1. Contact Information

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2. Teaching Innovation

In Spring, 2008 I began teaching the geography 481 (Fundamentals of Geographic Information Systems) course as a blended (hyflex) offering for the very first time. As a four credit, 400 level laboratory course with some very intense technical content, teaching such a course primarily online presents several serious issues.

1. Delivery of laboratory – based on high-end Geographic Information Systems (GIS) software
2. Making sure the students are actually engaged in the content
3. Reaching students with multiple learning styles
4. Creating learning community
5. Providing a shared intellectual landscape
6. Increasing time-on-task
7. Student-student and student-faculty interactions

The course as it is now incorporates not one, but several simultaneous and evolving innovations, each designed to address one or more of the above issues. Below is a brief list of these innovations.

1. Provide consulting services for laboratory exercises: While the laboratory manual includes datasets and self-directed exercises, students still struggle. To provide opportunities for students to access teaching assistants in a hybrid / hyflex environment I provided 3 2.5 hour laboratory "consulting" sessions for the students. The teaching assistants wear headsets and have skype turned on for students taking the course off-site. Additionally the TA's hold office hours in a virtual world called Second Life.
2. In my face-to-face version of the course I had noted that students had lost the skill of taking notes. They were essentially disengaged from the course. To rectify this I began providing PowerPoint frames to the students that are predominately graphical in nature and the students take notes directly on those frames using the classroom computers. For the online version of the course I replaced this note-taking task with questions supplied in the notes section of the frames, each designed to engage the students in the content and each graded based on a rubric. The questions allowed students to surf the web and obtain

content from multiple sources. This was designed specifically to engage the neomillenial student. Recently I replaced these annotation exercises with Softchalk exercises that include more engaging games, quizzes, and exercises.

3. Some students in online courses complain that they "need" the lecture. While need might be a bit of an overstatement, it does indicate that there are some audio / visual learners out there that do still learn from the lecture. To accommodate the online learner who fits into these learning styles I created a virtual classroom inside Second Life (a virtual world) that includes PowerPoint technology. At first I used this for my f-2-f class and asked students to select 10 frames per week that they had trouble with. I am now actually delivering lectures for those students who choose to participate.
4. In my first experience with teaching in Second Life the students asked if they could use the venue for study and review. This prompted me to augment the lecture with free virtual clicker technology that provides key questions for each chapter of the text. Moreover, the notes that are used with the in-world clicker are provided as retrievable notecards posted on a course corkboard. This amounts to a study guide. Today, these lecture/review sessions range between 60 and 120 minutes depending on topic and interest of the students.
5. Some of my learners are tactile as well as visual learners. To accommodate them I provide a set of 3-D building laboratories (extra credit) that link directly to course content. One classic example is an exercise where the students can nearly instantly create conical, cylindrical, and planar map projections as well as a spherical (globe) version of the map showing the response of parallels and meridians. Each of these boxed, tactile labs is graded and the kit contains a rubric as well. These exercises are done both individually and in groups and provide additional time on task, teacher-learner and learner-learner interactions. Additionally, they provide a shared intellectual landscape as all the students can see these things in-world in real time.
6. Learning community is developed through a fireside chat environment that allows students to work together and to discuss labs (voice is enabled in Second Life so they can talk to each other). Another innovation encouraging learning community is an exercise where students produce posters based on their actual laboratory exercises and send the resulting file as a graphic that I upload into Second Life and use to create student posters. The posters are set up so groups of students can view each others' work and interact with each other as they would in a real f-2-f poster session but for free and of course allowing online students to have this interaction.

3. Impact on Student Learning

In the spring of 2009 I evaluated exam grades for the students in 481 and compared the results for those students who participated in Second Life activities and those who did not. The results, unpublishable because I did not go through IRB procedures, were staggering. On the first exam the Second Life students did nearly 20% better than those that did not. The gap closed for exams two and three, but in

all cases the Second Life students performed better. This is in direct correlation to the known relationship between time-on task and student learning.

In an interview with NPR one of my students indicated explicitly that she was a tactile learner and the boxed exercises, allowing her to literally touch the course material was influential in her learning.

I have received several comments per semester from students who have told me they love the Softchalk exercises because they are "fun" and they learn more than from the original slides.

Perhaps the following statement from one of my students sums it up best:

"I appreciate your efforts and teaching style. I could tell that you put a lot of time into this class and I appreciated it. It always makes me feel good when I finish a class and feel a sense of accomplishment. Your class was one of the hardest, if not hardest, Geography class I have taken and that isn't a bad thing. I think that school should be challenging, I feel you learn best when you have to work hard. Thank you for all the hours you put into this class. Thank you for designing the class in a way to make us have to work and spend a lot of time working on this class assignments and studying for the quizzes every week. It is also always nice to know that money for a class was well spent."

Another student was more explicit and stated the following about Second Life:

"The Second Life stuff was totally awesome! It was really cool being able to study together for quizzes and tests. I really enjoyed the Second Life labs too. Thank you for taking the time to do this."

Further attesting to the importance of this innovation is that I have been interviewed by NPR, highlighted in educational newsletters (ESRI, RezED), produced two chapters and two articles documenting his approach, was asked to present the approach to the National Geospatial Intelligence Agency College, was selected as an associate editor for the International Journal of Virtual and Personal Learning Environments, and the content was part of a portfolio that resulted in my receiving the James R. Anderson Medal in Applied Geography awarded by the Association of American Geographers.

4. Relationship to the Teaching Academy

Because of my innovative work in Second Life I was asked and agreed to deliver a three-hour workshop on using Second Life for learning. The workshop was well attended and was delivered both f-2-f and in Second Life. I have also had my name referred from Teaching Academy personnel to faculty who are curious or even planning such use. In fact I am a primary point of contact for this innovation. I have been teaching Intermediate Second Life for Educators for Sloan-C now and use this as a forum to highlight the NMSU teaching academy to a national audience