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LEARNING LOG

Math at the Root of Success (MARS) - the re-engineering of Intermediate Algebra

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DETAILS

MAKING IT WORK, UNDERSTANDING WHAT WORKS, AND SHARING WHAT WORKS

TITLE

Math at the Root of Success (MARS) - the re-engineering of Intermediate Algebra

SOLUTION

Developmental Education Reform and Supports for Learning

CAPACITIES

Institutional Research

Owner

Christina Hart (/education/s/profile/005360000046lyGAAQ)

Record Type

Monthly-Current 2017

INSTITUTION

Indian River State College

REFLECTION

SITE INITIATIVE

College math readiness is a pervasive issue in higher education, especially in community colleges, with large numbers of students referred for developmental mathematics and low success rates in gateway and foundational mathematics courses. This problem impacts the likelihood of college completion and presents an obstacle especially for students in pursuit of a STEM career. Indian River State College's Math at the Root of Success (MARS) initiative, originally launched as our SACSCOC Quality Enhancement Plan, is a data-informed action research project focused on the redesign of gateway math to improve first attempt course success rates and increase the number of students transitioning to general education math. Alternative deliveries have been implemented for Intermediate Algebra (MAT1033) and a new gateway math option, Quantitative Reasoning (MAT1100), has been introduced for students who do not require College Algebra to complete their program of study.

PROGRESS TOWARD STUDENT SUCCESS

In 2012, examination of institutional data revealed that MAT1033 (Intermediate Algebra) was a significant barrier to completion at IRSC. Review of the data indicated that only 7% of the students who fail Intermediate Algebra ever graduate. The QEP committee consulted with peer institutions and engaged in a review of the literature regarding evidence-based interventions to improve student learning in mathematics, and especially Intermediate Algebra. Based on this initial research, a supplemental emporium delivery was introduced for MAT1033, in addition to the traditional lecture format. Since then, analysis of course success and subsequent course success data, input from the math department, and feedback from focus groups of students, faculty, and tutors involved in the program has led IRSC to offer five different deliveries for MAT1033 – traditional lecture, the supplemental emporium, a hybrid emporium, a flipped emporium, and a virtual mastery model for online learners. Discussion of the needs of students on a non-algebra track prompted the math department to introduce the collaborative-learning course MAT1100 (Quantitative Reasoning) for those students.

IMPACT

The objectives of the MARS project are increased course success rates in gateway math and increased completion rates as the gateway math barrier is addressed. Course success rates have been very encouraging: in 2012-2013, prior to implementation of the MARS project, course success for MAT1033 was 57%, in 2015-2016 that improved to 68% and course success for MAT1100 was 81%, while embedded assessments and subsequent course success rates suggest no compromise in learning. 2013-2014 was a transitional year so the first group of students associated with the MARS project enrolled in gateway math in 2014-2015. Early results are promising, and complete three-year completion data will be available end of summer 2017. In addition to these measurable outcomes, feedback from students, faculty, and tutors through regular focus groups has been very positive. Impactful strategies are now being scaled in other courses/disciplines with additional areas expected to be added in the future.

INTERNAL/EXTERNAL RESOURCES

As mentioned previously, early on lead faculty and staff involved with this project conducted extensive research including visits to other colleges, conference call/phone interviews, review of the literature and available articles etc.. Visits to colleges included several within the Florida College System, Florida Atlantic University, and the University of Central Florida - to name a few. Internal resources that have played a pivotal role are having academic tutors in the classrom alongside the faculty member teaching the course, expanded computer lab space for the supplemental emporium model and a full-time QEP Manager who oversees the labs on five campuses collaborating schedules working alongside the Math faculty and tutors. .

NEXT CRITICAL STEPS

We are in the process of expanding aspects of this action-research project with other disciplines. Biology, College Algebra, Chemistry and Accounting have incorporated certain aspects of the MARS project into their course design; including, diagnostics, embedded tutors, TutorTrac and active learning strategies. The next step is to continue to scale successful practices and strategies to additional disciplines and to expand the QEP version and delivery of Intermediate Algebra into the other sections of this course.

OPPORTUNITIES/CHALLENGES

Opportunities and Challenges we've experienced frame the following advice to other colleges:

1. Truly embrace the data-informed action research model: identify and clarify the problem, collect and analyze data, develop and implement a plan of action, evaluate the results, make changes as needed, repeat for continuous improvement.
2. Collect and analyze both qualitative and quantitative data to understand the problem and determine what's working, what's not, and why.
3. Constant communication between faculty, staff, and administration is essential.
4. Targeted professional development is necessary for everyone involved in the project, but don't overlook expertise within your own institution.
5. Cross departmental boundaries to explore pedagogy and practical strategies.
6. Be prepared for challenges, expect setbacks.

QUESTIONS/REQUESTS

Very interested in learning what other colleges/states are doing to address the elimination of Developmental Education and Gateway Math? Also experience using co-reqs in college credit gateway Math courses?

STATUS

Final

Completion Date

5/31/2017

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STATUS

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