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University of South Florida St. Petersburg Quality Enhancement Plan Impact Report

University of South Florida St. Petersburg.

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University of South Florida St. Petersburg

Quality Enhancement Plan Impact Report

Submitted to the
Southern Association of Colleges and Schools
Commission on Colleges

March, 2017
University of South Florida St. Petersburg Quality Enhancement Plan

Executive Summary

Submitted to SACSCOC in February, 2011

The Success Equation:
A Model for Enhancing Student Learning in Gateway Mathematics and Statistics Courses

For its Quality Enhancement Plan (QEP) the University of South Florida St. Petersburg (USFSP) has selected The Success Equation: A Model for Enhancing Student Learning in Gateway Mathematics and Statistics Courses.

During the summer and early fall of 2009 the Chancellor issued a university-wide call to faculty members, students and staff for QEP proposals. The QEP Committee received 20 proposals, with four of these proposals emerging as finalists through a structured review and selection process: (1) Lead Learn Serve; (2) Difficult Dialogues; (3) Green Learning; and (4) The New Math. The authors of these final four proposals made presentations to the QEP Committee and each plan was evaluated using a rubric developed from SACS QEP guidelines. The committee unanimously selected The New Math, a proposal submitted by a full-time mathematics faculty member and forwarded its recommendation to the Chancellor and her leadership team. During spring of 2010 the QEP Committee developed the QEP idea into a proposal on Quantitative Literacy and completed a working draft at the end of the Spring 2010 semester. This working draft was used by the university leadership team in preparing the institution’s Compliance Certification Report which was due to SACS in September. Shortly after the September 2010 submission to SACS, Dr. Marcy Stoll, a SACS Vice President, made an advisory visit to campus in preparation for the reaffirmation site visit in February of 2011. In addition, Dr. Stoll reviewed the working draft of our QEP proposal and provided the committee with feedback. After consideration of her comments, the scope of the original QEP was focused and refined into its current form.

The Success Equation QEP proposal emerged from assessment of institutional data which revealed that as many as one-half of the students taking gateway math courses receive Ds, Fs, or Ws. These data defined a real, measurable problem in student learning on campus. This QEP is intended to address this problem in an innovative, feasible way through a theoretically grounded, comprehensive student success model. Enhancing student success in mathematics gateway courses also matched well with the newly adopted (January 2010) USFSP strategic planning Goal #1 focused on Academic Performance, namely: 1.1: Use sustained evidence of student learning outcomes and student achievement for continuous improvement, and 1.4: Enhance programs that specifically support academic excellence.

The Success Equation QEP directly addresses student success and is founded on three key elements: (1) structured mathematics curriculum supplemented by innovative computer assisted drill and practice modules which provide opportunities for students who performed poorly on exams to improve their performance and earn a score that facilitates passing the course; (2) specialized pedagogical training for faculty and math tutors; and (3) specialized support from the USFSP Student Academic Success Center. Guided by Bloom's Taxonomy of Learning Domains, both the definition of numeracy and the Success Equation are grounded in the theoretical concepts that learning is developmental and incremental, and mastery of knowledge at the cognitive (highest level) is dependent on the fundamental skills of comprehension, utilization, estimations, and judgment of knowledge.

The Success Equation QEP establishes a robust assessment and reporting plan with multiple direct and indirect measures of success, and a continuous cycle for data collection, analysis, and reporting. At the core of our assessment strategy are specific and measurable goals. The primary goal of the USFSP QEP is to improve student learning through the application of the Success Equation. Student learning will be documented and measured by performance on three fundamental student learning outcomes (SLOs) imbedded within the university’s general education quantitative gateway courses (College Algebra, Finite
Math, and Statistics), and also on specified course-level outcomes. The general education outcomes specify that students will demonstrate the ability to (1) estimate and apply arithmetic, algebra, geometry, and statistics appropriately to solve problems, and have an awareness of the relevance of these skills to a wide range of disciplines; (2) represent and evaluate mathematical information numerically, graphically and symbolically; (3) comprehend mathematical arguments, formulas, and graphical representations, and use these to answer questions, understand the significance of the results, and judge their reasonableness. For the additional course-level outcomes, the math faculty has identified additional student learning outcomes specifically tailored for each course, mapped to critical assignments in examinations and a common final examination.

The secondary goals of the QEP include: (1) decreasing the number of students receiving Ds, Fs, and Ws; (2) improving performance on the nationally-normed measure of quantitative literacy (measured via the ETS Proficiency Profile); (3) minimizing math anxiety; and (4) increasing perceived knowledge of mathematics (measured via the National Survey of Student Engagement).

Lastly, the QEP has identified four administrative goals: (1) adequacy of key personnel; (2) adequacy of resources; (3) faculty and tutor development and training; and (4) continuous communication and feedback with the campus community. In the fourth year, external evaluation by an expert in mathematics education will help us to assess our goals. The QEP, in its totality, will be assessed annually using the same review process that USFSP employs to assess all of its other administrative and educational support functions (Administrative Unit Reviews), as well as academic programs (Academic Learning Compacts).

Institutional accountability for the management and implementation of the QEP rests with the Vice Chancellor for Academic Affairs (VCAA). The QEP Director is responsible for day-to-day management and for ensuring that all elements of the plan are on track. The QEP Co-Director will work with the faculty in finalizing the course development and implementation protocols which are presently already under development. The QEP Director will communicate with the Dean of the College of Arts and Sciences in whose college all of the target courses reside and the Director will be asked to provide annual review information to the CAS Dean for faculty who are participating in the project. As of October 2010 the Director position was being advertised and we hope to have that person in place in the spring of 2011. When the Director is in place, the QEP Committee will transition to an Advisory Committee providing periodic strategic and tactical review and advice and also serve as a resource to the QEP Director for budget and program review and, if necessary, modification.
University of South Florida St. Petersburg Quality Enhancement Plan Impact Report

The University of South Florida St. Petersburg’s mission is to “inspire scholars to lead lives of impact.” In support of that mission, the first of USFSP’s core values is student-centered success. Administrators, faculty members, staff, and students worked together to assess institutional data and determine the focus of the QEP; to support student success in the gateway math courses. These general education courses can be obstacles to student success and may have an impact on student choice of majors, retention, and persistence to graduation. The resultant QEP, The Success Equation: A Model for Enhancing Student Learning in Gateway Mathematics and Statistics Courses provides for structured mathematics curricula supplemented by innovative, computer-assisted learning tools, pedagogical training for mathematics and statistics faculty members and tutors, and specialized support from the USFSP Academic Success Center, which was renamed as the Debbie Nye Sembler Student Success Center (SSC) in February, 2016. The three general education quantitative courses with the highest enrollment are the focus of the QEP, namely MAC1105—College Algebra, MGF1106—Finite Mathematics, and STA2023—Introductory Statistics I.

Section 1: Initial Goals And Intended Outcomes Of The QEP

The initial academic goals of the QEP were:
1. Improve student learning as measured by the General Education Quantitative Student Learning Outcomes (SLOs);
2. Decrease the number of students earning Ds, Fs, or withdrawing (DFW) from the gateway mathematics and statistics courses;
3. Minimize math anxiety in the gateway mathematics and statistics courses;
4. Improve student performance on a nationally normed measure of quantitative literacy, the ETS Proficiency Profile;
5. Increase student self-perceived knowledge of mathematics as measured using the National Survey of Student Engagement (NSSE).

The initial administrative goals of the QEP were:
1. Ensure adequacy of key personnel;
2. Ensure adequacy of resources;
3. Provide faculty and tutor development and training;
4. Engage in continuous communication and feedback with the campus community.

Implementation actions of the QEP included:
1. Create and maintain structured mathematics curricula;
2. Provide student support at the Student Success Center (SSC);
3. Provide ongoing pedagogical training for faculty and SSC math tutors;
4. Ensure adequate QEP administrative infrastructure.

The original anticipated outcomes of the QEP were:
1. At least 60% of students will demonstrate competence at the 60% level for all General Education Student Learning Outcomes based on selected items on exams;
2. Increase the number of students passing the comprehensive final exams to 60%;
3. Increase the number of students passing each course to 60%;
4. At least 60% of students will experience a decrease in math anxiety over the course of the semester;
5. At least 60% of seniors will score significantly higher than freshmen on the ETS Proficiency Profile;
6. At least 60% of seniors will score significantly higher than freshmen on the NSSE quantitative items;
7. At least 60% of students will use MyMathLab/MyStatLab software with no additional prompting;
8. At least 60% of students who receive early warning referral will actually attend the SSC;
9. At least 60% of students will be satisfied with SSC tutoring and other services;
10. Faculty will be satisfied with SSC tutoring and other services;
11. At least 60% of students will be satisfied with the early warning system;
12. Faculty will be satisfied with the early warning system.

The 60% threshold was chosen because it represented what was thought to be necessary to “keep students in the game” (i.e., that they still have a chance to pass the course).

Section 2: Changes Made To The QEP

Several changes were made in the leadership and organizational structure of the QEP, implementation timeline, instructional strategies, and assessment of some of the anticipated outcomes after this QEP was approved in 2011.

The original QEP Director, hired after the QEP was approved, left USFSP in the summer of 2012. Leadership of the QEP reverted to the QEP Advisory Committee and two math faculty members who were responsible for creating and maintaining the curriculum. Ultimately, one of these instructors was appointed as the QEP Director in the fall of 2014. During the interim, it became clear that in order to provide sound leadership and faculty support, the QEP Director needed to focus exclusively on QEP implementation and assessment. Leadership of the SSC required specialized training and skills, distinct and separate from those needed for leadership of the QEP. A full time Assistant Director was hired to lead the SSC. The QEP Director would have full and sole responsibility for the QEP, seeking guidance as needed from the Regional Vice Chancellor for Academic Affairs. At that point, it was determined that a QEP Co-Director was needed.

The QEP implementation timeline shifted to accommodate the course redesign that was needed for curricular alignment and creation of the coordinated courses under the new leadership of the QEP. The coordinated course curricula provided common syllabi, homework, pacing, assessment, and grading policies for all sections of each QEP course, across semesters. MAC1105—College Algebra was redesigned with a new text, College Algebra by Lial, Hornsby, Schneider, and Daniels, ran as a QEP pilot course in the fall of 2012, and fully implemented the QEP strategies in the spring of 2013. MGF1106—Finite Mathematics was redesigned with a new text, Thinking Mathematically by Blitzer, ran as a QEP pilot course in the spring of 2013, and was fully implemented in the spring of 2014. STA2023—Introductory Statistics I was redesigned with a new text, Elementary Statistics by Triola, ran as a QEP pilot course in the fall of 2014, and was fully implemented in the spring of 2015.

The original QEP recovery option allowed students who earned below a 60% on an assessment to complete additional worksheets and/or retake the assessment to earn up to a 60% on the assessment in the hopes of being able to pass the course. The recovery option could be used at any point in the semester, for example, a recovery for a failure on the first exam could happen at the very end of the semester. Fewer than 20 students used this option. Most of the students who made the recovery attempt did so at the end of the course. This strategy, while intended to support learning, did not motivate students to use the option.

A new strategy called Jam, Quest, ReQuest was incorporated into the QEP implementation plan starting in the fall of 2012. Course content was “chunked” into two week units. Each unit was followed by a “Quest”, a short, formative assessment using an open answer format. Graded Quests were returned to students during the next class meeting, providing timely feedback for optimal learning. “Jams” were student-led review and cooperative learning sessions, held in class, immediately prior to each Quest. Students reaped the benefits of highly teachable moments as they clarified the material and gained confidence. Jams contributed to a safe learning environment where questions were welcome and confusion was accepted as part of the learning process. “ReRequests” were developed as a modified QEP recovery option. Each ReQuest covered the same key concepts as the corresponding Quest, using unique questions, not simply the “old” questions with “new” numbers. Outside of class time, students, working alone or in groups, were encouraged to address any learning gaps identified by the Quest by seeking tutoring at the SSC, working with faculty members, or using the study tools in MyMathLab and the text. Students had the option to take one ReQuest for each Quest, prior to the next biweekly in-class Quest, regardless of their score on the in-class Quest. Students took ReRequests using MyMathLab in a
proctored setting, the Math Recovery Center. Paper ReRequests were available for those students who felt uncomfortable with computer based assessment. MyMathLab graded the online ReRequests automatically and provided immediate results to students and instructors. Paper ReRequests were hand graded by the course instructors. A total of seven Quests and ReRequests were given in MAC1105—College Algebra and six were given in the other two QEP courses. Students earned the higher of the Quest and ReRequest scores. There was no penalty for a lower score. This change in strategy necessitated a change in the grading policy for the QEP courses, as shown in the table below.

**Components of Students’ Grades in QEP Courses**

<table>
<thead>
<tr>
<th></th>
<th>Homework</th>
<th>Quizzes</th>
<th>Tests (best 3 of 4)</th>
<th>Quests</th>
<th>Attendance</th>
<th>Software Use</th>
<th>Final Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original</td>
<td>15%</td>
<td>15%</td>
<td>40%</td>
<td>5%</td>
<td></td>
<td>5%</td>
<td>20%</td>
</tr>
<tr>
<td>Revised</td>
<td>20%</td>
<td></td>
<td>60%</td>
<td></td>
<td></td>
<td>5%</td>
<td>20%</td>
</tr>
</tbody>
</table>

Implementation of the assessment of some of the QEP anticipated outcomes also changed.

- It was decided by the QEP Advisory Committee, participating faculty members, and the Regional Vice Chancellor for Academic Affairs that setting a benchmark of students demonstrating competence at the 60% level for all General Education Student Learning Outcomes was insufficient because a 70% final course score was needed for a passing grade. The revised anticipated outcome was that at least 60% of the students would demonstrate competence in the General Education SLO’s by correctly answering at least 70% of the associated questions on the comprehensive final exams.

- In the fall of 2015, as part of a new statewide requirement, USFSP adopted the new state and institutional General Education SLO’s, so assessment shifted to meet this change. Three of the new SLOs corresponded closely with the former SLOs. The fourth SLO was assessed by using the students’ final course scores. The new SLOs are:

  - **M1:** Students will determine appropriate mathematical and computational models and methods in problem solving and demonstrate an understanding of mathematical concepts.
  - **M2:** Students will apply appropriate mathematical and computational models and methods in problem solving.
  - **M3:** Students will demonstrate the ability to accurately calculate and solve arithmetic, algebra, geometry, and statistical problems.
  - **M4:** Students will demonstrate the ability to represent, comprehend, and evaluate quantitative problems numerically, graphically, symbolically, in a tabular way, and/or in a written argument.

- Anticipated outcomes 2 and 3 were re-worded for clarity and consistency to read “increase the percentage of students passing the comprehensive final exams to 60%”, and “increase the percentage of students passing each course to 60%”.

- Anticipated outcomes 5 and 6 were modified to compare USFSP students’ results with those of peers at other Carnegie Master’s Comprehensive Institutions for more meaningful insights into the impact of the QEP. More than half of the students graduating from USFSP are transfer students, so comparison of seniors to freshmen is not indicative of the impact of the QEP.

- Anticipated outcome 11 was modified. The early warning system is intentionally transparent to students to avoid creating a sense of discouragement, stigma, or hopelessness. Faculty members make early warning referrals only after attempting to support students who are at risk of failing by submitting an alert online. One “point of contact” staff member in Academic Advising receives all alerts and then connects the relevant campus personnel to support the student. Other faculty members who teach referred students may be asked about student behavior and progress. The Wellness Center and other Student Affairs personnel may also be asked to assist. Students may also be contacted by their academic advisors, peer mentors, or the SSC. Although students are not aware of the behind-the-scenes work being done on their behalf, they receive support and intervention from
multiple sources without any stigma attached to that support. The anticipated outcome is that at least 60% of the students who receive referrals will be given support that contributes to their re-engagement and participation in the course.

- The resignation of the Director of Institutional Research in February, 2014 resulted in gaps in the collection of data via the ETS Proficiency Profile and the NSSE. These assessments were resumed in the fall of 2015 and the spring of 2016, respectively.

**Section 3: Impact on Learning and the Learning Environment**

**Revised Anticipated Outcome 1:** At least 60% of the students will demonstrate competence at the 70% level for all General Education Student Learning Outcomes based on selected items on final exams and final course scores.

This goal was met or exceeded every semester for every SLO by students in MAC1105—College Algebra. Students in MGF1106—Finite Mathematics and STA2023—Introductory Statistics have met or exceeded the goal for most of the SLOs every semester.

**Percentage of Students Demonstrating Competence on General Education SLOs**

**Revised Anticipated Outcome 2:** Increase the percentage of students passing the comprehensive final exam to 60%.

This goal was met or exceeded by students in the QEP math courses. Overall, 68% of the students in the QEP mathematics courses have passed their final exams with scores of 70% or better. Prior to the QEP only 45% of all of the students in these courses passed their final exams.
Revised Anticipated Outcome 3: Increase the percentage of students passing each course to 60%.

This goal was met or exceeded for all QEP mathematics courses. Student success rates are provided for all three courses in the table below.

**Percentage of Students Passing QEP Math Courses (Final Course Score > 70%)**

<table>
<thead>
<tr>
<th></th>
<th>STA2023</th>
<th>MGF1106</th>
<th>MAC1105</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-QEP Sp 2015</td>
<td>60%</td>
<td>78%</td>
<td>69%</td>
</tr>
<tr>
<td>Pre-QEP Fall 2015</td>
<td>69%</td>
<td>82%</td>
<td>75%</td>
</tr>
<tr>
<td>Pre-QEP Sp 2016</td>
<td>78%</td>
<td>88%</td>
<td>81%</td>
</tr>
<tr>
<td>Pre-QEP Fall 2016</td>
<td>77%</td>
<td>97%</td>
<td>80%</td>
</tr>
</tbody>
</table>

To examine the impact of taking ReRequests, students’ grades were calculated based on only the in-class Quest grades, disregarding improved scores on ReRequests. The results are summarized in the table below. Of the 2652 students who completed a QEP math course, 298 (11%) more students passed the courses because of improved scores on ReRequests than would have passed if ReRequests were not available. Fifty-nine percent of the time students attempted a ReQuest they improved their scores over the corresponding original Quest.
Impact of ReQuests on Student Success

<table>
<thead>
<tr>
<th>Course</th>
<th>N</th>
<th>ReQuests (Improved Score)</th>
<th>Pass Rate No ReQuests</th>
<th>Pass Rate ReRequests</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC1105</td>
<td>1331</td>
<td>2106 (51%)</td>
<td>731 (55%)</td>
<td>872 (66%)</td>
</tr>
<tr>
<td>MGF1106</td>
<td>416</td>
<td>672 (67%)</td>
<td>263 (63%)</td>
<td>330 (79%)</td>
</tr>
<tr>
<td>STA2023</td>
<td>905</td>
<td>900 (72%)</td>
<td>536 (59%)</td>
<td>626 (69%)</td>
</tr>
<tr>
<td>All Students</td>
<td>2652</td>
<td>3678 (59%)</td>
<td>1530 (58%)</td>
<td>1828 (69%)</td>
</tr>
</tbody>
</table>

Anticipated Outcome 4: At least 60% of students will experience a decrease in math anxiety over the course of the semester.

The Math Anxiety Survey-Revised (MAS-R) by Bai, Pan, Wang, and Frey (2009) is a bi-dimensional instrument with high reliability and construct validity, assessing both positive affect and negative affect related to math. The MAS-R consists of 14 statements and uses a five-point Likert-like scale for responses. Six statements reflect a positive affect and eight statements reflect a negative affect related to math.

Math Anxiety Survey-Revised (MAS-R) (Bai, Wang, Pan, & Frey, 2009)

Please respond to each statement using this scale:
1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 =Agree, 5 = Strongly Agree

1. I find math interesting.
2. I get uptight during math tests.
3. I think that I will use math in the future.
4. My mind goes blank and I am unable to think clearly when doing my math test.
5. Math relates to my life.
6. I worry about my ability to solve math problems.
7. I get a sinking feeling when I try to do math problems.
8. I find math challenging.
9. Mathematics makes me feel nervous.
10. I would like to take more math classes.
11. Mathematics makes me feel uneasy.
12. Math is one of my favorite subjects.
13. I enjoy learning with mathematics.
14. Mathematics makes me feel confused.

Total math anxiety scores were computed by adding the negative affect related subscore to the reverse indexed positive affect related subscore.

Students completed the survey on their first day of attendance and again either during the week prior to the final exam or immediately after completing the final exam. The timing of the post course data collection may have skewed responses.

Overall during the course of the semester in which a QEP course was taken, 54% of the students reported increases in positive affect related to math, 53% of the students reported decreases in negative affect related to math, and 56% of the students reported decreases in total math anxiety.

More students agreed or strongly agreed with every positive affect related item (e.g., I find math interesting; I think I will use math in the future; I would like to take more math classes; Math is one of my favorite subjects) at the end of the course than did at the beginning. More students disagreed or strongly disagreed with every negative affect related item (e.g., I get uptight during math tests; I worry about my
ability to solve math problems; Mathematics makes me feel nervous) at the end of the course than did at the beginning, across all QEP courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>N</th>
<th>Increase in Positive Affect</th>
<th>Decrease in Negative Affect</th>
<th>Decrease in Total Math Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC1105</td>
<td>426</td>
<td>211 (50%)</td>
<td>235 (55%)</td>
<td>232 (54%)</td>
</tr>
<tr>
<td>MGF1106</td>
<td>254</td>
<td>182 (72%)</td>
<td>167 (66%)</td>
<td>185 (73%)</td>
</tr>
<tr>
<td>STA2023</td>
<td>357</td>
<td>169 (47%)</td>
<td>152 (43%)</td>
<td>165 (46%)</td>
</tr>
<tr>
<td>All Students</td>
<td>1037</td>
<td>562 (54%)</td>
<td>554 (53%)</td>
<td>582 (56%)</td>
</tr>
</tbody>
</table>

Revised Anticipated Outcome 5: USFSP students will score at or above the 50th percentile relative to their peers at Carnegie Master’s Comprehensive Institutions on the mathematics general education competencies as measure by the ETS Proficiency Profile assessment.

USFSP QEP students took the ETS Proficiency Profile at the end of the Fall 2015 and Fall 2016 semesters. These students’ scores were compared with the reference group of over 179,000 students at other Carnegie Master’s Comprehensive Institutions. USFSP students scored at or above the 50th percentile in mathematics in all credit hour subgroups. In 2016, USFSP students scored at or above the 50th percentile for total scores in all credit hour subgroups.

<table>
<thead>
<tr>
<th>Earned Credit Hours</th>
<th>None</th>
<th>0-30</th>
<th>30-60</th>
<th>60-90</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 2015</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of students</td>
<td>52</td>
<td>151</td>
<td>74</td>
<td>44</td>
</tr>
<tr>
<td>Mathematics Percentile</td>
<td>71%</td>
<td>50%</td>
<td>66%</td>
<td>51%</td>
</tr>
<tr>
<td>Total Score</td>
<td>83%</td>
<td>66%</td>
<td>63%</td>
<td>39%</td>
</tr>
<tr>
<td>December 2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of students</td>
<td>57</td>
<td>146</td>
<td>95</td>
<td>47</td>
</tr>
<tr>
<td>Mathematics Percentile</td>
<td>85%</td>
<td>50%</td>
<td>66%</td>
<td>51%</td>
</tr>
<tr>
<td>Total Score</td>
<td>93%</td>
<td>66%</td>
<td>58%</td>
<td>70%</td>
</tr>
</tbody>
</table>

Revised Anticipated Outcome 6: At least 60% of USFSP students will report that their experience at USFSP contributed “quite a bit or very much” to their knowledge, skills, and personal development in thinking critically and analytically (Item 11e/17c) and analyzing quantitative problems and statistical information (Item 11f/17d).

Percent of Students Responding that USFSP Contributed “Quite a bit” or “Very much”

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Think critically &amp; analytically</td>
<td>85%</td>
<td>70%</td>
<td>74%</td>
<td>86%</td>
<td>79%</td>
<td>78%</td>
</tr>
<tr>
<td>Analyze quantitative or numerical/statistical</td>
<td>73%</td>
<td>61%</td>
<td>74%</td>
<td>73%</td>
<td>55%</td>
<td>54%</td>
</tr>
<tr>
<td>Senior phase</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Think critically &amp; analytically</td>
<td>87%</td>
<td>76%</td>
<td>84%</td>
<td>88%</td>
<td>86%</td>
<td>85%</td>
</tr>
<tr>
<td>Analyze quantitative or numerical/statistical</td>
<td>80%</td>
<td>60%</td>
<td>67%</td>
<td>75%</td>
<td>62%</td>
<td>60%</td>
</tr>
</tbody>
</table>

In 2013 and 2016, following QEP implementation, USFSP freshmen were more likely than their Carnegie class peers to report that the institution contributed to their critical and analytical thinking and math related skills. USFSP seniors were no more likely than USFSP first year students to report institutional contributions to numerical and statistical analysis. This may be because 79% of USFSP seniors were transfer students who had completed all math courses prior to attending USFSP.
**Anticipated Outcome 7**: At least 60% of students will use MyMathLab/MyStatLab software with no additional prompting.

All QEP courses were redesigned to incorporate the use of MyMathLab/MyStatLab for homework, ReQuests, supplemental instruction, and the use of adaptive learning tools. All students (100%) taking QEP mathematics courses use MyMathLab/MyStatLab for learning, homework, and the QEP recovery option.

**Anticipated Outcome 8**: At least 60% of students who receive early warning referral will actually attend the SSC.

The early warning system has been under development since the Fall 2014 semester. Initially, only QEP math faculty were asked to send referrals via email to Academic Advisors when students were identified as being at risk of failing a course. This referral process occurred following each biweekly Quest. In the Fall 2015 semester, this referral process was elevated to a General Education Working Group and currently uses a locally developed online, interactive form for all of the major General Education courses. Student referrals to the SSC are only one of the possible interventions to a referral by a faculty member. The SSC referral option was first implemented in the Fall 2016 semester, so data are not yet available to assess this anticipated outcome. Automated tracking software, not yet in place, is needed to gather this data.

However, since the Fall 2014 semester, 551 (33%) of the 1674 students enrolled in QEP courses have visited the SSC a total of 2102 times, spending a total 3039 hours in the SSC during their visits, with or without specific faculty referral.

**Anticipated Outcome 9**: At least 60% of students will be satisfied with SSC tutoring and other services.

This goal has been exceeded. Student responses to the SSC satisfaction survey given during the 2014/2015 academic year are provided in the table below.

<table>
<thead>
<tr>
<th><strong>SSC Student Satisfaction Survey Results</strong></th>
<th>N</th>
<th>Satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>How comfortable were you with the atmosphere/environment in the SSC?</td>
<td>394</td>
<td>371 (94%)</td>
</tr>
<tr>
<td>How satisfied were you with your tutor's knowledge of the subject area you received help in?</td>
<td>233</td>
<td>196 (84%)</td>
</tr>
<tr>
<td>Do you believe time spent working with a peer tutor at the SSC is helping to improve your learning?</td>
<td>249</td>
<td>221 (89%)</td>
</tr>
<tr>
<td>Do you believe time spent working with a peer tutor at the SSC is helping to improve your grade in the class you are getting help for?</td>
<td>237</td>
<td>201 (85%)</td>
</tr>
</tbody>
</table>

**Anticipated Outcome 10**: Faculty will be satisfied with SSC tutoring and other services.

One hundred percent of the faculty members teaching QEP courses who responded to a survey regarding services at the SSC were satisfied with these services.

**Revised Anticipated Outcome 11**: At least 60% of students who receive referrals will be given support that contributes to their re-engagement and participation in the course.

By midterm of the Fall 2016 semester, 74 USFSP students had been referred for support by the general education faculty members. Of these referrals:

- 28 (38%) have been resolved and students are no longer at risk of failing;
- 32 (43%) are in progress and support systems have been engaged;
- 14 (19%) are still awaiting response from students or academic advisors.

**Anticipated Outcome 12:** Faculty will be satisfied with the early warning system.

As of the Fall 2016 semester, the early warning system is still being refined with input from the faculty members, advisors, and other university personnel who use the system. Currently, 75% of the faculty members who teach QEP courses and responded to a survey regarding the early warning system are satisfied with the system.

**Unanticipated Outcomes**

There have been several unanticipated outcomes of this QEP.
- The extremely high number of ReRequests taken by students necessitated the creation and staffing of a dedicated, proctored space, the Math Recovery Center, for this purpose.
- Several other courses at USFSP have embraced the instructional and assessment strategy used, including MAT1033—Intermediate Algebra, MGF1107—Mathematics for Liberal Arts and three biology courses.
- Faculty members have increased their use of active learning strategies, because they have seen how well these work in conjunction with Jam, Quest, ReQuest.
- USFSP students have used the QEP as the subject for capstone projects in film making and marketing.
- Faculty professional development in pedagogy has become part of the academic culture for QEP math courses.
- The number of students indicating that they would like to take more math courses increased after students completed a QEP math course.

**Section 4: Reflection—What We have Learned As A Result of the QEP Process**

We learned about the process:
- Implementing each course carefully with pilots and assessment of the impact of each aspect of our strategy, at each stage was beneficial because refinements of the strategy could be made before the QEP went full scale.
- Within the context provided by the Jam, Quest, ReQuest instructional strategy, negative affect related math anxiety was neither correlated with nor predictive of students’ final course scores (Gibson-Dee, 2016). This result deviates from findings in the bulk of scholarly literature in which math anxiety was found to negatively impact student achievement.
- Within the context provided by the Jam, Quest, ReQuest instructional strategy, positive affect related to math was positively correlated with and predictive of students’ final course scores (Gibson-Dee, 2016).
- Classroom attitudes (including the class average positive and negative affect related math anxiety, hopes, and expectations) had a significant impact on students’ overall math anxiety as well as the positive and negative affect subscores at the end of the course (Gibson-Dee, 2016).

We learned about our faculty members:
- The dedication, skill, and enthusiasm of the faculty member teaching a course are critical to student success.
- A strategy of recruiting and retaining excellent teaching faculty is far more efficient than relying on recruiting and training new part-time faculty annually.
- Faculty professional development in implementing Jam, Quest, ReQuest is critical to student success.
- Unless faculty members consistently and strongly encourage students to learn from their mistakes and to demonstrate that learning on ReRequests, nothing is gained.
We asked our students for their reflections and perceptions. Students really appreciated the Jam, Quest, ReQuest strategy. Here are some of their comments:

- “My math anxiety was much higher before I took this class. I feel fairly confident in math now. Thanks so much!”
- “Examples on the board, Jam sessions are great!”
- “As a student who has struggled with math though most of his college career I found the Quests and Jam method helped me achieve more confidence in this subject and eliminated a very big part of my math anxiety.”
- “Loved the written Quests.”
- “The Questing method really worked for me.”
- “The Jams before the Quests really helped.”
- “Jam & Quests are the best!”

We learned a lot about our students. Our students needed help to understand how the courses using the Jam, Quest, ReQuest strategy differed from other math courses they had taken previously and in becoming resourceful and self-directed learners. Many students needed strong, credible encouragement to believe that they were capable of being successful, as they struggled to overcome math anxiety and negative self-efficacy in relation to math. We found out that students retaking QEP courses were likely to fail again unless we helped them develop different success strategies and behaviors.

We realized that students’ understanding of what constitutes learning was based largely on their experiences prior to coming to the university. Students needed to be coached in realizing that learning is not simply memorizing and replicating procedures or formulae, but depends on gaining rich conceptual understanding that can be applied to a variety of situations. Active learning strategies require students to be prepared for class, so students needed to be taught how to do this work. We also had to help students reframe homework, which was intended for learning and was therefore often challenging. Students had to learn that homework was not just repetitive practice of procedures that were demonstrated in class but was an opportunity for critical thinking and being resourceful in learning and seeking answers to their questions. Because the homework for the entire two-week unit was due the night before each Quest, students had to learn how to manage two-week projects and to take responsibility for pacing their own study time.

Students often made Quest and ReQuest questions more complicated than necessary because they had previously experienced math assessments as being composed of “trick” questions. Faculty members worked diligently to help students with strategies including careful reading of instructions, finding connections between concepts, and showing their thinking in written responses. We realized students needed to be taught how to learn from their mistakes on Quests. Students sometimes expected that ReQuests would have the same questions (or the same questions with different numbers) as those found on the corresponding Quests. Students needed help to learn how to identify the key concepts and recognize their own learning mistakes. Because ReQuests were graded by computer, students had to learn to be precise in their work and transcription of answers, and to be careful to follow all of the instructions.

It may be that the Jam, Quest, ReQuest strategy provides a learning environment that is conducive to student success. This strategy may also provide students with experiences that help them to become more resilient and resourceful learners who are able to accept personal responsibility for their learning and work.

References
