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Outcome:

Las Positas College  
Basic Skills Project Midterm Report

Check ONE

	Practitioner Project
X	Institutional Project

*Date:* Thursday, February 07, 2013

*Project Title:* Math X: Improvements

Our BaSk Math X Project was to complete some much needed steps in the Math Department's six year plan to significantly improve the technological supports students receive and therefore increase the success rate of our basic skills students taking their math classes in the Math X format. These technology improvements and the data that is collected on our efforts will be shared with the math department to help increase support in our basic skills math classes offered in other modes, such as hybrid, distance education and lecture.

Math X is our self-paced, mastery level, learning mode in which students take basic skills math courses (M107: PreAlgebra, M65: Elementary Algebra, M55: Intermediate Algebra, M71: Math for Trades). While students work at their own pace, benchmarks are provided to help students monitor their progress. It is a critical option for many of our students, as it allows them the flexibility of taking exams when they are ready and with unlimited time. By requiring students to understand the material at a mastery level, we prepare them for success in future math classes.

In the Fall of 2011, Math X courses moved to an online homework system, MyMathLab™; in the Fall 2012 this online systems changed to a new Pearson owned platform that is dramatically different and there was significant work to be done to customize all of our courses. The online platform gives instant feedback to students when doing their homework, as well as providing a host of support mechanisms, such as worked examples and tips for completing work. The entire textbook is also available online as an e-book. MyMathLab™ simulates the help a student would receive in a classroom by offering video lectures and short animations of the concept, examples of problems worked out completely, and step-by-step scaffolding to complete a problem. It also offers similar exercises that can be used to practice until the student is confident in their understanding. While using online software has been an improvement – we know that students are completing their homework correctly before being able to take a quiz or exam - this is not enough to support the learning of students in the program. Some are thriving with this format, taking advantage of all of the supports and practicing until they are confident in their understanding, but many are not using the supports or using the supports as a learning crutch, helping them complete the assignments without critically thinking about the material. We know that there are things that have to be done to improve the program, and this grant was one of many steps that we need to take to improve the student experience and student success.

Unfortunately, we discovered last year that the very generous BaSk Grant did not go as far as we wanted, due to high cost of release time for Kristy Woods. However, THANK YOU for the grant because Kristy and Dianne were able to work and complete over the summer and fall on many of our goals!! [Based on schedules, most of the work was done “ahead” of the grants

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timeline based on Kristy and Dianne having more time to work during the summer and so that improvements could be rolled out beginning in the fall of 2012.]

### **Completed during Summer and Fall of 2012:**

- Analyze the success rates of students on the various individual quizzes and tests to identify problem areas. Based on that data, create and add customized questions to the homework to provide more questions as needed to increase student success.
- Online Homework Summary Assignments: created additional, summary homework assignment that students must complete before taking a quiz or exam. The assignment closely mirrors the quiz or exam that they are about to take. Students are required to write their work down on paper and to review their work with an instructor or instructional assistant as part of the homework check. The homework summary assignment will NOT include learning aids (such as work in steps, see an example, watch a video, etc.). The assignment can be retaken an unlimited number of times but it must be mastered with an 85% or better before the assignment is considered to be complete.
- eManipulatives have been found and/or designed and included in the material to help students understand difficult math concepts by allowing students to interact with a virtual model. Powerful eManipulatives now exist for topics such as adding and subtracting signed numbers, operations on fractions, solving equations, translations of functions, etc.
- Conduct training and follow-up with instructors of Math X sections on how use the MyMathLab™ software to create a learning environment where students feel encouraged to persist. Instructors should be encouraged to regularly identify and contact students based on their progression through the material, which can easily be done using the software.
- (We did this in the Spring 2012, as it was too important not to do immediately!! A second one is planned for the Spring 2013.) In the Fall 2012, MyMathLab™ moved to an all new platform, requiring additional webinars and training on how to create, customize, and maintain courses in this new format. Kristy and Dianne were trained and worked with the publisher to do all of the work required to get all of the basic skills courses in Math X up on the new platform. Kristy head a session in the Spring 2012 for faculty members on how to use the new platform during instruction. We have shared the developed materials (including eManipulatives and best practices) with instructors to incorporate into hybrid, distance education, and lecture sections that use MyMathLab™.
- M71: Math for Trades is now available on the MyMathLab™ platform, with increased supports for student learning. The courses for M71X and M71Y were created in MyMathLab™ and customized for ease of student use; all assignments and exam and quiz coordination to match the material online.

### **In progress during Spring 2013:**

- Continue to analyze the success rates of students on the various individual quizzes and tests to identify problem areas. Based on that data, improve and continue to add customized questions to the homework to provide more questions as needed to increase student success.
- Continue to identify existing eManipulatives and have them incorporated into the courses.

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- Continue to provide training and best practices seminars for all instructors of BaSk math courses (including but not limited to Math X mode instructors).
- Work with Math Department and Rajinder Samra, Director of Research and Planning, to create and gather surveys of Math X students and Math X faculty. The goal will be to identify what needs and obstacles they have in completing their math courses at Las Positas, in general, and especially in this mode, and to gather data on perceived success of efforts thus far. Data should also be collected as to why students choose to take their class in the Math X mode. This information will be reported back to the department and used to inform future efforts.
- Collect and analyze success and retention rates of students in the Math X program over the last several years, as changes and improvements have been rolled out. Strategies for collecting data in the future need to be developed as well.

### **Hopes for Future:**

- Create “pre-quizzes” for all chapter sections for all math x courses. These pre-quizzes would allow students to, having read the e-book (containing supplementary lectures, animations, etc.) to find out what concepts they understand. The results from those quizzes would be used to create a customized homework for that section – homework would be streamlined to include only the concepts they still need to master (and would be marked “correct” on homework problems involving concepts they got correct on the pre-quiz).
- A PowerPoint Orientation Video with a voice-over that will include the Math X orientation and a demonstration of the MyMathLab™ software, how to use it, and best practices will be developed. This will be played by all instructors for the students on the first day and used for any late add students so that all sections have an effective orientation of the Math X program and online environment. There will be some additional power point slides provided to allow for individual instructor comments.
- Incorporate Knewton™ into the math x courses. This is an adaptive learning software and now available within the MyMathLab™ software. It will analyze student work on concepts and make suggestions to the student of what to work on next so students will be able to spend more time addressing weaknesses without wasting time on concepts they already understand.
- Work with the Faculty Association to improve training and updating instructor requirements given the evolving changes of this program to now include technology.
- Continue to research programs around the country that have done successful redesigns of self-paced, mastery level programs like ours. These programs are highly desirable when done right, as it is an economical mode for the college to get students into and through basic skills math classes.
- Research and apply to grants to realize our imagined overhaul of Math X (these improvements still utilized)!!