of your teaching were significantly impacted by using this additional technology?

I find teaching with the technology significantly easier than teaching a standard course. I like having the prepared slides which remind me of all the important points and examples that I want to make sure I mention in the lecture. I like having the interactive figures and computer generated images which make it much easier to explain concepts, and I think the clickers do give me some idea of where the students are in their understanding. I am also able to say a lot more in class because I am not wasting time writing out problems and trying to draw figures. I also think the students are more engaged with the technology than with the chalkboard. Most of the students are actually listening to what I say, thinking about the questions I ask, and responding. I think this is because they are freed from being so concerned with note taking, and are able to concentrate on really understanding.

The prep time involved in making all the slides before I taught this course the first time was much more than would have been required if I had just taught from blank slides or with the chalkboard, but now that I have the slides made, prep time is significantly faster. I can just look through the slides and remind myself what topics are in the section and what I want to talk about. I can't personally comment on the technology training, because I have slowly learned how to use these technologies over a number of years. I was impressed and encouraged by how quickly others (Dr. Leary, exam review leaders, etc.) pick up on using the Smart Podium and accompanying technologies.

Moving Forward: What is your opinion about teaching this technology enhanced course again in the future? Please comment on additional improvements you believe are needed and what aspects should remain the same.

I really hope the department decides to continue this way of teaching 151.01 and 152.01. The students keep asking me if all the courses are going to be taught this way soon. Beyond the advantages of the technology itself, the students really seem to like it and it gives them a favorable view of the math department.

I would like to teach this course again, but what I would really like to see if the department encouraging others to learn how to teach this course with all the technology. We've developed instructor resources that teach the instructors how to use the technology that should answer most of their questions. I imagine that the first few times I will also be a reference for them, but I think it is completely reasonable to assign some lecturers of these classes to teach this way.

As for the technology, there isn't much that I would change. I am not sure if I am sold on the clickers or not. I would like to wait and see what the students this quarter think of them before I make up my mind. Otherwise, I think everything we are doing adds value to the class.

One comment I would make is that I think lecturers who use these materials in the future should not feel constrained by them. They should feel comfortable editing the slides and clicker questions to complement their style of instruction, and the department should make sure it is easy for them to do so. The instructors should also feel free to use the applets that they think are helpful and not demonstrate in class those they think would be better for the students to play with at home. Because this was a pilot, I think there was a pressure for both Dr. Leary and I to do things exactly the same way, but that doesn't necessarily have to be the case in the future.