

**Strengthening Student Success Conference
October 2006**

**Session: Strengthening the Developmental Program as
a Whole - Data and Action**



**Los Medanos College
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I. Types of data: direct measures of student learning, indirect measures, qualitative measures

A. Direct measures of student learning: the measurement of actual student learning, competency or performance using authentic student work and public criteria.

Examples from the LMC Developmental Education Program: Assessment of student learning outcomes based on holistic assessment of a random sample of common final exams or papers

1. Assessment of a random sample of final exams for 8 sections of Elementary Algebra using rubric-scoring for all five of the DE Program Outcomes
2. Assessment of a random sample of expository essays from all sections of an English course using rubric-scoring for one of the DE Program Outcomes

B. Indirect measures : the measurement of variables that assume student learning, such as course success rates, persistence rates, transfer and graduation rates.

Examples from the LMC Developmental Math Research agenda designed by math faculty and conducted by the LMC Office of Institutional Research:

1. Investigation of factors that correlate with higher success rates in self-paced basic skills math instruction (4-semester comparison of success rates for sections categorized by instructor, day/time, class size, date of closure due to full enrollment)
2. Investigation of placement factors connected to higher success rates in Elementary Algebra (compared success rates of students grouped by assessment score and prior LMC course success.)

C. Qualitative measures: the measurement of perception or satisfaction using surveys, interviews, etc.; typically an indirect measure of student learning

Examples from LMC Developmental Education Program:

1. Survey of student use of and satisfaction with math lab services
2. Survey of student perception of the impact on their learning of curriculum and pedagogy used by instructors participating in a Teaching Community

II. Using these three types of data to assess Student Learning Outcomes for the LMC Developmental Education Program

At the end of the LMC DE Program students will be able to

1) Demonstrate the skills necessary for the first transfer level courses in English and Math or for the English and Math competencies for the Certificate of Achievement

Direct measures:

End-of-course assessment of student achievement of Developmental Education Program Learning Outcomes in capstone developmental math and English courses (Math 30 and English 90)

Indirect measures:

- Persistence to transfer-level from various entry points in the developmental course sequence
- Comparison of success in first transfer course (English 10S or Math 34S) for students taking an LMC developmental math or English course versus students who assess into those courses

2) Think critically to construct meaning and solve problems

3) Read with comprehension

4) Communicate effectively both in writing and orally

Direct measures for SLOs 2-4:

End-of-course assessment of student achievement of Developmental Education Program Learning Outcomes in capstone developmental math and English courses (Math 30 and English 90)

5) Demonstrate the characteristics, habits, and attitudes of an effective learner

Qualitative measures:

- In first transfer course, compare attitudes/engagement in learning for students who took a developmental course and those who did not.

III. Examples of the use of direct measures to improve teaching and learning

A. Example from English:

DE Program Outcomes:

- Think critically to construct meaning and solve problems
- Read with comprehension
- Communicate effectively both in writing and orally

SLO for English 90 (two levels below 1A): Write expository essays that integrate and synthesize course readings.

Design Assessment Instrument/ Scoring Criteria: All English 90 instructors are asked to give an assignment toward the end of the semester that has students write a 4-5 page persuasive essay that draws on 3-5 non-fiction readings provided by the instructor. (Note: content varies in different sections of the course.) A common rubric was created for scoring student work across sections.

Plan Learning Experiences: Assumed learning experiences in the classroom were aligned with SLO and assessment.

Collect and Analyze Student Work Across Sections: We collected and holistically scored student work in Fall 04, Spring 05 and Fall 05. We plan to do it again for Fall 06.

Analysis: For the first two rounds, our primary “finding” was that the assignment prompts did not uniformly call for students to write a persuasive argument with the agreed upon criteria, e.g. one paragraph on concession.

Response: Our DE Leads worked with full and part time faculty to ensure that the assignment prompts elicited the skills that we were assessing students on. We asked for assignments to be turned in to the lead early in the semester so feedback could be given if an adjustment was needed. By the third round, the prompts were deemed acceptable by all, but student performance had declined. Then some instructors called into question the SLO itself. Should English 90 students know how to write a persuasive essay with formal features of argumentation such as concession, or should that be a skill learned primarily in English 100? This question will be revisited in the department.

Further Analysis: Students are consistently weak on certain things such as logic, coherence, and the incorporation of quotes in an accurate way. To address this, we need to look at the ways students are learning (or not) to incorporate these abilities into their writing. This semester, we have planned four workshops (beginning in flex, then one per month) in which we asking faculty to submit their major assignments for the course, then analyze what skills students would need to be successful in these assignments and where the learning seems to break down – and what we can do about that.

B. Example from Math:

DE Program Outcome: Think critically to construct meaning and solve problems

SLO for Intermediate Algebra: Students will demonstrate the ability to use verbal, graphical, numerical, and symbolic representations of mathematical ideas to solve problems.

Design Assessment Instrument/ Scoring Criteria: A committee of Intermediate Algebra instructors writes a set of problems that address the SLO and a rubric that defines criteria and levels of performance. Instructors are required to include these problems on their final exam.

Plan Learning Experiences: Teaching Communities have written a series of classroom activities that are designed to build the skills and abilities described in the SLO.

Collect and Analyze Student Work Across Sections: We collected and holistically scored a random sample of student work in Fall 04, Spring 05, Fall 05, and Spring 06.

Analysis: In Fall 04 59% of the sample were rated as proficient or better on this outcome.

Response: The Intermediate Algebra classroom activities, originally written by the Teaching Community, were extensively edited to foster the use of tables and graphs in problem-solving and to improve the critical thinking involved in generating useful tables and graphs.

Further Analysis: Instructors submitting student work for the assessment in SP 05, FA 05, and SP 06 used these revised activities. Student performance drastically improved in the subsequent assessments.

	FA 04	SP 05	FA 05	SP 06
% proficient or better*	59%	80%	80%	82%

*These results do not represent all LMC Intermediate Algebra students.

	FA 04	SP 05	FA 05	SP 06
# instructors submitting student work	6/12 = 50%	3/8 = 38%	5/9 = 56%	2/10 = 20%

IV. **Examples of the use of indirect measures to make structural changes in the DE Program**

The Developmental Education Committee works in collaboration with the Office of Institutional Research to develop a research agenda. Here are two examples of the types of research questions we investigate and how the information has been used.

A. Responding to persistence data in English

Indirect measures of student success typically include course success rates which are relatively quick and easy for the Office of Institutional Research to calculate. Course success rates alone, however, are limited as a tool for decision making. Somewhat more useful are persistence rates, particularly in developmental sequences.

The LMC DE Research agenda contains a variety of questions related to persistence. Here is an example of how we used data on persistence rates to launch a successful intervention in our developmental English courses- later expanded to our developmental math courses as well.

In Fall 1999 we specifically investigated the persistence of students who successfully completed the English course two levels below English 1A

Findings:

Success rate for our developmental English course two levels below English 1A: 57%
Persistence rate for those who successfully completed this course and enrolled in the next course in the sequence (one level below English 1A) the following semester : 44%

The English department was shocked to learn that less than half of the students who *successfully completed* the first course in the developmental sequence went on to enroll in the next higher level course!

Action we took that is consistent with these findings: This seemed to us to require institutional dialogue, not just dialogue within the English department. What we decided to do was to institute an intervention called the Counseling Partnership. It took various iterations, but eventually we came up with something that was doable across twenty or more sections of developmental English. A counselor visits each class in the beginning of the semester and presents the services available through counseling with emphasis on educational goals and planning. The English teacher follows up with an assignment that calls for students to familiarize themselves with college resources such as child care and financial aid. Students are then required to meet with a counselor at least once during the semester to develop an educational plan. Counselors return for a quick visit around registration time, and encourage students to enroll in the next course in the sequence without “stopping out”.

The results of this intervention: In Fall 2001 we repeated the persistence study with the following results:

Success rate for developmental English course two levels below 1A: 61%
Persistence into next course in the sequence the following semester: 64%

B. Designing a research template to compare the effect of different types of preparation on course success

DE Research agenda: a three-semester comparison of success rates in elementary algebra for four groups categorized by “preparedness”: those who assessed into Elementary Algebra, those assessed below Elementary Algebra but enrolled anyway, those who took the LMC Prealgebra course, those who took an LMC basic skills course.

Findings: The only groups who consistently succeeded at rates higher than the state average were those who assessed into Elementary Algebra and those who successfully completed LMC Prealgebra. Those in the last group had significantly higher success rates than any other group.

Because implementing a new prerequisite is controversial, this research was complemented by

- Analysis of prerequisites for Elementary Algebra for a random sample of 26 CA community colleges
- Meta-analysis of prerequisites in successful DE programs nationwide
- Cut-score validation study: instructor and student perception of appropriateness of placement

Action we took that is consistent with these findings:

1. Implement a prerequisite for Elementary Algebra with multiple measures that parallels the prerequisite for English 90.
2. Provide opportunities for pre-testing and review before assessment test.

Results of this intervention: Success rates have consistently risen each fall semester, but is the gain sufficient to justify the prerequisite?

	Fall 2002	Fall 2003	Fall 2004	Fall 2005
Elementary Algebra success rates (Math 25)	0.508	0.548 Implementation of new prerequisite	0.561	0.634

V. **Examples of the use of qualitative measures to motivate changes in teaching**

A. **Using Qualitative Data in the Developmental English Program**

In Spring 2004, we had a Teaching Community that focused on using the Reading Apprenticeship Model in our integrated reading and writing course two levels below English 1A. We assessed the effectiveness of student learning in these sections with a pre/post assessment that measured students' ability to write a summary and response to a brief non-fiction piece of writing. At the beginning of the semester, only 30% of the students were assessed as proficient. At the end of the semester, 75% of the students were assessed as proficient using the same rubric. In addition to this direct measure of student learning, we also collected qualitative information in the form of feedback from the students. Of the 120 students who participated in this study, we received surveys back from 93.

Question #1: How would you rate the following learning activities that you engaged in this semester?

The following are a few sample items and responses:

- **Learning how to ask questions**

Very Important	Important	Somewhat important	Not Very important	NA
53%	23%	14%	9%	

- **Annotating, Breaking Down Readings**

Very Important	Important	Somewhat important	Not Very important	NA
65%	20%	13%	2%	

- **Summarizing**

Very Important	Important	Somewhat important	Not Very important	NA
69%	19%	9%	2%	

How is this feedback useful?

First of all, it helps students gain an awareness of the array of learning experiences they engaged in over the course of the semester, and self-assess how important those instructional strategies were to their own learning.

Secondly, it encourages faculty new to teaching these courses to include these instructional strategies in their classroom, as students are telling us that they work.

Question #2 To what extent do you feel you improved your ability on the following course learning outcomes?

- **Outcome 1 Students will use college resources to help them become engaged and purposeful learners.**

A lot of improvement	More than some imp.	Some imp.	Little imp.
37%	41%	20%	2%

- Outcome 2 Students will read to make meaningful connections personally, socially and academically.

A lot of improvement 47%	More than some imp. 35%	Some imp. 15%	Little imp. 2%
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- Outcome 3 Students will write essays that develop a clear and focused thesis, effectively incorporating quotes, summary and analysis

A lot of improvement 55%	More than some imp. 27%	Some imp. 16%	Little imp. 2%
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- Outcome 4: Students will proofread and edit their own writing to correct errors.

A lot of improvement 54%	More than some imp. 27%	Some imp. 16%	Little imp. 3%
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How is this feedback useful?

Again, it is useful as a metacognitive strategy for helping students self-assess their progress toward meeting course learning outcomes. In addition, it is a persuasive tool for convincing faculty that a Reading Apprenticeship approach is effective in helping students attain course outcomes.

B. Using Qualitative Data in the Developmental Math Program

Information and findings:

1. Survey of students (n=99) about the impact on their learning of curriculum and pedagogy used by instructors in the Teaching Community

Findings:

74% of students rated learning activities developed by the Teaching Community as a important or very important to their learning;

60-70% of students rated their achievement of Math DE program outcomes at a 4 or 5 (on a scale of 5).

2. Survey of instructors in the Teaching Community(n=9) about the impact on their teaching effectiveness

Findings:

100% of participating instructors said the staff development activities positively impacted their teaching; 91% of instructors participating in outcomes-based assessment of final exams rated the activity as ‘important’ or ‘very important’ to the Math DE Program.

3. Research in the American Educator (SU 02) comparing the effectiveness of different types of staff development in math

Findings: Only content-specific staff development correlated to improvements in student learning

Action we took that is consistent with these findings:

Submit a proposal to request campus funds to support participation in Teaching Communities that have a course focus.