

Weber State University
Developmental Mathematics Program Review
March 17, 2014

1) Overview/introductory Statement

The program review for the Developmental Mathematics department at Weber State University revealed a program in transition within the College of Science. Following a thorough review of faculty, students, curriculum, and program resources, the evaluation team compliments administration and faculty on strengths in faculty excitement and innovation in addressing student success, impressive facilities in the HUB, and an understanding of the needs of developmental student needs. The Program Review Committee recommends continued movement toward increasing student interaction with faculty in TERM; validating faculty input in regard to changes in instructional approach; planning for focused, on-going professional development, increasing faculty professional status and security; and focusing on appropriate student placement to improve pass rates. Details on program strengths, challenges, and recommendations are listed below.

2) Program strengths (please reference Standard where appropriate)

Program Strength 1. The Developmental Mathematics program is willing and excited to innovate to address success rates. The Developmental Mathematics Program Director is always looking for ways to address student needs and looks to the developmental math research base for solutions rather than popular trends. The faculty are eager to find ways to help students be successful in their courses. (Standards B, C, D, E)

Program Strength 2. Classrooms are adequate for their purpose and the computer structure in the HUB is impressive. The student question request system is an effective way to monitor student needs as students are able to identify their place in the posted queue. Questions are addressed by tutors or faculty in a timely manner. (Standard F)

Program Strength 3. Development math faculty are eager to be involved in the campus community. The faculty are willing and able to do the work of faculty within the academy. As such, they should be afforded the respect and requirements of such members. (Standards E, G)

Program Strength 4. Faculty understand the developmental student population and approach their courses in a student-focused manner. Faculty are focused on helping students be successful and are eager to work with students in whole groups, small groups, or one-on-one. (Standard E)

Program Strength 5. Faculty are excited about the Flipped model of instruction and are buoyed by the student success in those courses. It is evident that faculty are motivated to build on that success. (Standards B, E)

3) Program challenges (please reference Standard where appropriate)

Program Challenge 1. Faculty do not feel engaged with students in the TERM delivery methodology. Lack of student attendance and self-motivation or self-monitoring skills tend to keep them disengaged

from the faculty student interaction. Students visiting the HUB do not always get to see their teacher of record even though their hours in the HUB are posted. The 50 minutes spent face to face is not sufficient time for faculty to understand and know the students individually. (Standards E, F)

Program Challenges 2. In TERM, all the students are in different instructional places so whole class instruction is difficult. Hence the instruction is more focused on procedures rather than conceptual understanding. It tends to be a skill/drill structure, which does not lead to a student's conceptual understanding of mathematics. Research indicates that the once a week model is not effective and in fact the more students and faculty interact the greater the effect of instruction in understanding and success. (Standards B, C, E)

Program Challenges 3. Pedagogical changes have been administratively driven which was repeated by several groups of faculty and staff. There was a strong statement that they felt decisions were top down from senior administrators. They did express that they felt Ms. Van Wagoner supported their needs, however, they were told to implement TERM 100% and voiced a concern that they were told if they would not do it they would be replaced. Change is difficult and changing the culture of any program requires the buy-in of those implementing the change and also the students that will be taking the courses. This seems to be lacking in the adoption of TERM, however, was present in the Flipped classroom as demonstrated by their enthusiasm for the course and the opportunity for the student being successful. (Standard E)

Program Challenges 4. Many changes have occurred in a too short period of time without allowing time for reflection, identifying longer-term trends and needs, as well as seeing if implementation has been effective. Staff is put under too much pressure to keep changing, creating a work environment that is not productive. This rapid-fire change mentality is overwhelming for faculty and creates a struggle to change. (Standards B, C, D, E, F, G)

4) Areas where the program did not meet the Standards and why

Program Concern 1. Poor pass rates. Despite repeated efforts to innovate, student outcomes (pass/success rates) remain low. While recently showing signs of improvement, student outcomes have not yet returned to the levels seen before the move to the TERM model. Even pre-TERM, student outcomes still had substantial room for improvement, even though they were not drastically different from national data. (Standard C)

Program Concern 2. Professional development and mentoring. There are limited resources available to faculty members for professional development. While they can attend conferences, these occur during the regular term and faculty report that finding substitutes is a significant challenge. While many of the faculty are experienced teachers, there would still be benefits from increased collaboration with fellow faculty, additional professional development, and mentoring, particularly of new faculty and adjunct faculty. (Standard E)

Program Concern 3. Course placement. As student options increase (e.g. TERM, flipped classes, online classes) so does the need for advising. Each environment has particular advantages/disadvantages and students should be selecting the format optimal for their own success. Unfortunately, it appears that most students self-select based on other criteria (e.g. what appears easiest, what seems convenient) rather than on their own learning needs. A more pro-active advising approach to place students would be helpful. (Standard D)

Program Concern 4. Student support during courses. There is only one advisor available to the students, and he has little time to help students with learning issues during their courses. If a student has issues with test anxiety, skill retention, etc., there is no dedicated learning strategist/advisor to turn to for help with those kinds of issues. (Standard D)

Program Concern 5. Limited connection to the community. There is poor interaction between Developmental Math and Math and other external communities at the University. They appear to be second-class citizens as demonstrated by their lack of tenure track, reduced pay scales, and year-by-year contracts. They have limited interaction with the university as a whole through institutional committees. This leads to low morale. (Standard G)

Program Concern 6. The curriculum is too broad and shallow. There are too many topics to cover in too little time. This only allows for a skill-and-drill approach which focuses on procedures. Conceptual understanding of the topics is sacrificed in order to accommodate the large number of topics. In addition, there is little understanding of which topics are truly necessary for quantitative literacy (though this is at a minimum a state-wide issue) which prevents faculty from focusing the curriculum on the most important content. (Standard B)

5) Recommendations for change – suggested changes for meeting Standards

Program Review Team suggestions:

Recommendation 1. Full-time faculty in the Developmental Mathematics Dept. do not have job security. They are rehired year-to-year. The faculty feel marginalized, undervalued, and too insecure to offer opinions or suggestions that are not in full agreement with deans and higher management. In addition, they feel like second-class employees. For example, when TERM was introduced, faculty reported that they were told to implement it without any input as to whether TERM was appropriate for Weber students. When one member voiced concern, she was told that if she did not want to teach it, the dean would find another faculty member who wanted to be employed at Weber. This was one of several examples of an overall feeling of not being respected, valued, appreciated, or part of the campus community. For faculty, job security was the biggest concern. Faculty also do not have the motivation to develop new programs when they do not know until summer if they will be hired back in the fall.

Program Review Team suggestion: Implement a tenure process for developmental mathematics faculty. We suggest that to achieve and maintain tenure, the faculty member must have an earned masters degree in mathematics, mathematics education, or a STEM discipline (bachelor in mathematics likely required if the masters is other than mathematics or mathematics education). In addition, tenure track faculty should have required committee work (service), both inside and outside of the department and a minimum annual professional development requirement. These additional responsibilities should be compensated by adjusting the pay scale. Since faculty cannot be tenured to a program, which developmental math currently is, one way of providing tenure might be to reorganize developmental math into a department by including other courses (e.g. Quantitative Literacy, Math for Elementary Teachers) that would be a good fit. (Standard E)

Recommendation 2. Students are currently able to “save” their mathematics graduation requirement for their last semester. They often then find themselves struggling to take and complete their developmental mathematics courses before they can take the graduation requirement course. In

addition, they will have then attempted and/or completed other college courses in which they might have benefited by the knowledge of the mathematics courses.

Program Review Team suggestion: Require students to complete or place out of their developmental mathematics courses before they begin their upper division courses. (Standard D)

Recommendation 3. Faculty teaching online courses reported having students enrolled in their courses who did not ever log into the course or did so only every once in a while. Those students did not complete assignments or participate actively. The students who do not plan on being actively involved are extra administrative work for the faculty. The students are also promoting a culture that is not beneficial for the college community.

Program Review Team suggestion: Students should be dropped from the course at 3 weeks if they have not shown up or logged in. (Standard C)

Recommendation 4. Faculty report that they are so busy teaching all of the required topics that there is no time to explore mathematical content conceptually or in-depth. The pilot of the Pathways course is an initial effort to address this issue, but it likely to meet challenges at the state level.

Program Review Team suggestion: Weber State should take a serious look at defining Quantitative Literacy, and then backwards mapping the required developmental content from there. Not only would this provide guidance if additional testing and implementation of the Pathways model is pursued, it would also give Weber State a solid foundation from which it could discuss these issues at the state level. (Standard B)

Note: Standard H- Program Summary. Program has not had a previous program review

6) Additional recommendations and comments from the review team

Additional Recommendation 1. Many of the students enrolled in Math 950 and Math 990 have learned the content previously. Their last mathematics course might have been two or more years before their assessment test. They place into Math 950 or Math 990, but really just need a quick, intensive review of the content and would then be able to placed into and succeed in Math 1010. They are losing a term(s) by being in TERM and not learning new content.

Program Review Team suggestion: Develop and implement a “boot camp” or bridge program. The logistics would be to take an assessment test and then be given the option to take the course they place into OR to do a three or four-week, intensive, self-directed TERM program to review as much content as they individually need to. They could then retest and place into a more appropriate mathematics course. Consider reviewing ALEKS for this type of program. It is extremely effective for giving directed review.