Library and Learning Support Services Assessment Report

Tips: Keep in mind that the whole purpose of assessment is to improve student learning.

Steps in the assessment cycle	**Library or title of Learning Support Service**: Math Lab
Identify an Institution-level L&LSS SLO	Apply knowledge learned and competencies gained from using Library and Learning Support Services to academic coursework and assignments.
Identify a Program-level SLO	**Math DE Program SLO:** Students will use mathematical reasoning to solve problems and a generalized problem solving process to work word problems.
Research questions	**Does tutoring improve students' ability to use the problem-solving process to solve word problems?** **Does math lab attendance correlate with higher course success rates?** **Do students feel good about the help they receive in the math lab?**
Identify and develop assessment instruments or process	**Direct measures of student learning**: Pre-post tutor assessment of student performance on each part of the problem-solving process: paraphrasing the task, identifying relevant info, choosing a useful representation, attempting a reasonable strategy. **Indirect measures of student learning**: Track lab attendance (unduplicated head count) for each section of Math 12, 25, and 30. See if lab attendance correlates with course success rate. **Qualitative measures of student learning**: • Matched pairs: At the end of a tutoring interaction, the student will fill out a quick survey to indicate if she feels that she improved on any of the four steps in the problem-solving process. • Student satisfaction survey given in class; satisfaction survey given after the tutoring interaction
Collect and analyze data	**Direct measures**: We ran a two-week pilot. 74% of the DE students (n=23) improved in their use of all four parts of the problem-solving process; weakest improvement in "paraphrasing the task" 48% of the DE students' self-assessment matched the tutor's assessment (50% of Math 12 (n=2), 44% of Math 25 (n=8), 31% of Math 30 (n=13)) There were two unanticipated observations from this pilot: • instructors reported that they focused more on the problem-solving process when tutoring as a result of the pilot • we saw that much of what students are being asked to do does not require use of this four-step problem-solving process because the assigned problems are not word problems, but skill drills. This is particularly true in Math 12.

	We noticed the following problems with the pilot: • Tutors both do the tutoring and the assessment of student work • Students may think that they can only check one of the four parts of the PS process, thus weakening the matching with tutor perception **Indirect measures:** (FA 05) • For Math 12 and Math 30 lab attendance (unduplicated head count) explained less than 1% of the variation in success rates by section, but for Math 25 there was an astonishing result: lab attendance explained 73% of the variation in success rates. • We noted a large range in lab attendance for different sections of the same course. For example, one section of Math 12 had only 2 students attended the lab during the semester while another section had 27 students. **Qualitative measures**: (SP 02, n=407) We noticed that relative to other math students, Math 12 students (n=21) tended to rate their experiences in less positive terms: • Overall, 69% of the 329 answering students felt they received personalized help in the math lab; 22% felt they received "somewhat" personalized help, while 50% of the Math 12 students felt this way. • 67% of the 326 answering students felt that the help they received in the math lab from tutors/instructors enabled them to work better on their own; 23% felt "somewhat", while 42% of Math 12 students felt this way. • 46% of the 324 answering students felt the tutors/instructors in the math lab helped them learn <u>how</u> to learn; while only 32% of Math 12 students said "yes" • 50% of the 325 answering students felt the math lab helped them to feel better about math; while only 21% of Math 12 students answered "yes"
Develop action plans to improve student performance	1. We see two benefits to expanding the pilot. First, it provides a good focus for staff development for tutors and ties math lab tutoring to program-level SLOs. Second, it provides a way for the department to communicate the expectation that students should be given word problems as a regular and significant part of their out-of-class work. Clarify the directions on the student portion of the form. Try to design a way for student work to be assessed by someone other than the tutor who worked with the student. 2. All three measures point to issues in Math 12. More data needs to be collected. Future action may include curriculum development for Math 12 that emphasizes problem-solving with word problems and/or staff development for lab personnel that focuses on the needs of Math 12 students and/or replacing the "by arrangement" lab component with in-class lab.