

**Quality Enhancement Plan (QEP)**

**Fall 2015 Report**



**Prepared By**

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## Introduction

The purpose of this report is to provide an update on QEP events which occurred at Fort Valley State University during the fall 2015 semester. The following areas will be covered:

- [Assessments](#)
- [Summary of Assessment Results](#)

## ASSESSMENTS

There are two assessment approaches being used to evaluate students' critical thinking skills at FVSU, the first is the critical thinking subsection on the *Collegiate Assessment of Academic Proficiency (CAAP) Exam*, which is facilitated by the Office of Institutional Research. The second are *course-embedded evaluations* which are specific to the academic departments, based on the ECT reasoning strategies model, and developed by the faculty. These course-embedded evaluations are administered toward the beginning (pretests) and end (posttests) of each semester, while the ECT model is being taught as part of the course content.

### *CAAP Exam*

There are 32 items on the critical thinking subsection of the CAAP exam. As part of FVSU's Georgia Board of Regents core curriculum agreement, students must receive a scaled score in at least the top 56<sup>th</sup> percentile of those taking the exam. Students take the CAAP exam by the end of their sophomore year, when they have completed at least 45 semester credits. Students who do not score in the top 56<sup>th</sup> percentile are required to retake the critical thinking section **only**, until they do, as completion is noted on their transcript. They can also meet the requirement if they score 70% or better on course-embedded critical thinking posttests. The posttest is available in the Testing Office where students who do not make the 70% minimum score during their in-class assessment may retake it until the requisite score is achieved.

The QEP reading and writing lab is available to assist students with preparing for the CAAP Exam. Tutors are available through the Office of Retention Services to assist with class assignments, and to provide individual peer-tutoring assistance.

### *Fall 2015 CAAP Results*

A total of 136 FVSU students were tested on the critical thinking section of the CAAP exam during fall 2015 semester. Of that number 66 (48.53%) scored in the required top 56<sup>th</sup> percentile. The lowest scaled score was 49 and the highest was 71. The average scaled score was 58.15%. This was the largest group of FVSU students to have tested on the CAAP exam. When compared to spring 2015 semester, there was a slight decrease in the number of students who scored within the required 56<sup>th</sup> percentile. However, of the 66 students who scored in the top 56<sup>th</sup> percentile, 50

(76%) of them were honored by CAAP for scoring above the national average in critical thinking. Thirty seven percent of FVSU students who took the CAAP were honored for scoring above the national average.

<b>Collegiate Assessment of Academic Proficiency (CAAP) FVSU Critical Thinking Summary</b>										
<b>Criteria</b>	<b>Fall 2010</b>	<b>Spr. 2011</b>	<b>Fall 2011</b>	<b>Spr. 2012</b>	<b>Fall 2012</b>	<b>Spr. 2013</b>	<b>Fall 2013</b>	<b>Spr. 2014</b>	<b>Fall 2014</b>	<b>Spr. 2015</b>
<b>No. of students tested</b>	97	131	83	100	68	20	70	23	99	114
<b>Scores Range</b>	47 – 70	46-68	47 – 70	50-72	50 – 68	54-67	49-72	48-71	48-73	48-72
<b>Avg. Scaled Scores</b>	58.29	57.15	57.9	58.3	58.54	60	58.96	59.04	57.70	58.30
<b>No. in top 56<sup>th</sup> percent</b>	Data not collected	Data not collected	Data not collected	Data not collected	33 (48.5)	13 (65)	43 (61.4)	13 (56.5)	53 (53.54)	59 (52%)
<b>No. above nat'l avg.</b>	Data not collected	Data not collected	Data not collected	Data not collected	28 (41)	12 (60)	35 (50)	9 (39)	27 (27.3)	51 (45%)
<b>** Highest possible score = 72; as of fall 2014 highest possible score = 73</b>										

Table 1

<b>Collegiate Assessment of Academic Proficiency (CAAP) FVSU Critical Thinking Summary</b>										
<b>Criteria</b>	<b>Fall 2015</b>									
<b>No. of students tested</b>	136									
<b>Scores Range</b>	49 – 71									
<b>Avg. Scaled Scores</b>	58.15									
<b>No. in top 56<sup>th</sup> percent</b>	66 (48.53)									
<b>No. above nat'l avg.</b>	50 (37%)									
<b>** Highest possible score = 72; as of fall 2014 highest possible score = 73</b>										

Table 1 (Continued)

*What do these CAAP results mean for the impact of the QEP at FVSU?*

CAAP results for fall 2015 were slightly below projected outcomes in regard to the percentage of students who were projected to score in the top 56<sup>th</sup> percentile. It was projected that 50% would score in the top 56<sup>th</sup> percentile, however, only 48.53 students scored in the top 56<sup>th</sup> percentile. All

other measures were comparable to other years. The number of students who score above the national average (37%) was commendable for such a large group of test-takers.

Since the QEP/ECT model is being implemented in every section of English 1102 and Math 1111 and 1113, it is fairly safe to assume that every student taking the CAAP exam encountered critical thinking pedagogies prior to taking the CAAP Exam. This means that CAAP results can provide meaningful information about whether or not the ECT model is effective in improving students' critical thinking skills. Consistently satisfactory results on the CAAP exam seem to suggest that the ECT model is making a difference in improving student performance in critical thinking.

### ***COURSE EMBEDDED ASSESSMENTS***

Course-embedded pre and post assessments are also used to assess students' critical thinking skills in relation to the ECT reasoning strategies model that is implemented in each QEP/ECT course. The following is a list of the reasoning strategies implemented in each department:

#### *English*

- Inductive reasoning
- Deductive reasoning
- Comparative reasoning
- Abductive reasoning
- Analogical reasoning

#### *Math*

- Criteria reasoning
- Interpretive reasoning
- Deductive reasoning
- Analytical reasoning
- Adaptive reasoning
- Strategic reasoning

In English and Math, faculty who taught QEP/ ECT course sections used a standardized module for their respective discipline, which means they were likely to cover similar topics and give similar types of assignments. Once again, students are required to demonstrate proficiency in critical thinking before they can graduate. This means they must either score in the top 56<sup>th</sup> percentile on the CAAP exam, or score 70% or above on the posttest course embedded assessment. The following results are therefore a summary of what was found by examining course embedded pre and posttests.

## Methodology

The central theme of the QEP at FVSU is enhancing critical thinking (ECT). In order to enhance critical thinking among students, intentional efforts must be made among faculty to enhance critical thinking pedagogy. Consequently, the QEP Director, Dr. Ian Toppin also serves as Director of the Center for Teaching and Learning (CTL), which gives him the opportunity to ensure that appropriate pedagogy training is implemented to guide the QEP process. The CTL provides adequate opportunities for faculty to engage in critical thinking training activities.

English 1102, and Math 1111 and 1113, were selected because they are core classes. All FVSU students are required to take these courses, which increases the likelihood that all students will at some point encounter formal critical thinking instruction during their matriculation at FVSU, and especially before attempting the CAAP exam. Students were selected simply by being enrolled in the courses. There was no predetermined designation of which students would be in which courses. Students were asked to sign consent forms in order to be included in this study before taking the pretest at the beginning of the semester. The same tests were given as posttests at the end of the semester in order to make inferences about differences in scores and about the impact of ECT interventions during the semester. While all scores are reported to the Office of Institutional Research for record-keeping in response to the graduation requirement, only scores from students who took both the pre and posttests were used in this report, scores are not used in this report if the student took one test but not the other.

## Questions

Results are based on the following questions:

1. What is the difference in pre and posttest average scores of students in QEP/ ECT English 1102 courses?
2. Are there overall statistically significant differences in pre and posttest scores in QEP/ ECT English 1102 courses at the .05 alpha level?
3. What is the difference in pre and posttest average scores of students in QEP/ ECT Math 1111 and 1113 courses?
4. Are there statistically significant differences in pre and posttest scores in QEP/ ECT Math 1111 and 1113 courses at the .05 alpha level?

## Null Hypothesis ( $H_0: \mu_1 < \mu_2$ )

There is a statistically significant difference in pretest and posttest scores in QEP/ ECT English 1102, and QEP/ ECT Math 1111 and 1113 courses.

## **ENGLISH RESULTS**

**Question 1:** What is the difference in pre and posttest average scores of students in QEP/ ECT English 1102 courses?

- **FALL 2015**

There were 75 students who took both the pre and post tests in QEP/ ECT English 1102. Their pretest average score was 71.29%, while their average posttest score was 75.73%. This result indicated vast average improvement. The following table summarizes the results:

<b>Test Type</b>	<b>QEP Eng-1102</b>
Pretest	71.29%
Posttest	75.73%

**Table 2**

**Question 2:** Are there overall statistically significant differences in pre and posttest scores in QEP/ ECT English 1102 courses at the .05 alpha level?

T values were calculated to compare the size of the difference between pretest and posttest scores in QEP/ ECT English 1102. The calculated t value as shown in table 3 is .60. At the .05 ( $\alpha = .05$ , one tail) level, the critical t-value was 1.66, and  $P = 0.00$ . This means that the probability of the difference is less than the alpha level. At .025 alpha level (two tailed), the critical value was 1.99, and once again  $P = 0.00$ . The small P value is an indication that the intervention during the semester was effective. Additionally, the fact that the calculated t value was less than the critical value, indicates that the null hypothesis should be accepted (There is a statistically significant difference in pretest and posttest scores in QEP/ ECT English 1102 courses). Standard deviation result (6.22) was reasonable since means scores were acceptable. This result indicated that scores were clustered close to the mean. In other words scores generally fluctuated six points above or below the mean. A test of Pearson's Correlation (.49) indicated no correlation ( $<.50$ ) between pre and posttests scores. The overall results seemed to indicate that there is statistical significance in improvement between pre and posttest scores. The null hypothesis must therefore be accepted.

<b>Observations</b>	<b>75</b>	
<b>No. of scores less than 70%</b>	<b>11 (15%)</b>	
<b>Mean Scores</b>	<b>75.73 (posttest)</b>	<b>71.29 (pretest)</b>
<b>df</b>	<b>(n-1)=75-1=74</b>	
<b>Standard Deviation</b>	<b>6.22</b>	
<b>Calculate t value</b>	<b>0.60</b>	
<b>t-test P(T&lt;=t) 1 tail</b>	<b>0.00</b>	
<b>t Critical one-tail</b>	<b>1.66</b>	
<b>t-test P(T&lt;=t) 2 tail</b>	<b>0.00</b>	
<b>t Critical two-tail</b>	<b>1.99</b>	
<b>Pearson's Correlation</b>	<b>.49</b>	

**Table 3**

**MATH RESULTS**

**Question 3:** What is the difference in pre and posttest average scores of students in QEP/ ECT Math 1111 and 1113 courses?

- *Math 1111 – FALL 2015*

In Math 1111 there were 104 students who took both the pre and posttests. The average pretest score was 26.59% and the average posttest score was 34.84%, which was a slight improvement over average pretest scores. However overall averages in Math 1111 suggested that major improvements in performance are needed.

Test Type	ECT Math-1111
Pretest	26.59%
Posttest	34.84%

**Table 4**

T values were calculated to compare the size of the difference between pretest and posttest scores in QEP/ ECT Math 1111. The calculated *t* value as shown in table 5 is .48. At the .05 ( $\alpha = .05$ , one tail) level, the critical t-value was 1.65, and  $P = 0.00$ . At .025 alpha level (two tailed), the critical value was 1.96, and once again  $P = 0.00$ . The small *P* value is an indication that the intervention during the semester was effective. This means that the probability of the difference is less than the alpha level. Additionally, the fact that the calculated t value is less than the critical value, indicates that the null hypothesis should be accepted (There is a statistically significant difference in pretest and posttest scores in QEP/ ECT Math 1111 courses). Standard deviation result (13.97) was high, indicating that scores were not clustered closely to the mean and that there were wide variations in scores. A test of Pearson’s Correlation (.35) also indicated no correlation (<.50) between pre and posttests scores, which indicates that students’ pretest and posttest scores were not good predictors of each other. These results seemed to indicate that while there is statistical significance in improvement between pre and posttest scores, the scores on average were so low that the relationship between scores and student success was also low.

<b>Observations</b>	<b>104</b>	
<b>No. of scores less than 70%</b>	<b>103 (99%)</b>	
<b>Mean Scores</b>	<b>34.84 (posttest)</b>	<b>26.59 (pretest)</b>
<b>df</b>	<b>(n-1)=104-1=103</b>	
<b>Standard Deviation</b>	<b>13.97</b>	
<b>Calculate t value</b>	<b>0.48</b>	
<b>t-test P(T&lt;=t) 1 tail</b>	<b>0.00</b>	
<b>t Critical one-tail</b>	<b>1.65</b>	
<b>t-test P(T&lt;=t) 2 tail</b>	<b>0.00</b>	

<b>t Critical two-tail</b>	<b>1.96</b>	
<b>Pearson's Correlation</b>	<b>.35</b>	

**Table 5**

- **Math 1113 – FALL 2015**

In Math 1113, there were 71 students who both took the pre and post tests. Their average pretest score was 26.11%; while the average posttest score was 46.39%. This was an improvement (20%) over pretest scores. However, once again, overall average performance on both pre and posttests indicated that significant improvements are needed in Math 1113.

<b>Test Type</b>	<b>ECTMath-1113</b>
Pretest	26.11%
Posttest	46.39%

**Table 6**

T values were calculated to compare the size of the difference between pretest and posttest scores in QEP/ ECT Math 1113. The calculated t value as shown in table 7 is .69. At the .05 ( $\alpha = .05$ , one tail) level, the critical t-value was 1.67, and  $P = 0.00$ . At .025 alpha level (two tailed), the critical value was 1.99, and once again  $P = 0.00$ . The small P value is an indication that the intervention during the semester was effective. This means that the probability of the difference is less than the alpha level. Additionally, the fact that the calculated t value is less than the critical value, indicates that the null hypothesis should be accepted (There is a statistically significant difference in pretest and posttest scores in QEP/ ECT Math 1113 courses). Standard deviation results (19.45) indicated that scores were not clustered closely to the mean and that there were wide variations in scores. A test of Pearson's Correlation (.15) also indicated no correlation ( $<.50$ ) between pre and posttests scores. These results seemed to indicate that while there is statistical significance in improvement between pre and posttest scores, the scores on average were so low that the relationship between scores and student success was also low.

<b>Observations</b>	<b>71</b>	
<b>No. of scores less than 70%</b>	<b>61 (86%)</b>	
<b>Mean Scores</b>	<b>46.39 (posttest)</b>	<b>26.11 (pretest)</b>
<b>df</b>	<b>(n-1)=71-1=70</b>	
<b>Standard Deviation</b>	<b>19.45</b>	
<b>Calculate t value</b>	<b>0.69</b>	
<b>t-test P(T&lt;=t) 1 tail</b>	<b>0.00</b>	
<b>t Critical one-tail</b>	<b>1.67</b>	
<b>t-test P(T&lt;=t) 2 tail</b>	<b>0.00</b>	
<b>t Critical two-tail</b>	<b>1.99</b>	
<b>Pearson's Correlation</b>	<b>.15</b>	

**Table 7**

## **SUMMARY OF ASSESSMENT RESULTS**



Student performances on course embedded assessments during fall 2015 semester once again met expectations in English 1102, but needs significant improvements in Math 1111 and 1113. As it relates to the CAAP exam, results declined slightly in the projected number of students in the top 56<sup>th</sup> percentile. The goal was for 50% of students to score in the top 56<sup>th</sup> percentile; however, 48.5% scored in the top 56<sup>th</sup> percentile in fall 2015. Thirty seven percent of those who took the CAAP exam in fall 2015 scored above the national average in critical thinking.

Average pretest scores in fall 2014 and spring 2015, were routinely low in both Math 1111 and 1113, which seemed to indicate that students came in with low critical thinking math skills. However, posttest scores showed improvements in both classes, particularly Math 1113, albeit they did not reach high enough. This leads to the conclusion that students' critical thinking aptitude in Math is generally below average.

Course Embedded Assessments Average Scores for Fall 2010 to Spring 2013																	
Fall 2010			Spr. 2011			Fall 2011			Spr. 2012			Fall 2012			Spr. 2013		
#	Pre	Post	#	Pre	Post	#	Pre	Post	#	Pre	Post	#	Pre	Post	#	Pre	Post
<b>ENGLISH 1101</b>																	
99	76	79	11	74	73	147	74	81	35	67	74	No longer tested					
<b>ENGLISH 1102</b>																	
41	75	80	36	76	81	38	84	83	84	72	78	134	68	61	249	71	74
<b>MATH 1111</b>																	
87	54	71	54	54	75	104	50	73	83	55	58	144	41	57	72	41	53
<b>MATH 1113</b>																	
37	61	76	39	48	74	33	31	44	44	30	59	57	22	40	59	23	30

**Table 8**

# - Number of students tested  
 Pre – Pretest scores  
 Post – Posttest scores

Course Embedded Assessments Average Scores for Fall 2013 to Spring 2015														
Fall 2013			Spr. 2014			Fall 2014			Spr. 2015			Fall 2015		
#	Pre	Post	#	Pre	Post	#	Pre	Post	#	Pre	Post	#	Pre	Post
<b>ENGLISH 1102</b>														
115	16	52	244	48	50	153	71.9	78.8	175	72.4	76.7	75	71.3	75.7
<b>MATH 1111</b>														
108	41	49	91	29	37	81	29.2	39	44	27.8	42.1	104	26.6	34.8
<b>MATH 1113</b>														
35	30	43	21	28	60	52	26.2	61.9	24	29.7	42.8	71	26.1	46.4

**Table 8 (Continued)**

### Implications of Assessment Results

Results seem to be suggesting that academic maturity may be a significant factor in improving students' critical thinking skills. This is borne out in the fact that course-embedded assessments, which students take during their freshman year, continue to show routinely low results, particularly in Math. However, results on the CAAP exam, which students take following their sophomore year, provide a more positive outlook. The reverse was expected when this QEP study commenced. These results seem to suggest that by the time students reach the end of their

sophomore year when they take the CAAP exam, and when they should be more academically mature, their critical thinking skills are significantly improved.