

Faculty/Librarian Grant for Course Development Final Report

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Supported by a Presidential Grant I narrowed ten texts down to four. Based on software demos and pricing I chose *Precalculus: Mathematics for Calculus* by Stewart, Redlin and Watson. Online tools were integrated with our Blackboard course environment and Thomson Publishing generously made online tutorials available to my students for free.

In choosing a textbook I first composed a list of the features I was interested in seeing in a precalculus text (see attached). Some texts were eliminated immediately because they did not contain review material our students need. The remainder of the texts had all necessary material and comparable weight and cost; I considered stylistic issues when selecting from among those.

Texts which placed review material in the first chapter were slightly preferred over texts with review in the appendix. Texts which introduced graphing early were strongly preferred over algebra-based texts. I also favored texts with integrated technology use, student projects, and examples of mathematical modeling.

Two of the electronic companions to these texts were very similar, allowing composition of internet homework assignments using problems similar to those in the text. They both offered a wide variety of options for random problem generation, due dates, printability, etc.; I chose the cheaper of the two. The third electronic companion did not require internet access and provided a computer guided course and “mastery” tests. While this might be of great value to a student studying independently it did not seem appropriate for my course.

The textbook I chose is available in an abridged edition, which has offered some savings to our students. It was written with modern technology in mind, including content accessible only through electronic graphing tools,

and downplays skills made obsolete by those same tools. It contains both small and large projects for classroom use, and showcases mathematical modeling methods at several points in the text.

There are several levels of electronic support available to students; students who buy the book used should be able to access the online homework at no extra cost (in contrast with the competing publisher) and students with a new textbook or who purchase access to online tools can use automated or live online tutoring, work practice problems, view examples, read the text online, etc.. The electronic companion has been integrated into my Blackboard site for easy access, and in the future students may be able to purchase electronic copies of the text chapter by chapter.

In using the electronic companion I found the software to be somewhat buggy, and a few of my students had difficulty accessing it. Most of my students accessed the software easily, and I was able to see that several of them had started the first homework shortly after the first class period. I have been disappointed by the online hints offered by the software, and have learned that sample answers are essential when there is no partial credit. For example, the computer grants no partial credit for the response $-2 < x < 2$ if the correct answer is $|x| < 2$.

I combined projects included in the text with the most successful activities developed for my past precalculus classes and now need only write one more in-class activity for the semester. As implied by the attached schedule, I plan to do three graded in-class exercises taken from the text, two ungraded in-class exercises from the text, and three graded in-class exercises that I will have developed myself.

In conclusion, I have tried to choose a precalculus text that meets the needs of Bridgewater State College's students. I selected an electronic companion that did not impose extra costs on students buying used textbooks. I have found that most of my students are comfortable submitting homework electronically and that the instructor's interface is usable and provides valuable information on student achievement.