BASIC SKILLS FUNDING REQUEST
STUDENT SUCCESS COMMITTEE

Requester(s): Bob Martinez  Department: Math  Date: 9/18/08

Name of Activity: Math Algebra Project (MAP) Phase 2: Completion of the full Math 125 course - Beta version) Total requested: Hourly pay to cover 14 total units of release time for 1 semester: $19,600 approx.

Please review the list of committee funding principles below before filling out this form.
Email the completed form to mccaslin@piercecollege.edu and goodmai@piercecollege.edu.

Description of the Project: Clearly and concisely describe your project.

The Math Algebra Project (MAP) is the creation of innovative Algebra teaching methods and materials, in concert with the best practices cited in the Basic Skills Initiative "poppy copy", designed to promote critical thinking, quantitative reasoning, reading skills, and writing skills, and to improve student success through improving study skills and introducing directed learning activities in the classroom. The instructor's role changes from "sage on the stage" to "guide on the side", that is, the majority role of the instructor becomes one of facilitator rather than a one way lecturer.

In the Spring of 2008 we began working on the materials for Math 125 (Intermediate Algebra) The goal was to produce a number of pilot lessons for class testing in the Summer session '08 and the Fall 2008 semester (ongoing now). The lessons consist of:
1) Reading - this differs from the normal text book in that the reading is, whenever possible, concerning real world timely situations and data. And, the reading has interactive applets imbedded. Then the study skills component of the reading is that students must answer reading questions online which are graded automatically and the results are gathered in the electronic gradebook in the course management system. It is critical to the functioning of this method that students read the material before coming to class, thus the reading questions will have considerable weight in the grading. We (all) know that (most) the students do not read the book - this method promotes that crucial study skill.

2) Skill-drill warm up and Drill-skill post lesson problems: These are math exercises that contain the more rote or formulaic (lower level reasoning) skills but that facility in which is necessary for solving higher lever math problems requiring more complex critical thinking . Students do the Skill-drill problems online where there are step by step examples, animations, professional videos, and videos made by Pierce Math faculty. These problems are graded automatically and the results are placed in the electronic gradebook.

3) Directed Learning Activities: The heart of MAP, these in-class higher level critical thinking activities are designed for the students to work in groups and discover the deep Math concepts that the reading component introduced. The instructor goes from one group to another guiding the learning. There are usually 3 learning activities per 1 hour of class time. Each activity targets a specific learning outcome from the COR for the course and complete sentence written answers, when applicable are stressed. Instead of passively listening to a lecture, the students spend the majority of class time working on the materials.

4) Clicker questions: After each activity the instructor surveys the learning of the students by running a quick clicker session facilitating immediate (uncorrupted) feedback and promoting self assessment. At
this time in the class, group activity work and answers can be shown via a document camera and discussed.

5) Learning Activity Homework: An extension of the learning activities, the Homework problems reinforce the material learned in class and are assigned after each lesson. Writing complete sentence answers, when applicable, is stressed. The instructor collects and hands grades this work, along with the in-class activities student work.

The release time coverage for Spring ’09 is similar to the approved Spring ’08 release time but we intend to finish the complete Math 125 course beta version in order to large scale class test in summer ’09 and Fall ’09. In Spring ’08 we received funds for coverage of 9 units release time total (Kathy Yoshiwara 5 units and Bruce Yoshiwara 4 units) with the understanding that pilot lessons would be completed and class tested in Summer ’08 and Fall ’08. In Summer B we gathered survey data from students after each of 6 lesson class tested (we included samples of student responses).

At this time, the reading sections and a set of learning activities for an entire semester length Math 125 have been written and are being tested in class (now, in Fall ’08). But now we need more time to complete the electronic components - reading questions, Skill-drill problems, and clicker questions. We ran into a technical problem roadblock of Moodle not being able to support some technical elements of the online part of the project as well as a roadblock from our IT department saying we are not allowed to operate a WebWork server (the electronic problem display mechanism and grading online). So, worried that would delay or de-rail the project, we turned to MyMathLab as the course management system. Since we can use this platform to deliver the online reading questions and drill skill problems, and we can do it in a more timely manner rather than creating the delivery system from scratch, we can now have as a goal to finish Math 125 Intermediate Algebra (with all of the 5 components listed above) by the end of the Spring ’09 semester. The trade off is that WebWork and Moodle would have been free to the students (our original goal) but also would have taken a lot more time to complete even getting passed the technical roadblocks - while the MyMathLab delivery system costs a student $57 for an access code. The shrinkwrapped learning activities package are copied off by Copytech and sold (as in the original design) to the student at cost, which will be about $20. With a $30 - $40 clicker (cost may lower with bulk campus adoption being discussed currently in the Tech committee) the total cost to the student is $107 to $117 which is still less than a math textbook (around $150 now), and they can sell the clicker back to the bookstore or use it in other classes (or they may even have one already from another class).

So to accomplish our completion date of the end of Spring ’09, we are requesting funds for the hourly coverage of 14 units of release time for the Spring ’09 semester - 5 units for Sheri Lehai, 4 units for Kathie Yoder, and 5 units for Kathy Yoshiwara. Total estimated cost of $19,600.

Results: What specific outcomes related to student success do you expect to come out of your project?

We expect to raise the reading and writing level of students as well as improve their critical thinking and study skills levels beyond that provided by the usual Algebra class structure. Ultimately we predict more student retention and success due to the students more thorough understanding of the material and the interest generated by the real world timely topics. But we realistically also predict student growing pains initially due to the fact that passive failure is much easier than active learning and success. A quote from one student in the summer class test was "I hate the stories (the real world timely situations) cuz it just means more reading". Apparently, some students don't care about global warming and glaciers melting. We hope to overcome these growing pains by ultimately creating the same kind of designed materials for Algebra 1 and Prealgebra so Pierce students can grow up in the system and be used to it.
**Coordination:** What other departments/areas, if any, will be involved in this project. Describe how. Other departments would be involved if we offered an Algebra learning community with that department. Otherwise, not.

**Academic Freedom and course materials:** Every Math instructor will retain the choice to choose the materials he/she sees appropriate for his/her class. But through the success of MAP and with subsequent participation in class testing and further development of materials for the other Algebra levels, we believe more and more instructors will be naturally drawn to use the materials.

**Evaluation:** Describe how you will assess the effectiveness of this activity.

MAP will be assessed:
1) Results of the MET in Algebra 1 and 2 (Math 115 and 125) in comparison to the normal score averages overall and those classes not using the materials.
2) Success of MAP students in subsequent Math classes as compared to the success of non MAP students.
3) Surveys of student opinions of the lessons.
4) Success and retention rate in MAP classes vs. non MAP classes.

**Funding Breakdown:** If appropriate, provide a general breakdown of the total funding request.

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**General Principles Regarding Funding of Student Success Projects**

Dec. 2007

- Projects should be piloted first, i.e. carried out on a limited basis with their progress evaluated before continued support is provided and because of the limited amount of committee funds
- Projects should include a built-in assessment component and outcomes to be able to evaluate their performance
- Departmentally focused projects should have been discussed with and have some support from originating departments and the dean
- Projects should reflect alignment with the Basic Skills literature review (*Basic Skills as a Foundation for Student Success in California Community Colleges* [http://www.cccbsi.org/Websites/basicskills/Images/Lit_Review_Student_Success.pdf](http://www.cccbsi.org/Websites/basicskills/Images/Lit_Review_Student_Success.pdf))
- The ownership of intellectual property will be governed by Article 41 of the 2005-8 faculty contract. ([http://www.laccd.edu/collective_bargaining_agreements/AFT/aft.htm](http://www.laccd.edu/collective_bargaining_agreements/AFT/aft.htm)).
- Since there are multiple funding sources besides Student Success funds possible for supporting projects, the committee will consider and recommend what the appropriate means for funding will be. Ways of compensating for faculty time could include reassigned time (contingent on President’s approval), hourly pay, a stipend, professional development credit or other sources of funds.