Increasing Student Engagement and Providing Early and Timely Performance Feedback

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Grant Proposal for Summer 2012

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I have reviewed the proposal and I support the request for a course release/cost reimbursement for the project

__________________________________________  ____________________
Head of Academic Unit  Date
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Problem Statement

The DFW rate for the first fourteen sections (463 students) of a new required marketing course (Marketing Metrics: MK 4010) is 20.8%, compared with the same-period departmental average across all undergraduate marketing courses of 7.4%. The number of D grades in the metrics course has been about four times higher than the department average.

In Fall Semester 2009, a new required course, Marketing Metrics (MK 4010), was introduced to strengthen the analytical skills of marketing undergraduates. As a required course, approximately 300 students per year take the course. Given that the course was designed to address analytical deficiencies, it is not surprising that some students struggle. Our experience to date has identified several factors that contribute to students’ difficulty in the course. Students often get off to a slow start in the course, waiting until after the first exam to buckle down. Not all students actively participate in the team-based homework assignments. Students can be hesitant to ask questions in class. For some, of course, the actual math is a problem. A common theme is a lack of engagement on the part of some students: they know that they are not “getting” the concepts but don’t seem to know what to do about it. Students often appear passive about their learning in this course. This passivity or lack of engagement makes it challenging for the instructor to improve student learning.

Proposal Objectives

The ultimate goal is to improve student learning in MK 4010 which will lead to an improvement in student performance and a reduction in the DFW rate. Specific proposal objectives, designed to support this goal, are:

- To increase student engagement and involvement with course material.
- To provide students with timely and early feedback on course performance.
- To provide a non-threatening learning environment.
- To use technology to facilitate student learning.

Method

Our goal is to strengthen student performance by increasing student engagement and by providing early and timely performance feedback. The purpose of the instructional innovation grant is to develop teaching approaches to accomplish this goal. There is a significant opportunity to increase student engagement through the use of available technology. Through this grant we will explore and develop two teaching approaches designed to more fully engage students and to provide more

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1 The rationale for the development of the new course is described in Pilling, Rigdon and Brightman
2 The challenges encountered are described in Pilling, Nasser and Ellen (working paper).
immediate and individual performance feedback. These approaches are the development of online homework and the creation of course-specific movies.

As a context for the discussion of these approaches, we refer to Posner and Rudnitsky (1997), who emphasize five strategies for creating a favorable learning environment. These strategies are to encourage risk taking, to provide feedback so that students can monitor their progress, to assess prior student knowledge, to create an engaging learning environment and to communicate learning goals to students. We will refer to these concepts as support for the proposed innovation.

**Online Homework.** We propose to develop online homework assignments to be completed individually by students. Students will receive immediate feedback upon submitting their homework (including the right answer) and will be able to resubmit the homework as often as necessary. The instructor can provide general feedback that the student would receive after the question is graded. For example, the instructor could explain common errors or refer the student to another resource (such as a course movie). Based on meetings with Instructional Design and Training Services at GSU, the uLearn learning system software is a viable platform. We will also investigate other software packages. We will develop questions where a range will be input for each variable in the question, so that the answer changes each time the student attempts that question. For example, the student could be asked to calculate a breakeven sales quantity with a return on sales objective. For each attempt, the software would vary the level of fixed costs, the ROS objective, the selling price and the variable cost. This feature discourages cheating and permits the student to test him/herself with different numbers. We will be able to monitor the performance of each student, including the number of attempts, the score on each attempt and the answer to each question. We will also be able to identify areas where additional classroom emphasis would be helpful. We anticipate several learning benefits. Online homework is convenient and uses technology familiar to the student. Students will receive immediate feedback on homework performance. Students can attempt the homework as often as desired, in a low-risk setting. The homework can be used for exam preparation during the term as well as for preparation for the cumulative final exam. Finally the student cannot rely on group members to complete the assignment.

I have developed six on-line homework modules. The modules were originally developed in the Assessment function in uLearn. Starting Spring 2013 the homework is now housed under Quizzes in Desire2Learn. D2L has quiz capabilities that are very similar to those in uLearn. The modules vary from 25 questions to 15 questions, depending on the content.

**MP4 Movies.** We propose the development of a series of movies linked directly to course content, produced and narrated by the instructor. These movies would be posted on the university’s media server and links and descriptions would be provided to students within the learning management system software. Movies will cover specific in-class exercises and key course concepts. As an
example, a movie would be created to cover the in-class exercise dealing with cannibalization. Because students will be able to access these movies remotely (even on smart phones), we believe that the movies will help to establish an engaging learning environment. They will permit students to review material as needed and represent a way to reinforce key course concepts. The movies will communicate key learning goals to the students. Also, movies will be a useful and efficient way to review the “prior knowledge” that students are expected to bring to the course. For example, we would create a movie on calculating percent change, including how to solve for X1 or X2 given the percent change and how to “reverse” a percent change. Over time we would expect to create about 30 to 40 movies. We are exploring two software packages for the creation of these movies: Camtasia by TechSmith and Captivate by Adobe. We anticipate the use of a digital tablet to create some of the content and have briefly experimented with the WACOM and MOBI tablets.

To date I have developed 25 movies using the approach described above. I am using Camtasia and an Intuox Wacom tablet to create the movies. The following link presents a movie that describes and illustrates the process to create the movies, provides samples of the movies and also describes the on-line homework: Report on IIG.

The use of online homework and course-related movies should also improve teaching consistency across multiple course sections and instructors. These techniques may also be applicable to other required courses in the college, particularly those that are both analytical in nature and required for all BBA students.

Evaluation

We will monitor four specific areas:

- The DFW rate. We believe that increased student engagement and improved feedback will increase learning and performance, lowering the DFW rate.

  The DFW rate for Summer 2012 and Fall 2012 was 21.3% (based on 122 students). This rate compares to an average DFW rate of 20.8% for all prior semesters of the course. I would conclude, therefore, that the movies and on-line have not yet lowered the DFW rate.

- We will track student engagement through the learning management system software. For the online homework we can track the number of attempts, the length of each attempt and the timing during the semester. For the MP4 movies we can track the number of views, time per view and the total time spent, at the individual student level. Activity rates will help to capture the popularity and perceived usefulness of the movies and homework.

  Because the student tracking data stored in uLearn is no longer available, I can no longer access the relevant metrics in uLearn to run an analysis of effort and performance. I also discovered another
limiting factor, which was that, while uLearn tracked the amount of time that a particular link was open, I had no way of knowing if the student was actively engaged during the elapsed time. For example, a student might access module 4 homework on four separate sessions, for a total of 12 hours. But that does not mean that the student was actively working for 12 hours.

Anecdotally, it appears that students did spend a significant amount of time on both the movies and the homework. In Summer 2012, for example, one student logged 37 hours on the movies. She indicated that she watched the movies while working out on the treadmill.

- We will survey students to gather their feedback concerning the homework and movies.

Students in the Summer 2013 sections were surveyed to gather their perceptions about the homework. The students were asked to rate their level of agreement with a series of statements relating to the homework, with 1 = Strongly Disagree and 7 = Strongly Agree. The following table presents the means and standard deviations.

<table>
<thead>
<tr>
<th>Questions</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The homework helps me learn</td>
<td>57</td>
<td>6.0</td>
<td>1.18</td>
</tr>
<tr>
<td>The homework is too difficult (reverse coded)</td>
<td>57</td>
<td>4.5</td>
<td>1.48</td>
</tr>
<tr>
<td>I think that the homework is a waste of my time (reverse coded)</td>
<td>56</td>
<td>6.4</td>
<td>1.01</td>
</tr>
<tr>
<td>I can see a direct link between the homework and test questions</td>
<td>57</td>
<td>5.0</td>
<td>1.65</td>
</tr>
<tr>
<td>I get frustrated trying to do the homework (reverse coded)</td>
<td>57</td>
<td>3.6</td>
<td>1.49</td>
</tr>
<tr>
<td>Being able to redo the homework questions as often as desired is very</td>
<td>57</td>
<td>6.4</td>
<td>.92</td>
</tr>
<tr>
<td>helpful</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I prefer individual to group homework</td>
<td>57</td>
<td>5.2</td>
<td>1.81</td>
</tr>
<tr>
<td>Spending time on the homework really paid off on the exam</td>
<td>57</td>
<td>5.0</td>
<td>1.70</td>
</tr>
<tr>
<td>Being able to review the homework will really help me prepare for the final</td>
<td>57</td>
<td>5.8</td>
<td>1.46</td>
</tr>
<tr>
<td>exam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessing the homework online is convenient</td>
<td>57</td>
<td>6.3</td>
<td>1.16</td>
</tr>
<tr>
<td>I just do not see value in doing the homework (reverse coded)</td>
<td>57</td>
<td>6.4</td>
<td>1.08</td>
</tr>
<tr>
<td>The homework helps me gauge my level of learning</td>
<td>57</td>
<td>5.1</td>
<td>1.42</td>
</tr>
<tr>
<td>The homework is an effective learning tool</td>
<td>57</td>
<td>5.7</td>
<td>1.18</td>
</tr>
<tr>
<td>I do not see a meaningful connection between my homework score and my</td>
<td>57</td>
<td>4.7</td>
<td>1.98</td>
</tr>
<tr>
<td>test score (reverse coded)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>56</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In general the results are favorable and in the expected direction. Students perceived that the homework helped them learn (mean = 6.0), that it was helpful to be able to redo the questions as
needed (mean = 6.4), that it was convenient to access the homework online (mean = 6.3) and that the homework helped them to gauge their level of learning (5.1). The level of homework difficulty appears about right and the homework was rated as an effective learning tool (5.7).

- Informal Feedback

While not part of the proposed evaluation approach, I have received a lot of informal positive feedback from students about the homework. The homework appears to be facilitating student learning in two important ways:

1. When a student comes to my office I can pull his/her homework up on my screen and we can go over specific questions as needed. I can see the student’s answer to the question and have the student walk me through his/her approach.

2. If a student has a homework question, he/she can paste the homework into an email and show me his/her work to date. Then I can give the student enough direction for him/her to continue making progress on the question.

3. While it has not been documented, I have seen an improvement in student exam answers related to homework questions. I have also been able to cover more material and raise the difficulty level of the exams because the homework helps the students to better learn and practice the course material.

- We will conduct correlation analysis to examine the relationship between course performance, homework scores and time spent on movies and homework.

For Summer 2012 and Fall 2012, there was a significant positive correlation between homework scores and course grades (.562, N = 112, p < .01, 1-tailed test). This finding provides evidence that the homework contributed positively to student learning.

Because the student tracking data stored in uLearn is no longer available, I have not been able to access the relevant metrics in uLearn to run an analysis of effort and performance. I could not test the correlation between time spent on movies/homework and course grade.

Budget

In support of the project, one course release is requested for Summer 2012.

Works Cited
