

# **Increasing Student Commitment to Class Preparation**

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## **Abstract**

Most of us know the rule-of-thumb that students should spend a certain number of hours outside of class studying for every hour in class. Unfortunately, students often develop the view that it is more efficient to come to class and have the instructor cover the material and then only study material that was emphasized or unclear. As faculty members this results in the dilemma of either assuming the students are not prepared and lecturing over basic material or trying to require the students to prepare. Some use readiness quizzes covering the required readings. Some try to intimidate, calling on students to motivate preparation. Various other techniques have been used to coerce students into completing reading assignments before class.

In an attempt to improve the students' level of preparation and the education dynamics within class, I modified the format of a senior-level engineering management course. Key to this change was a formal commitment from the students and from me as the instructor to approach the course differently and to take certain specific actions before and during every class. This paper reports on the results of this classroom experiment. It includes surveys from student participants and a group of control students to compare differences in attitudes, behaviors, and academic results. Comparisons are also made to other sections of the same course in previous years.

## **Introduction**

In the movie *Mona Lisa Smiles*, Julia Roberts portrays a new art history instructor at a private women's college. She begins her first lecture in an introductory class and is shocked that the students already know all of the works of art she planned to present that day. As she becomes more and more flustered, one of the students reveals that they have already read the entire textbook. At first, this sends Julia's character into a tailspin, but she recovers and develops a richer course that she and the students both enjoy and learn from. Many of us would argue that this is Hollywood fantasy, not any form of reality television.

But what if our students came to class and were truly prepared? What kind of rich discussions could we have? What would it be like to teach a roomful of engaged students? How could we create such an environment?

## Background

Two engineering management classes were considered in this research, *Safety Engineering Management*, a class that was modified with the goal of improving student participation and preparation, and *Human Factors*, a class that was a control group to determine the status quo of student attitudes towards class and class preparation. Both classes were similar in type of context. Often, students take both classes. During the semester involved in this research, three students were in both classes and eight human factors students had previously taking the safety engineering course. The courses can be taken by undergraduates or masters students. The majority of students taking the courses were seniors.

An anonymous survey was given during the final exam period of the control class with the purpose of determining student patterns in class attendance and textbook reading. The survey included four closed ended questions. Responses are shown in figures 1 and 2. Open ended questions, “When you miss class what is the primary reason(s)?”, “Why have you taken your approach to reading textbooks for classes?”, and “What is your preferred method of classroom learning (i.e. lecture, group discussion, case study, etc.)?” were also included in the survey. There was a 100% participation in the survey. Students were a diverse group with variability in race, gender, age, academic year and major. They were asked about the human factors course and courses in general. The results of the survey were disheartening, but not surprising.

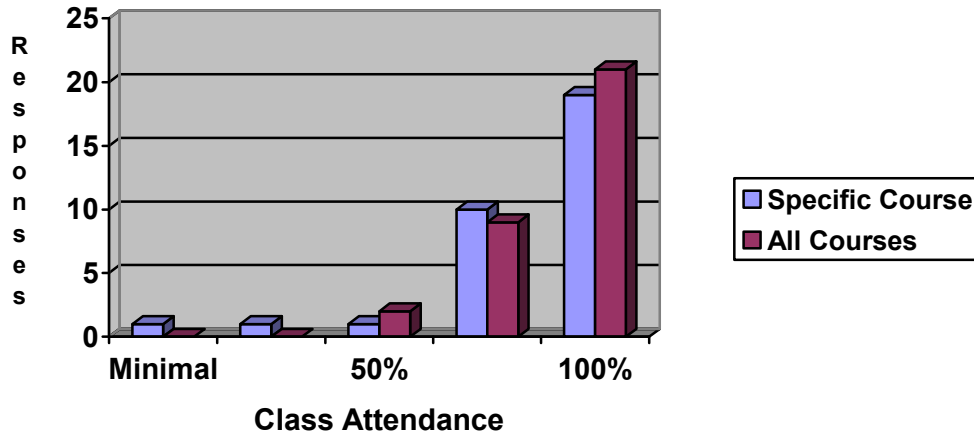


Figure 1 – Self Reported Attendance

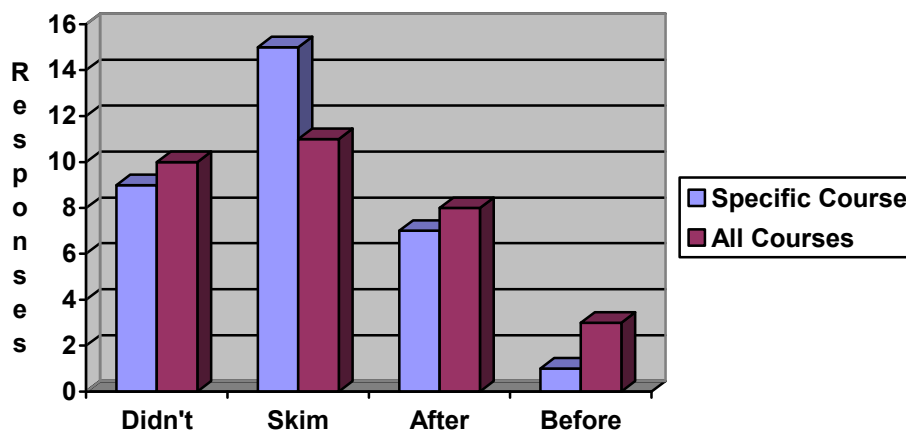


Figure 2 – Self Reported Patterns of Textbook Reading

Together the graphs show students reported attending class regularly, but without reading prior to the class. Of the 32 students surveyed, only one student reported reading the chapters before the class session covering them in the control class and only three read before class in general. In general 21 (66%) students reported “only skimming the chapters” or “didn’t read much of the book.” This result confirms what many faculty members experience – students prepare poorly for class.

In an open-ended question, students were asked the primary reason(s) for missing classes. The top reason given was sleep-related, including oversleeping. The class met at 9 a.m. and for some students that was early. Second was illness, including caring for sick children, and third was being out of town, including interview trips. Other reasons given included schedule conflicts, lack of transportation, and masters’ thesis. One student responded, “I didn’t feel like it.”

An open-ended question asking why they have taken their approach to reading textbooks resulted in a variety of answers. The students who read before class answered “habit,” “worked best in most classes,” and “it makes lectures more interesting.” The students who read the book after the class answered in two categories: time related reasons and effective way to learn/prepare for exams. One student commented, “It has worked for me so far, and I am graduating with honors tomorrow.” The students who skim or don’t read before class gave a variety of reasons: too busy to read, the books are boring, my notes are better, and the professor highlights what is important.

The final survey question asked students their preferred method of classroom learning. I found the results surprising. The most frequent answer was lecture with 20 responses. Some of these responses included combinations of techniques and some were solely lecture. Group discussion was cited 16 times and case studies 11. The responses working alone, projects, role playing, and quizzes were each given once. One student answered “group discussion and role playing” and then went on to comment, “It seems like we are living in the days of ADD. Damn that television.”

## Revised class

Due to a variety of factors, the student enrollment in the safety engineering management course was smaller than normal. About half of the students had taken a different course from me previously. I approached the students with the opportunity to maintain the traditional method of lectures with discussions and the occasional short case/activity or to modify the course. The response was unanimous to modify the course. After some discussion the students agreed to 1) attend every class unless they were out of town on a job interview, 2) read the assigned chapters before each class, and 3) for every class bring a question and an important point from the reading. I committed to the students 1) I would avoid lecturing, 2) I would minimize the importance of exams, and 3) if they kept their commitments they were guaranteed an A or B in the class.

At the beginning I had reservations whether this approach would work. I brought my lecture notes with me to class and had them available at a moments notice. We quickly got into a routine of a student starting a class asking what did this portion of the textbook mean or expressing surprise at some point. Students often shared experiences from working in industry. I soon noticed in this format we covered most, if not all, of the points in my lecture, although we often did them in a different order. I was able to bring in examples for discussion. For the classes covering analytical techniques, the students worked in small groups and presented their results to the class. In over 40 class periods, I only lectured three times. Our mid-term exam was an oral exam that students gave each other in pairs and the final was a take-home exam. During the oral exam, students were randomly put into pairs and the instructor walked around the room to ensure valid results. Performance on both of these was equal to or better than prior years when in class exams were used.

At the mid point of the course, I surveyed the students using a five point Likert scale with 1 being *strongly disagree* and 5 *strongly agree*.

Question	Average Response
I enjoy the flexible structure of the class.	5.0 – Strongly agree
I am learning as much or more than I do in a traditional class.	4.8 – Strongly agree
I miss having lectures every day in class.	1.6 – Strongly disagree
I am getting what I wanted out of this class.	4.8 – Strongly agree
The pace is about right in the class.	4.6 – Agree
The class is going into the right depth on the material.	4.4 – Agree
Overall this is a good class and a good learning experience.	5.0 – Strongly agree

Anecdotally the students made interesting comments about the revised class. A graduating senior with a below average GPA said, “Gee, I should have been reading the book for all of my classes.” For the three students taking this class and the control class, I asked why they hadn’t changed their behavior in the control class. Their reply was that they knew they were going to have to participate in the modified class, but the odds of me

calling on them in the control class were small on any given day and they were willing to take the risk.

I highly enjoyed the modified structure of the class. I approached the class with more enthusiasm, learned from the class discussion, and gained a better understanding of the student perspective. I was surprised that more often than not I had to tell the students we were out of time and had students following me out of the room still discussing the topic.

As the semester progressed, class attendance became a problem. In some instances the students were ill or out-of-town interviewing. Several students had a rough semester including one being arrested for driving while intoxicated, one being diagnosed with depression, and significant academic stress for another student. The commitment to class attendance was still a concern for the students. On more than one occasion, a student in the class called a friend's cell phone during class to give them grief for not being in class and to tell them to get to class. Surprisingly, this tactic worked. In an effort to encourage attendance, I started assigning make-up work to the students who missed class. Examples included, "In class today we discussed the following questions in the text, write a one-page analysis of each." Students who were unreliable at turning in graded assignments in other classes, eagerly completed the make-up assignments without question.

## **Conclusion**

Overall it was an interesting experience. It renewed my faith in college students and made me less cynical. It did improve the class preparation and the participation of the students. However, it did not achieve the level of class attendance that I had hoped. I believe the survey results can be generalized, providing insight into our students. I believe there is promise in gaining formal commitments from students related to their class performance. I plan to continue building on this experience and am eager to hear feedback from others on this topic.

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Dr. Murray currently serves as an Associate Professor of Engineering Management at the University of Missouri – Rolla. Her research interests include engineering education, work design, human modeling, productivity improvement, safety engineering, and human factors. She received her B.S. and Ph.D. in industrial engineering from Texas A&M University and her M.S. in industrial engineering from the University of Texas-Arlington. Prof. Murray is a registered Professional Engineer in Texas and a member of ASEE.