

**Los Medanos College
Program Improvement and Development Process
Proposal Form
2007-2008**

Project Title: Transfer Math Student Success Project

Unit or Team: Math Department

Contact Person: Myra Snell

Overview of Proposal (Must be typed with no less than 12 font and no more than 4 pages)

Scope of Project

What is the project that you are proposing to be pursued next fiscal year? Include the following in your response: (1) A description of the project as developed in your department/team's program review and planning document and how the project will support College Goals and Strategic Initiatives; (2) Any research data (qualitative or quantitative) that supports the need for this project to be pursued; and (3) A discussion of the desired outcomes of the project.

Project description:

The Transfer Math Program proposes to build on the work of the Developmental Math Program by providing focused and sustained professional development with the goal of improving student learning in transfer-level math courses. This project will fund faculty participation in Teaching Communities. Teaching Communities are course-specific meetings that are characterized by:

- Collaborative investigations into teaching and learning
- Integration of research-based effective practice into the curriculum and pedagogy, including culturally responsive teaching
- Assessment of student work and use of assessment results to inform the development of curriculum and pedagogy that is responsive to student need
- Content-specific professional development

Connection to College Goals and program review:

This project is aligned with 5 of the 6 college goals.

College Goal #1: Improve the learning of students. This project directly addresses this goal by providing professional development that responds to assessment results.

College Goal #2: Create an educational environment in which all people have a chance to fully develop their potential and achievement of educational goals. Teaching Communities provide a mechanism through which issues of culturally responsive teaching and strategies for improving the achievement of underrepresented groups can be investigated and implemented in a sustainable and broad-based manner.

College Goal #3 Offer high quality programs that meet the needs of students and the community. In a large department like math where adjuncts teach approximately 75% of the math classes, this level of professional development ensures program consistency and helps to maintain

program quality. If we are to meet the needs of students and produce learning that is applicable outside of the classroom, we need to provide on-going training for our adjunct faculty that is grounded in assessment of student work.

College Goal #5 Enhance a culture of innovation, inclusiveness and collaboration. Teaching Communities are founded on the assumption that by working together faculty can sustain a culture of innovation and build on previous work to improve learning. While we respect each other as individuals, idiosyncratic excellence cannot foster innovation or sustain improvement within a large program like a community of practice can.

College Goal #6 Establish a culture of research and planning, implementing, assessing and improving. This project builds on the work of the Developmental Math Program, which leads the college in the use of assessment to improve learning. The DE Math Program has an impressive five year history of “closing the assessment loop” that has been recognized by invitations to present at the Strengthening Student Success Conference and workshops sponsored by the American Mathematical Association of Two-Year Colleges.

This project is also aligned with the Transfer Math Program’s planning objectives from our 2006 program review:

- *Assess students’ achievement of PSLOs;*
- *Create greater equity for students by assessing using normed standards;*
- *Directly assess & improve student achievement of CSLO’s;*
- *Ensure student preparedness in subsequent courses by norming depth and level of difficulty*

Research data that supports this project:

Norton Grubb, author of *Honored But Invisible: An Inside Look at Teaching in Community Colleges* (1999), is critical of the “skills and drills” approach that historically has dominated much of math education. He refers to this as a behaviorist approach, as opposed to constructivist approaches that are student-centered and meaning-centered. In the absence of structured opportunities to engage in dialogue about good teaching practices and to construct coherent philosophies of teaching that emphasize meaning-making, individual instructors are more likely to turn to conventional approaches with which they are most familiar. He states

Thus the very absence of discussions about pedagogy within a college and the absence of any institutional mechanisms to prepare instructors (especially part-timers) are indications that instruction has veered in the direction of skills and drills. Instead, community colleges that want to improve the quality of their programs need to have explicit discussions about pedagogy, explicit agreements and mechanisms to move those agreements into practice. (p.4)

The characteristics of effective professional development are well-documented in the literature and summarized concisely in The University of Delaware's *Education Policy Brief*. Specifically, professional development that improves student learning is content-focused, extended, collaborative, part of daily work, ongoing, coherent and integrated, inquiry-based, teacher-driven, informed by student performance and has a self-evaluation component. These are the components of our Teaching Communities.

Research referenced in the SU 2002 issue of *American Educator* compared different types of staff development for math teachers to see which types were connected to an improvement in student learning. Only staff development efforts grounded in an instructor's course content led to improved student learning. Teaching Communities are based on this model. Instructors work in curricular-teams to design activities, discuss lesson plans, and analyze student work in an effort to improve student learning.

Perhaps the most convincing research that supports the effectiveness of Teaching Communities in improving student learning comes from the Developmental Math Program at LMC. The work of both our Elementary Algebra and Intermediate Algebra Teaching Communities have produced impressive gains in students' abilities to problem-solve, communicate mathematically, and to use multiple representations of mathematical ideas fundamental to quantitative literacy skills.

Intermediate Algebra: Assessment results are from a random sample of students across sections of Math 30. New curriculum written by the Teaching Community was introduced in FA 04 and revised in SP 05 and again in FA 05 based on assessment results.

Percent proficient or better				
	FA 04 (n=32)	SP 05 (n=30)	FA 05 (n=32)	SP 06 (n=28)
Communication	81%	77%	83%	82%
Problem solving	69%	73%	90%	89%
Versatility	59%	80%	80%	82%

Elementary Algebra: Assessment results are from a random sample of students across sections of Math 25. New curriculum written by the Teaching Community was introduced in FA 07 with weekly faculty meetings focused on interactive pedagogy to promote higher-level problem-solving skills.

Proficient or better			
	FA 06 (N=36)	FA 07	
		TC (n=27)	Non-TC (n=11)
Communication	39%	67%	45%
Problem-solving	39%	74%	36%
Versatility	33%	55%	27%

Grubb, N., & Associates (1999). *Honored but invisible: An inside look at community college teaching*. New York: Routledge.

Kedzior, M. and Fifield, S. (2004). Teacher Professional Development. *Education Policy Brief*, 15, 1-6. University of Delaware Education Research and Development Center.

Desired Outcomes:

- 1. Greater equity for students:** Teaching Communities result in more equitable standards for students across sections in a course and across semesters. In the Teaching Communities instructors identify core course learning outcomes, write exams and assignments together, and develop criteria for assessing student work. This level of collaboration ensures that students have similar learning experiences and are judged by similar standards regardless of who their instructor happens to be. Without this type of collaboration, equitable standards are difficult to establish and maintain in a program.

2. Higher program quality: In our current Teaching Community for Statistics, which is funded by the SPECC grant, we have sponsored the following activities to improve the quality of statistics instruction:

- development of a common final exam
- comparison of LMC student performance on a national exam for introductory statistics to national performance
- development of “statistical literacy” assignments that focus on more meaningful, everyday use of statistics in newspapers, medical studies, etc.
- reading and discussing current research in statistical education, such as Joan Garfield’s “How Students Learn Statistics” and “Mathematics, Statistics, and Teaching” by Cobb and Moore.

3. Improvement of student learning: All of the activities of the Teaching Community are geared toward improving learning and grounded in assessment of student learning.

Budget

Provide a written commentary addressing your budgetary needs and how these expenditures will support the project and yield a successful outcome. Also indicate if the budget request is for one year, multiple years or ongoing.

We are requesting ongoing funding to support professional development through Teaching Communities for faculty teaching transfer-level math courses. We are requesting a small amount of money to cover the expenses of copying materials for the Teaching Communities. Aside from these interprogram charges, all of the funds will be used to compensate faculty for participation in ongoing, intensive professional development.

In our current Teaching Communities, about 70% of the participating faculty are adjuncts. We plan to pay them hourly for their participation (in excess of flex obligations) or with stipends for classroom-based research projects. Full-time faculty will be compensated only if they have already met their contractual obligations for five hours a week of departmental or other college committee work or if the nature of the project is deemed above and beyond expectations for a normal work week.

Staffing:	
10 faculty x \$45/hour x 16 hours (note: estimate of hourly rate is based on the assumption that we have an equal number of FT and PT participants)	\$7,200
Employee Benefits 10 faculty x \$5/hour x 16 hours (note: see above assumption)	\$800
Interprogram Charges	\$300
Total	\$8,300

Appropriate Manager’s Signature: _____