

The Higher Learning Commission Action Project Directory

Baker College

Project Details		
Title	General Education Math Alignment and Redevelopment Project	Status COMPLETED
Category	1-Helping Students Learn	Updated 09-28-2011
Timeline		Reviewed 10-13-2011
	Planned Project Kickoff 10-30-2009	Created 02-25-2010
	Actual Completion 05-31-2012	Version 2

1: Project Goal

- A:** 1) We will have explicitly stated the quantitative skills that Baker College graduates will possess.
- 2) We will have identified how the general education math curriculum supports the needs of the academic programs in the college.
- 3) Using the college's Academic Improvement Model, we will have built the course or courses necessary to ensure the quantitative literacy of Baker College students. These courses will meet college requirements, including integrated assessments.
- 4) The structures supporting student success, including professional development, department structure, placement tools and other supporting resources will have been revised/redeveloped and deployed as determined necessary through a collaborative development process with faculty and administration.

2: Reasons For Project

- A:** Ongoing growth in the college continues to drive record enrollment in these courses demanding increased action to resolve issues that have proven difficult to address. Further, the college learning outcomes are being revised and with this revision we have an opportunity/need to operationalize the idea of quantitative literacy skills to ensure that we are enacting the institutional outcomes as we intend.

3: Organizational Areas Affected

- A:** The project will primarily impact academics, specifically in the general and developmental education curriculum. However, the impact will radiate across all classes and impact every program (with the exception of 2 certificates that do not require gen ed math).

4: Key Organizational Process(es)

- A:** The key organizational process that will be impacted is the method by which general education outcomes are developed. The process developed as part of this project will be documented, assessed and modified as needed so that it can be used in the future with other discipline areas.

5: Project Time Frame Rationale

- A:** The time frame that has been defined allows for the project to be broken into several phases, each dependent on the previous. The processes instituted by instructional design dictate the time line for the second phase as well as the ending point for the first phase. The final phase is a projection based on the time frames that were necessary for the previous English project.

6: Project Success Monitoring

- A:** The project has been broken into a number of phases, some overlapping and some sequential. These phases provide milestones with completion dates attached so that the project can be tracked to ensure it remains on schedule. The project is currently overseen by a committee chaired by the President of Baker College. The AQIP Council will be updated on a quarterly basis on the progress of the

project.

7: Project Outcome Measures

- A:
1. Written and agreed upon math outcomes in the general education curriculum that support the needs of programs.
 2. Course(s) with embedded assessments and curriculum materials built around these identified outcomes.
 3. An operating process to review student achievement in general education math that will allow ongoing improvement of the course(s).
 4. Process in place to identify support needs of faculty to achieve higher levels of student achievement.

Project Update

1: Project Accomplishments and Status

A: During the 2010-2011 academic year, committees were formed to develop student learning outcomes and create new courses for general education math. One committee focused on writing student learning outcomes and creating courses that reflected the needs of programs as well as the needs of students in a career college setting. This committee determined that an integrated approach to math that crossed traditional course boundaries would best serve the needs of both constituent groups. Therefore, they developed outcomes and created two new math classes that integrated algebra, geometry and statistics. This was accomplished by drawing in individuals from a variety of campuses with varying math backgrounds.

At the same time, a second committee of math educators explored practices at both the high school and college level in an attempt to answer the question: What is college level mathematics? Ultimately, this group developed a list of criteria, some mandatory and some desirable, that they believed represented college level math. The two committees then merged to discuss their individual efforts and to work through the process of determining if the outcomes developed and the courses envisioned met the criteria of college level math. Some parts of the courses were altered and agreement was reached.

Baker College has an instructional design department that uses the "Understanding by Design" model of curriculum development. Once the math committee had determined what the classes were intended to accomplish and some parameters around the course, work began between the content experts and the instructional designers to develop courses. This process starts with broad "Big ideas" and outcomes and then develops into a complete course with assignments, assessments, support materials, etc. These courses are currently working through this process.

The third task achieved this year was to hold meetings between the math program officials and officials in other programs so that each program was aware of the new courses and could work to determine if the new courses were the best fit for their program or if the old continuing courses were a better fit. As anticipated, many programs saw the new courses as the best fit and have started the process of modifying documents related to course lists, pre-requisites, and advising materials to be prepared for the launch of the new courses fully in the fall of 2012.

2: Institution Involvement

A: As noted in last year's update, the project started as a very broad based project that included large faculty representation from all campuses as well as surveys of every program and group meetings held on each campus to collect information about needs and expectations. In the past year, the phases of the project focused on have involved a smaller contingent. A group of faculty from the math area constituted the membership of the two committees, with additional involvement of some senior leadership and an instructional designer. These teams represent the content experts necessary to develop the specific curriculum needed.

A broader group was brought in to the project through program meetings. Programs hold quarterly meetings where program officials and faculty meet to deal with specific needs and challenges. Leaders from the general education math area participated in these program meetings during this past academic year to update everyone at the meetings about the project's achievements, and to help explain the new courses so that each program could determine if the new courses or old courses better fit their needs. In this way, the project reached out to every program within the college to provide updates and gain buy-in.

3: Next Steps

A: The next step for this project is to test the new classes by running several sections. This will allow the content experts to work with the instructional design staff to revise and improve the courses before they are rolled out in the fall of 2012. This revision process is important as we seek to understand issues of pacing as well as the impact specific assignments have on students.

In addition to a revision of courses, processes must also begin for the development of standardized assessments. While initial assessment materials can be developed, data will have to be collected as the courses are actually implemented to verify reliability and understand validity. A waiver test must be developed and appropriate cut scores will need to be determined. As well, the college uses the COMPASS test to help place students. Student achievement in the new classes will need to be tracked and correlated with COMPASS scores to ensure that this placement test continues to deliver the expected prediction.

The project has also undertaken a review of the department structure of the general education math division. The intent is to improve communication, workflow processes, and consistency in work across campuses. A proposal has been developed to increase the number of full- and part-time faculty in the department, add math labs on each campus to increase tutoring opportunities, and improve professional development and support. These ideas mirror early steps that were taken in a similar AQIP project that focused on general education English courses and department needs.

4: Resulting Effective Practices

A: This project attempted to implement a new process that sought to have one group of experts independently corroborate the work of another group. There was concern among some faculty that new courses would not reflect the appropriate rigor to be considered college level course, and a specific process was instituted to ensure that any new courses targeted the proper level of achievement. This process was cumbersome and it is recognized that in spite of the work, some faculty may still choose to challenge the rigor of the final courses. In spite of this, the concept is considered to be worthwhile and will be used in the future as we seek to ensure quality.

A second practice that this project undertook that we believe has been worthwhile was a process of programs before work on any new general education course was developed. Programs expect general education courses to result in certain types or levels of student learning. It was very important for the general education faculty to understand what the program faculty and officials expected of them. Through surveys and small group meetings, these expectations were made explicit. The general education department was then able to respond directly and clarify which of the expectations/needs could be met, and which could not be met. In the case of expectations that could not be met, programs then knew that either additional math courses would be required of their students, or specific math skills would need to be developed within program courses.

5: Project Challenges

A: The biggest challenge facing the project at the present time is the implementation of new courses. Advising materials, computer systems, old catalogs, etc. all contain program information that refers to courses that may no longer be the best courses for a student to take. Additionally, over the next few years, programs will have students enrolled that may have taken the old course (if the student is moving slowly through the program) or completed the new course(s). This may present challenges in the classroom. For instance, students taking the new general education math class MTH108 will have some exposure to statistics that students who completed the old MTH111 course will not have had. Instructors will need to keep this in mind and respond appropriately based on the makeup of their class.

Another anticipated challenge is presented by students who change majors. A student may start at the college in a program that requires the MTH 108 - 109 sequence and then change to a program requiring the MTH 111 - 112 sequence. Decisions must be made about whether students will be required to repeat the sequence, repeat one course in the sequence, or address the slightly different course outcomes in an alternate fashion. Similarly, the skills in 108 do not prepare students for 112 as directly as 111. If students change programs before they have completed both courses, will they start at the beginning repeating 1 course, or will they be allowed to move to the next course making up any knowledge deficits through work in the learning support center or elsewhere? While these instances will be infrequent, they must be addressed. Discussions on these topics continue and will need to be resolved before implementation.

Update Review

1: Project Accomplishments and Status

A: Baker has created an ambitious project that is reasonably progressing. The sequence of steps seems logical, and the College has created a process for feedback from its internal constituencies. A high performance organization exhibits the characteristic of involvement, and Baker has designed a process that shows it is aware of the need to involve a broad constituency. Baker reports that the other program areas have been supportive of the course redesigns. It seems possible that asking other programs for input during the design process might have garnered even more support from other programs. It might also be useful to involve external constituencies (graduates, local businesses, and so forth) as the course designs are finalized. Using the *Understanding by Design* principles to engage other department's faculty might help the Math department "start with the end in mind" for the course redesigns.

2: Institution Involvement

A: Baker's response to this section indicates the College values its people. The College began the project by surveying each program for concepts and then began the course redesign process. It is not clear what involvement other program faculty had after the initial survey - whether the results were shared. It seems Baker has the right idea, but it might be beneficial for the College to not just provide updates and gain buy-in for these changes, but also be sure to remain open to feedback from other programs that might have good ideas for tweaking the course content.

3: Next Steps

A: This is a logical next step for this project, and a very important part of implementing the new courses. It might be beneficial for Baker to consider the planned implementation of this course-testing process. For example, will students be randomly assigned to the new course sections, or does the College plan to allow for a self-selection into the new class sections? The math professors should be able to work with the instructional designers not only as the courses are developed, but also to design a statistically valid test of the new course design. Baker has demonstrated it is taking multiple factors into consideration, and is not simply rushing to implement a new course series without testing the new design.

4: Resulting Effective Practices

A: Baker states "this project attempted to implement a new process..." leading one to conclude this was not successful as a resulting effective practice. The College goes on to say "...the concept is considered to be worthwhile and will be used in the future." It might be beneficial for the College to clarify if this is an effective practice, or if the College has created an effective practice based on what it has learned from this experience. Baker also states that a resulting effective practice of this project is that general education faculty have an improved understanding of the needs of other programs. This is not a small accomplishment, and it might be possible to expand this effective practice to intra-program discussions among faculty.

5: Project Challenges

A: Baker has outlined a list of challenges it faces as this project is implemented, and it is evident that Baker has given considerable thought to this project. It might be worthwhile to create a special course equivalency chart for advisers to use; it might also be worthwhile to consider creating modules (online and/or on ground) that could help bridge the gap for students who started the sequence in the old format and will complete the sequence in the new format.

Project Outcome

1: Reason for completion

A: This project was designed to support the development of new math classes at the college that sought an integrated approach to learning math at the college level. This goal has been attained with the development and implementation of MTH108 and MTH 109. Additional work will continue to support the faculty teaching these classes and ensure the courses are at the highest level. However, the project has reached a reasonable conclusion and can be successfully closed as an AQIP project.

2: Success Factors

A: The primary objective of creating new, integrated classes was achieved. The two classes are:

- MTH 108 College Math 1 : Reasoning and Contemporary Application - Associate and Certificate level course focused on statistics, financial, geometry, and algebra concepts
- MTH 109 College Math 2: - Bachelor level course focused on modeling of real-world data and statistics

In addition, the project prompted a re-evaluation of placement testing and the use of COMPASS. A decision was made to retain current practices. A waiver test for MTH 108 was developed allowing students with sufficient skills to test out of this basic class and enter a higher level math course. The developmental math class MTH 099E was also re-evaluated to determine if students completing the class would be adequately prepared for the new MTH 108 course. As a result, some changes were made to increase the rigor of MTH 099E.

The project was also successful in promoting a broad-based conversation about the role of math in higher education as well as in specific career programs. Departments throughout Baker College had to evaluate the specific math needs of their graduates for the careers they were preparing for. Each department had to determine if their graduates would be best served by the new MTH 108-109 courses or the traditional courses. This not only promoted an increased look at math education, but also ensured college-wide involvement in the development and implementation of the resulting curriculum.

3: Unsuccessful Factors

A: The project took longer to complete than originally anticipated. There was fear among some faculty that the new math sequence would be less rigorous and not serve students well. As a result, very thoughtful planning led to numerous meetings between the project leaders and faculty throughout the institution. At each step, efforts were made to keep everyone informed, demonstrate the reasons for decisions being made, and seek to re-assure stakeholders that the resulting courses would be rigorous and meet student needs. Once developed, departments wanted time to review courses and carefully consider their use. As anticipated, the new courses have been widely adopted for many programs although some recognize the benefit of the more traditional approach so those classes will remain available.

The project originally sought to develop a model that would allow Baker College to compare its courses to courses at other institutions as a check that new classes met the rigor and relevance expected by academics in general, not just those at Baker College. The process used was informative and helped to understand how our courses matched those at other institutions. However, the benefits from the process in terms of better understanding and creating curriculum were not commensurate with the resources involved in making the comparison. The model is not likely to be retained as it was used here.