Math 153 Course Reform Report-Fall 2015

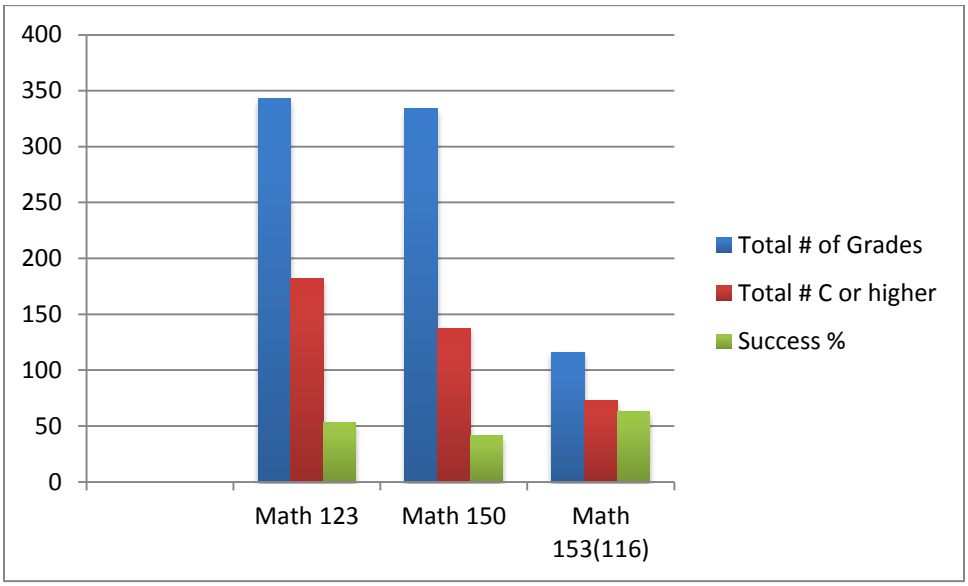
Summary of Instructional Redesign Components

I. Objectives

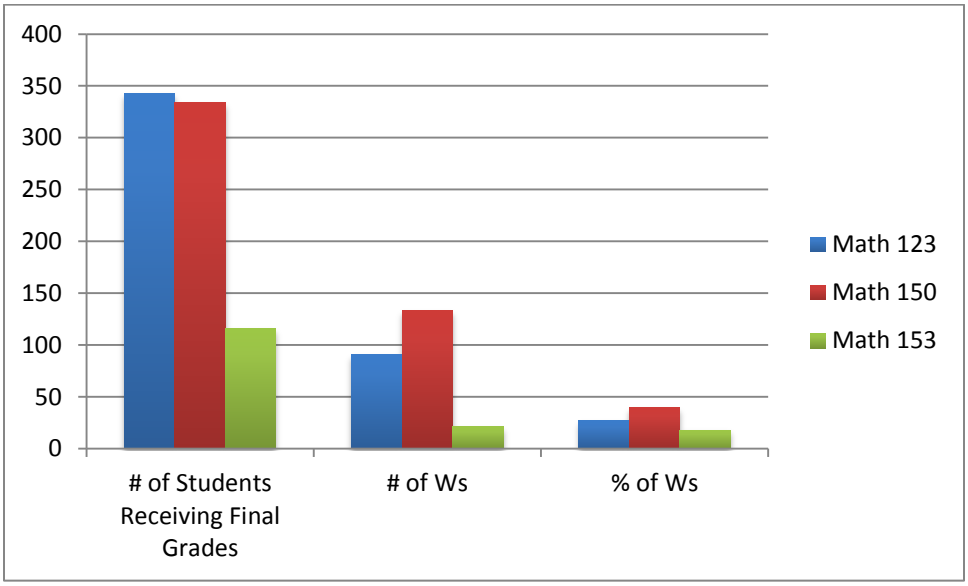
The goal of the Math 123/150 Course Reform team was to improve the engagement, learning and success of students in the course at UNM. We used a comprehensive approach that sought to engage students more completely in mathematics both outside of and within the classroom. Specifically, we aimed to:

- Improve the retention and success rates of students who enroll in Math 123/150.

Looking at preliminary results from the spring 2015 semester, it appears that this is already being accomplished. Here is a summary chart of the pass rates:



Also encouraging are the lower withdrawal rates:



- Align the 123/150 combination course with 162/163 as well as 121.

Our team re-examined the alignment of math 121, 123/150, and 162 and adapted the new 153 course to be more aligned with the content students will have seen coming out of 121 into 153 as well as students going out of 153 into 162. There were a few topics in both math 123 and 150 that we felt were outdated and irrelevant to STEM major students going into maht 162. For example, topics such as the fundamental theorem of algebra, the rational zeros theorem, and the division algorithm were taken out entirely. Other topics, such as conic sections (in particular, parabolas, ellipses, and hyperbolas) were cut down from being covered over a week to being briefly introduced and summarized in one to one and a half class periods.

- Improve the rates of Math 123/150 completers who enroll in and succeed in the courses that follow Math 123/150.

We are still waiting on this data.

- Shorten the amount of time students take to complete their STEM degrees.

By design, math 153 gives students the opportunity to meet the prerequisites for 162 by only taking one course over one semester.

- Improve the depth of understanding of Math 123/150 students on core subjects.

By cutting certain topics out (as mentioned above), we are able to spend more time focusing on topics that are not only crucial to success in 162, they are topics that students struggle with and need more in depth practice with. Also, the curriculum is set up to constantly show how topics in algebra relate to topics in trigonometry so that students are less likely to see algebra and trigonometry as two completely different topics. For example, the online HW (in the same assignment) has students examine the concept of a vertical asymptote for both rational functions as well as trigonometric functions like the tangent or secant. All of our online assignments have been written to constantly force students to revisit concepts from previous chapters. Sometimes there are random problems like solving a quadratic or rational equation. Other assignments include topics from previous sections that have conceptual connections to the current topic, such as domain and range of rational functions compared to domain and range of trigonometric functions.

II. Student Survey

Students in two of the sections taught by Precious Andrew were given the following survey during the spring 2015 semester. The results follow. It is interesting to note that the students found the in-class/groupwork with the PLFs nearly as effective as the lectures.

Math 116/153-Precalculus and Trigonometry Survey

This is a survey to assess the effectiveness of a variety of tools being used in this course. This is NOT a survey to assess the effectiveness of your instructor.

Please rate the following elements of your Math 116/153 course in terms of effectiveness.

1. How effective was **the time spent working in class with peers, PLFs, instructor** on worksheets,etc**.** vs. a traditional lecture in helping you prepare for exams/succeed in the course?

1 2 3 4 5

very	somewhat		somewhat	very
ineffective	ineffective	neutral	effective	effective

Please comment briefly on **the time spent working in class with peers, PLFs, instructor** (Did you find it useful? Any compliments/complaints?):

2. How effective were the online assignments **(WebAssign)** in terms of helping you to prepare for exams/succeed in the class?

1	2	3	4	5
very	somewhat		somewhat	very
ineffective	ineffective	neutral	effective	effective

Please comment briefly on the **WebAssign** (Did you find it useful? Any compliments/complaints?):

3. How effective was the written HW **(Worksheets)** in terms of helping you to prepare for exams/succeed in the class?

1	2	3	4	5
very	somewhat		somewhat	very
ineffective	ineffective	neutral	effective	effective

Please comment briefly on the written HW **(Worksheets)** (Did you find them useful? Any compliments/complaints?):

4. How effective were the lectures in preparing you for the online HW **(WebAssign)**?

1	2	3	4	5
very	somewhat		somewhat	very
ineffective	ineffective	neutral	effective	effective

5. How effective were the lectures in preparing you for the written HW **(Worksheets)**?

1	2	3	4	5
very ineffective	somewhat ineffective	neutral	somewhat effective	very effective

6. How effective were the **quizzes** in terms of preparing for exams?

1	2	3	4	5
very ineffective	somewhat ineffective	neutral	somewhat effective	very effective

7. How effective were the **PLFs (Rebecka, Aaron, Aron, Marshall)** in terms of helping you prepare for exams/succeed in the course?

1	2	3	4	5
very ineffective	somewhat ineffective	neutral	somewhat effective	very effective

Please comment briefly on the **PLFs** (Did you find them helpful? Any compliments/complaints?)

8. How effective was **time spent outside of class** working with a PLF (Rebecka, Aaron, Aron, Marshall) or the instructor at **office hours/study sessions** in terms of helping you prepare for exams/succeed in the course? **(leave blank if not applicable)**

1	2	3	4	5
very ineffective	somewhat ineffective	neutral	somewhat effective	very effective

Summary of Survey Results