The Success Equation: A QEP for General Education Math Courses That Works

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QEP Director

Overarching Goal:
Improve student learning in general education quantitative gateway courses

MAC1105--College Algebra
MGF1106--Finite Mathematics
STA2023--Introductory Statistics I

Goals of the QEP

- Improve student learning as measured by quantitative Student Learning Outcomes (SLOs)
- Decrease number of students earning Ds, Fs or withdrawing (DWFs)
- Minimize math anxiety
- Improve performance on nationally normed measure of quantitative literacy
- Increase self-perceived knowledge of mathematics & quantitative literacy

Improving student learning and satisfaction in gateway math courses
Implementation Plan

- Unique teaching and assessment strategy
- Coordinated courses
- MyMathLab
- Early, active intervention coordinated with Academic Advising
- Support from Student Success Center

Jam, Quest, ReQuest

- Chunking the course content into two week units
- Providing a short formative assessment after each unit
- Ensuring prompt feedback on the formative assessment
- Supporting students in learning from their mistakes
- Second chances on parallel assessment
- Only the higher of the two scores counts
- Students are never penalized for trying again

The Quest

- Tests can trigger anxiety
- Quests have the hint of adventure!
- Every other week
- Roughly 10 questions, 2 points each
- Only two weeks worth of material
- Graded and returned at the beginning of the next class
Jam First!
- Interactive, student led review, questions & answers
- Spontaneous learning, builds confidence
- Students ask, answer, share ideas
- Students self-select their level of involvement
- Faculty acts as consultant

ReQuest
- A second chance
- Learn from mistakes
- No penalty for trying again
- Online & proctored
- Master material & move on
- No more getting hopelessly behind
- Results immediately

Overall, 58% of ReQuests result in improved scores

Goal 1: Improve Student Learning

Percent of Students Demonstrating Math Competence on GE SLO's

<table>
<thead>
<tr>
<th>Course</th>
<th>M1</th>
<th>M2</th>
<th>M3</th>
<th>M4</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC1105</td>
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<tr>
<td>MGF1106</td>
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<tr>
<td>STA2023</td>
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<tr>
<td>Total</td>
<td></td>
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</table>
Goal 2: Increase Student Success

<table>
<thead>
<tr>
<th>Course</th>
<th>N</th>
<th>ReQuest Attempts (Improved Scores)</th>
<th>Pass Rate (No ReRequests)</th>
<th>Pass Rate (ReRequests)</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Algebra</td>
<td>1128</td>
<td>1834 (50%)</td>
<td>600 (53%)</td>
<td>720 (64%)</td>
</tr>
<tr>
<td>Finite Math</td>
<td>357</td>
<td>557 (68%)</td>
<td>218 (61%)</td>
<td>278 (78%)</td>
</tr>
<tr>
<td>Introductory Stats</td>
<td>625</td>
<td>665 (69%)</td>
<td>343 (55%)</td>
<td>409 (65%)</td>
</tr>
<tr>
<td>Total</td>
<td>2110</td>
<td>3076 (58%)</td>
<td>1161 (55%)</td>
<td>1407 (67%)</td>
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</tbody>
</table>

Goal 3: Minimize Math Anxiety

<table>
<thead>
<tr>
<th>Course</th>
<th>N</th>
<th>Decrease in Math Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Algebra</td>
<td>426</td>
<td>232 (54%)</td>
</tr>
<tr>
<td>Finite Mathematics</td>
<td>254</td>
<td>185 (73%)</td>
</tr>
<tr>
<td>Introductory Stats I</td>
<td>357</td>
<td>165 (46%)</td>
</tr>
<tr>
<td>Total</td>
<td>1037</td>
<td>582 (56%)</td>
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</tbody>
</table>

By the end of the course
✓ Adaptive anxiety correlated positively with course scores
✓ Maladaptive anxiety was not significant in relation to course scores
✓ More students agreed/strongly agreed with every positive affect item
✓ More students disagreed/strongly disagreed with every negative affect item


Get Into a Student Mindset

- How anxious are you about taking a college level math class?
- How would you react inside if you heard you were taking math using Jam, Quest, ReQuest?
- What would help you feel safe asking questions in class?
- What would motivate you to prepare for class?
- How would you decide whether or not to take a ReQuest?
Setting The Stage For Jams

- Growth mindset—questions, confusion, and mistakes
- Classroom turf
- Students at the board every day starting with day 2
- Attendance quizzes/Readiness Assessments (RAts)

The Secrets Behind Quests & ReRequests

- Philosophy and purpose
- Types of questions
- Grading (what they did right)
- Formative feedback to support growth mindsets

Misunderstanding ReRequests

- “Harder”
- All or nothing grading
- Preparation
- Glitches
- Lack of time
- They show up late
How can we support our students?

✓ Sharing our own hopes for our students
✓ Creating a safe learning environment
✓ Emphasizing learning (mastery goals), not grades (performance goals)
✓ Including students in discussions about meaningful & achievable goals
✓ Providing pathways for students to achieve course goals
✓ Motivating students with engaging and inspiring instructional strategies
✓ Demonstrating care and commitment to students

Please feel free to contact me with questions, ideas, or comments.

Thank you.

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