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Department of Information Technology

Faculty Learning Community

2007 - 2008

I. Introduction

I have learned a great deal during this past year serving in the faculty learning community. Through the implementation of this project, as well as through our meetings with other faculty and facilitators, I have gained more insight into effective teaching styles. The project I present here entails a method that seeks to improve the effectiveness of students' learning by way of reducing distractions and increasing participation.

II. Philosophy of Teaching

The role of the professor in any class involves the integration of several key elements. I believe that if these elements are well executed, tremendous benefit will result for both the professor and students. While there are many elements involved in effective teaching, I believe that the following are most essential:

1. Having the necessary qualifications and a thorough knowledge of the class material.
2. Having clear goals and direction for both the students and the professor.
3. Implementation of goals in a manner that optimizes students' understanding of the class material.
4. Actively staying up-to-date on subject matter and teaching tools.

Throughout my education and career, I have been able to see the value of having the necessary qualifications for execution in a particular circumstance, whether it is teaching a college level course or being prepared for a major consulting deal.

While being both qualified and prepared is of great importance, I feel that it is just as important to have clear goals and direction both for myself as the one delivering the material, as well as for the students who are receiving. Three goals that I have for my students include creating an effective learning environment for the students, having the students grasp the material, and developing students' life-long skills such as their ability to concentrate and solve problems.

Implementing each of these goals require careful thought and creativity. I can recall a professor during my Math Masters' work in which he taught me the value of always asking "why." He encouraged me to understand the rationale behind a particular subject area prior to actually diving in. I have taken this piece of advice with me throughout my career, and specifically, have implemented this concept in the classroom. At the start of a new topic, I always emphasize to the students

"why" we are covering that particular topic. I believe this provides perspective and motivation for the students as they learn with a well-defined purpose

I have found a particular teaching technique to be very effective in both communicating the course material and fostering the students' learning of the material. The technique is conducting a "lecture by example." Rather than teaching all the material first and then showing examples, I incorporate relevant examples throughout each lecture. Using examples allows the students to tangibly see how the text material is actually implemented and it keeps the lecture interesting.

Finally, actively staying up-to-date on subject matter and teaching tools remains a strong commitment of mine. I stay up-to-date on each subject by continuing to read new textbooks, learning of current research, and attending both conferences and workshops. In addition to this, I am also committed to re-evaluating my teaching tools periodically and thinking of new ways to teach course material, as each class is comprised of a unique set of individuals.

III. Metaphor of Teaching: Project Manager

Teaching to me is like a project manager. There are many similarities between managing a project in industry versus teaching a course at the university. In particular, just as there are work breakdown structures for projects such as tasks and subtasks, each course covers major topics and subtopics. Similarly, milestones and deliverables in a project can be compared to deadlines and homework in courses. Also, just as there are performance evaluations in projects, grades are given to students to evaluate their work in the course. And finally, rewards in the form of bonuses and time-off in industry is comparable to extra points (in the form of raffle tickets in this project) in courses.

IV. Summary of FLC Project

Problem: In Programming for IT III (4002-219) and Introduction to Data Modeling and Database (4002-360) (syllabi attached), students are seated behind computers as these are courses offered in the "Active Learning Classroom" and as a result, students are inattentive and distracted during class. Therefore, students' learning is not maximized.

Goal: I would like to improve students' attention, preparation, and participation during 4002-219 as well as 4002-360-073 by implementing a "rewards system" in which students will be encouraged to prepare for each class prior to each class period, as well as participate during the class.

Implementation: Each class will begin with a review of the material from the previous class, and will be followed by an overview of what will be covered in that day's class period (total of 15 minutes). During this time, students are

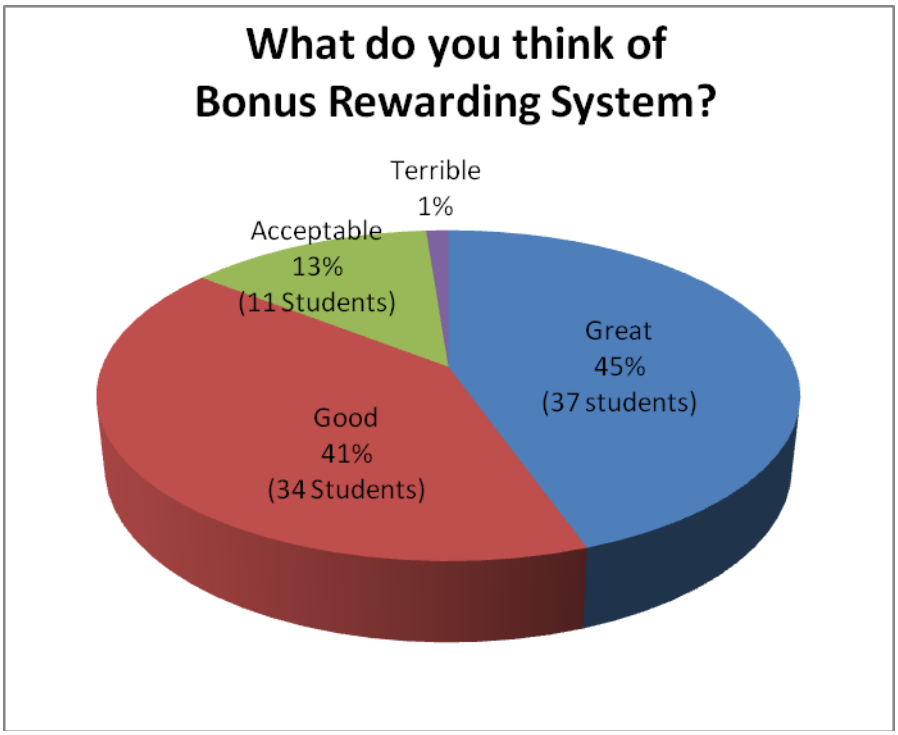
rewarded a (raffle) ticket for each correct answer during the 15 minute review or overview, as well as during lecture participation. I implement a lecture by example approach in which each lecture is run around a specific example. Together, as we move through different concepts during the lecture, I ask students what the next line of code which implements that new concept is. Both students and I then type the next line on their respective computers and on the projector respectively. Those students who contribute lines of code are then rewarded tickets for correct answers. These tickets will then count as bonus points towards their practical exam grades. I believe that the potential success of this approach is largely dependent on the lecture by example style that I implement. Since the lecture style itself is centered upon class interaction and participation, the addition of a rewards system further enhances the students' motivation to prepare, participate, and understand material better.

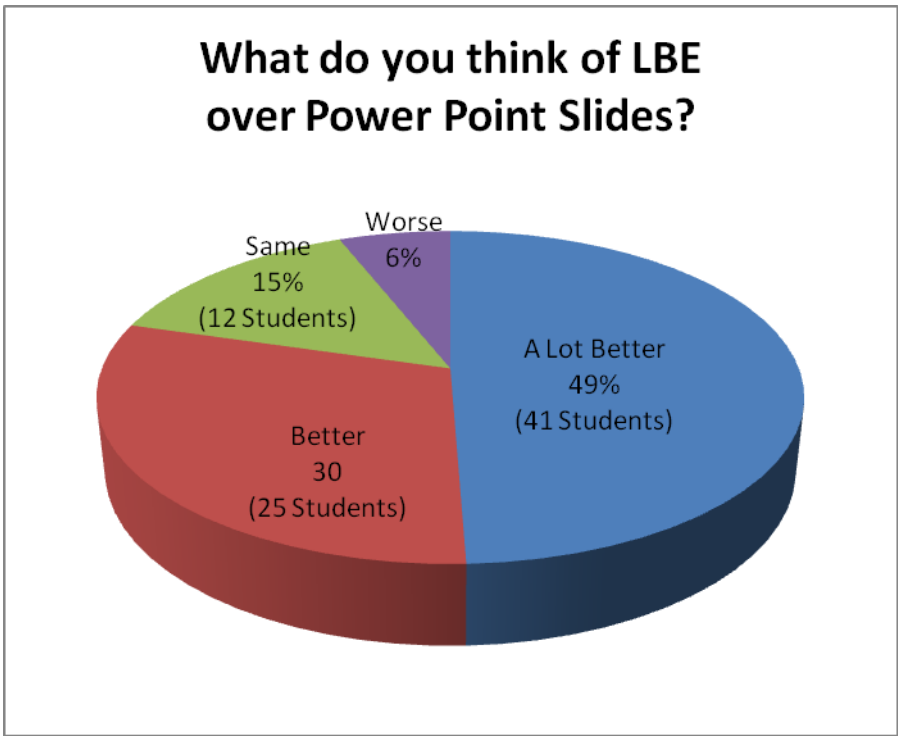
When students are prompted to answer a question during the class period, a student is selected (among those students who raise their hands) such that priority is given to those with less tickets. Students who find any coding errors before I compile the class program will also gain a ticket. I will also make it clear to the class that any students who raise their hand more than three times during the class with the correct answer, but do not get selected, can also obtain a ticket at the end of the class period.

Hypothesis/Proposed Solution: With the implementation of a system in which students will be motivated to not only understand previously covered material but also prepare for the next class, I hypothesize that students' interest in the class and motivation will increase. As a result, students will understand material better, score higher, as well as gain confidence in class material.

Assessment: I will give a survey to all students at the completion of each course, as well as gather written comments from students and TAs regarding their opinion on this new lecture-by-example (LBE) rewards system.

Conclusion: Student surveys were generated from Programming for IT III (219-01-072, 210-02-072, and 219-70-072), as well as from Introduction to Data Modeling and Database (360-01-073) to gather student opinions on the use of LBEs vs. traditional power point lectures, as well as how they felt about the bonus rewards system. Regarding LBE vs. power point, 49% said they liked LBEs "a lot better" than power point lectures, 30% said "better," 15% said "same," and 6% said "worse." With respect to the bonus rewards system, 45% of students felt that the new system was "Great", 41% said "Good", 13% said "Acceptable" and only 1% said "Terrible." Comments gathered from students and TAs are included in Appendix, and were positive.





Resources – Faculty/Student Advisors:
Prof. Keith Whittington (IT Dept.), Prof. Ed Holden (IT Dept.) Adjunct Prof. Bryant French
Students: Ada Tse (TA), Lynette Fernandes (TA), Bill Dollinger (219-01-072

Student)

V. Reflections on the FLC7 Experience

My participation in the FLC this year has been a positive one. Overall, I gained much insight as I was exposed to various teaching methodologies, was able to discuss and learn from other members and facilitators, as well as receive feedback from others regarding my own FLC project.

Last September, we had a conversation in which Manny shared about his "just-in-time review" approach that he used in his classes. It entailed reviewing previous class material at the start of each class to prevent students from forgetting already covered material. I thought that this was a very good idea, and have started to implement this strategy myself.

Another influential aspect of this past year in the FLC was attending the Lilly Conference last November (11/16-11/18). I felt that this was a great forum to listen to other college faculty members discuss their needs, definitions, theories, research, stories, and ways to apply different teaching methodologies in the classroom. In addition, I attended about a dozen different sessions such as "Podcasting: Aligning the medium with hearing in higher education," "The joy and responsibility of teaching well," and "Applying active-cooperative learning," in which I gained much insight.

In addition to discussions and conferences, my experience in presenting the "Person of the week" was very interesting. I gave a presentation on Jean Piaget, and in preparation for this, learned a lot about him. I spent a significant amount of time learning about him as well as the various theories that he introduced. These included the Development of Cognitive Structure, Piaget's Theory of College Teaching, Guidelines for Educators, and Implications of Piaget's Theory for College Teaching Practices. I tried to make the presentation interesting for others in the group, and feel that it was a beneficial exercise altogether.

Finally, this past April, we underwent the "Strength Quest Experience" survey on the web. I thought it was very interesting and helpful, as its goals were to determine my greatest natural talents, increase my learning by making the most of my talents, strategically determine a rewarding career path, and maximize my potential for strengths by building on my talents. I learned a lot about myself through this exercise, and can definitely foresee how this survey can positively influence future teaching.

I would like to show my appreciation to all FLC facilitators: Susan, Trudy & Sarah for their dedication and encouragement throughout the year.

VI. Comments from students and TA (Teaching Assistants)

1. TA Feedback

LBE - Lecture By Example

Lecture By Example (LBE) is a very effective method when teaching. This method is very effective as it makes the students feel comfortable that the professor is writing the program at the same time and also explaining what each line of code does as he goes along. Also the students can ask questions and as they type along with the professor they learn too.

Ticket Method

This is a very innovative method of getting the students to study. It is a new method and at first I thought it wouldn't work. But I was wrong. I was surprised to see that the students really enjoyed getting answers right and getting a ticket. All companies provide some sort of incentive to their employees. It is this that gets them motivated enough to do work. So in the same way, Prof. Kang is dangling the carrot on the stick. He gives them a ticket for every question the student gets right. Each tickets carries point weight age that is added to the exams in the course. This is very motivating. Students will do anything to get a higher grade. And this works very well. I have noticed that most students are actually reading the lecture slides before coming to class so that they can answer a question right and get a ticket.

My Thoughts and Comments

Overall, Prof. Kang's teaching methods are different from other professors that I have worked with, but they prove to be effective and the students do pay more attention and seem to be learning better too.

2. TA Feedback: Lecture by Examples

I find this method of teaching very innovative and effective. This method accomplishes all the requirements from the student's side of being able to understand and implement the concepts thought in a course and it also motivates them unto thinking and solving problems in a real world scenario.

The Professor has come up with the concept of providing tickets to students who actively participate in the question and answer session and this motivates the students unto listening to the lecture and doing some homework by preparing for

the next day's lecture. The common class room environment where students are free to do what they want is restricted to listening to lectures and answering and being able to earn some tickets as they add value to the final grade.

One good thing and a very important point that I like to make is, this class is almost devoid of students who play games and browse outside course stuff and this is very interesting as I have never been in a class like that (tutoring) in the past three quarters. Playing games in class is a sign of the student's disinterest in the course and the lecture by example system I assume has made a world of difference to the way the student's develop an interest.

3. Student Evaluation of Lecture by Example and Ticket System from 4002-219-01

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I found the LBE and ticket system to be a refreshing and highly valuable approach. It provides the incentive for the student to develop proper study habits. In my case, the benefits carried over into other classes. Even though the other classes don't implement the system, I have developed the necessary skills and experienced the value of this approach.

The ticket system also has helped to reduce stress levels during practical exams. Ticket points are applied to exams so you can use them if you encounter any difficulty. Of course, the student is in much better shape by exam time and will not likely need any extra points for a good grade.

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I believe RIT students would benefit if this system was used in other courses. Each instructor could implement it in a way that adapts to his or her individual teaching style while keeping the necessary components in place. Expectations effect results and Professor Kang benefits students by expecting the best from them.

4. Student Review of Bonus Ticket System and LBE 4002-360

The students in 360, in my opinion, are motivated by the approach and are more engaged than I have seen in other classes. I believe a large majority are doing the reading prior to class, and the show of hands during questioning is often impressive. There are exceptions, and I am not sure any approach will be able to

force a student to due the work necessary to gain an understanding of the material if they are simply not interested.

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I think the lecture by example is even more helpful when being introduced to MySQL. As Professor Kang has pointed out in class, we need a lot of practice at our current stage. Watching a professor read through lecture slides has always seemed inefficient to me. If students are already exposed to the material, the professor should be relied upon to answer questions about it from the students. Once questions are addressed, we can begin to put the concepts into hands-on practice. Thankfully, this is how Professor Kang operates.
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As a result of my experiences in Professor Kang's classes, I have developed and adapted my study schedule and usually I am in good shape when the class begins.

VII. Attachments

- Course Syllabi: 4002-219 (Programming for IT III) & 4002-360 (Intro to Data Modeling & Database)