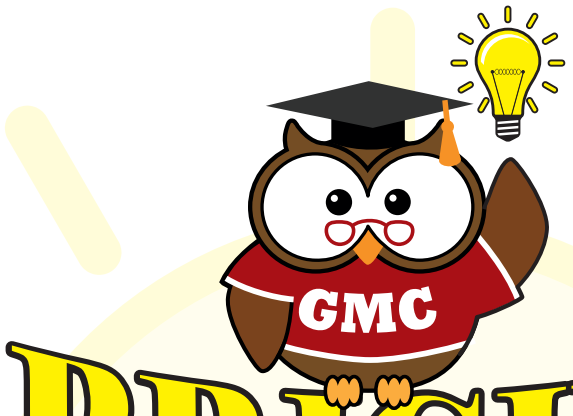

BRIGHT

INFER
INDUCE
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EVALUATE
ANALYZE

ENHANCING STUDENTS' CRITICAL THINKING ABILITIES

GEORGIA MILITARY COLLEGE GMC COLLEGE

Quality Enhancement Plan

SACSCOC On-Site Review: September 27-29, 2016

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I. Executive Summary

In support of Georgia Military College's mission to "produce educated citizens and contributing members of society in an environment conducive to the development of the intellect and character of its students," the Quality Enhancement Plan, Bright IDEA, was developed to provide an atmosphere that will enhance students' critical thinking abilities. Through extensive research, faculty support, and carefully designed plans, the college is implementing and exposing students to critical thinking through 14 core courses that will allow direct application of these skills to their course content and material. The QEP will facilitate higher-level thinking through introduction, exposure, and application of critical thinking and metacognition, thus increasing student success at GMC and beyond, inside and outside of the classroom.

The GMC community (faculty, staff, students, and administration) selected the QEP topic of critical thinking. The QEP committee focused on the topic to identify a working definition of critical thinking, and the QEP goal and objectives.

Critical Thinking is defined by GMC's QEP committee as "an active, self-reflective, and deliberate attempt to utilize cognitive skills to support decision-making, problem solving, or mastery of concepts throughout various contexts." The QEP committee agreed upon the following desired goal, objectives, and outcomes for GMC.

Goal: Provide an atmosphere where students will improve their ability to think critically.

Objective 1. GMC Stakeholders (Students, Faculty, Academic Support Staff, and Administration) will demonstrate knowledge of metacognition, critical thinking, and the five reasoning skills.

Objective 2. Faculty will participate in professional development in metacognition, critical thinking, and the five reasoning skills.

Objective 3. Students will employ metacognitive skills, critical thinking, and the five reasoning skills throughout the core curriculum.

The plan to improve students' abilities to think critically includes several organized elements. These include revising First Year Experience (FYE) courses to comprise more critical thinking and metacognition introductory material, enhancing core courses with critical thinking lessons and assignments applicable to the material in the course, and facilitating extensive training and professional development to ensure that faculty understand the importance of and methods to implementing critical thinking in the classroom.

The GMC QEP committee has developed an implementation plan that includes an appropriate budget to cover necessary resources, identification of persons responsible for each task, and an assessment plan that will evaluate both quantitative and qualitative measures. For continued success of the QEP, data from the assessment plan will be frequently analyzed and changes will be implemented as needed. An annual QEP report will show the assessment data, any changes made to the plan, and lessons learned throughout the year.

II. Development of the QEP

Institutional Context

Georgia Military College (GMC) was founded in 1879 by act of the Georgia General Assembly "-to educate young men and women from the Middle Georgia area in an environment which fosters the qualities of good citizenship." The college offered its first classes on January 19, 1880. The legislative acts of 1920 and 1922 severed the relationship with the University of Georgia and gave a local Board total power over the operations of the school. In 1950, the War Department designated the institution a "Military Junior College." Today, GMC is one of only five United States Military Junior Colleges. As a public, independent liberal arts college, GMC offers associate of arts, associate of science, and associate of applied science degrees. In 2014, GMC secured a change in the Georgia law to offer bachelor of applied science degrees. SACSCOC approved GMC's level change in 2016 to a level II status.

GMC's main campus is located in Milledgeville, Georgia, with an online campus, six additional campus locations, and five extension centers in Georgia. The college functions on the quarter system with four terms at the Milledgeville campus and five terms at all other locations. GMC's total annual unduplicated enrollment for 2015-2016 was 13,816 students with the fall 2015 term enrollment at 8,107 students. Of these students, approximately 250 are college cadets on the Milledgeville campus.

GMC is an open-enrollment institution only requiring that students complete a high school diploma or GED. In 2015-2016, approximately 49% of GMC students took at least one remedial course in mathematics, reading, or English before enrolling in credit level mathematics, English, or some Biology courses. GMC currently enrolls students from 39 states and 12 nations, as well as students from more than 100 of Georgia's 159 counties.

The college student body is primarily female (61%), African-American (46%), and White, non-Hispanic (43%). Sixty-one percent (61%) of GMC students are ages 18 to 24 years old. GMC offers 26 degree programs. Two programs were deleted for 2016-2017: Health and Physical Education and Secondary Education, and Studio Art was added. The majority of GMC students tend to major in General Studies, Pre-Nursing, or Business Administration.

GMC prepares students to either graduate (27%) or transfer (26%) to other institutions. The 2014 fall to 2015 fall retention rate was 56%. GMC does work with Georgia high school students to offer dual enrollment. In Academic Year 2015-2016, GMC enrolled 1,288 dual enrollment students.

Mission and Vision

The mission of Georgia Military College (GMC) is to produce educated citizens and contributing members of society in an environment conducive to the development of the intellect and character of its students, regardless of location or method of delivery. College students are offered a liberal arts based, two-year undergraduate curriculum designed to support student attainment of an associate degree and prepare students for transfer to four-year colleges and universities. Students with an associate of applied science degree are offered a curriculum designed to support student attainment of bachelor of applied science degrees. For selected college students who enroll in the Reserve Officer Training Corps (ROTC), and preparatory school students in the Junior ROTC program, GMC includes a military training and education component.

The President's vision for Georgia Military College, Vision 2029, is that GMC will be a nationally recognized leader providing character-based higher education, improving the personal well-being of our students and giving hope for a brighter future. The vision is achieved by being accessible to any student desiring a character-based college level education, being the best two-year college in the state of Georgia and among the top five in the nation, being nationally recognized as a "best value" college, being recognized as a military friendly school, being nationally recognized in the top ten fastest growing community colleges, being nationally recognized as a leader in the innovation and delivery of individual learning support services, being nationally recognized as a leader in the innovation of programs, and by increasing scholarship endowments to make education affordable.

Georgia Military College has four strategic initiatives: (1) Contribute to Student Success, (2) Grow Enrollments, (3) Think and Act as one Institution, and (4) Invest in the Future of GMC, commonly referred to as "The 4 Big Ideas." The QEP topic arose from the desire to "Contribute to Student Success" and to achieve our mission of producing educated citizens and contributing members of society. The faculty, students, and staff believe that the ability to think critically is an important skill for students to acquire. While GMC has attempted to teach students critical thinking skills as one of its core competencies, it has not achieved the levels of success desired. By researching the topic of critical thinking further and understanding the complexity of critical thinking, the QEP provides a mechanism to achieve consistent critical thinking training of faculty and students based on cognitive psychological principles in the areas of metacognition and the five reasoning skills: Analysis, Inference, Evaluation, Deduction, and Induction.

III. Identification of the Topic

Identifying the Learning Needs of GMC Students

Georgia Military College formed the QEP committee in 2013 and charged them with orchestrating the selection of the QEP topic from broad based involvement, reviewing campus assessment results, writing a literature review, and constructing a viable plan. The selection of the topic and initial review of assessment results took place from 2013 to 2014. QEP committee members and faculty volunteers contributed to the writing of the QEP in 2014. The QEP committee worked with others to construct the plan in 2015 and 2016 that also included reviewing further data.

To ensure broad-based participation, the college conducted meetings and surveys to elicit ideas for the QEP topic. The QEP committee wanted to ensure that the topic would tie to the college's mission and make a significant and long-term improvement in student learning. Because GMC consists of several campus locations, the chair of the QEP selected a faculty member from the Milledgeville campus, the Online campus, and the five largest campuses to serve on the committee. The topic selection began with each QEP campus coordinator conducting a meeting on their campus to elicit topics for GMC to consider for improving student learning. For example, the GMC-Columbus campus listed "Information Literacy/Research Skills, Global Learning, Writing/Communication Skills, Work Ethic, Service Learning, and Cultural Sensitivity/Diversity" and the GMC-Warner Robins and GMC-Augusta campuses had even longer lists of topics (Appendix A - QEP Ideas from GMC-Warner Robins; Appendix B - QEP Ideas from GMC-Augusta).

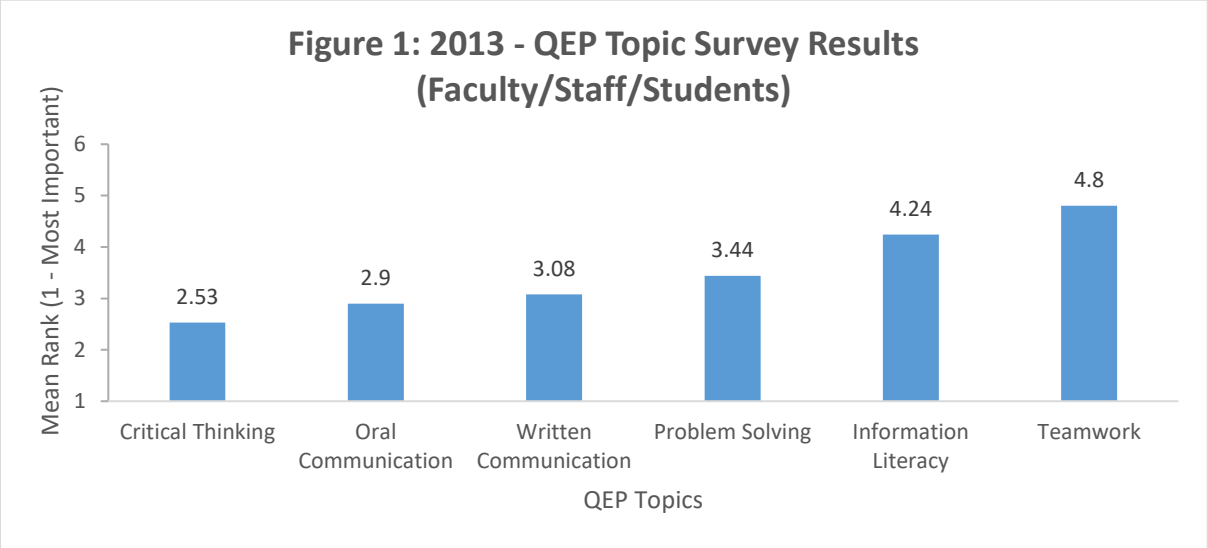
The college holds a fall and a spring faculty workshop/assembly meeting each year. The Chief Academic Officer/Dean of Faculty hosts these meetings, and brings together all full-time faculty, any part-time faculty who want and are able to attend, Academic Deans, and Academic Administration from all of its campuses for general session meetings and division meetings. Full-time faculty are required to attend, and adjunct faculty members are invited and encouraged to attend. At the spring 2013 faculty workshop, the Division Chairs conducted an activity in their session meetings to determine in what areas each division felt it could improve student success and learning and encourage lifelong learning to assist with the selection of a QEP topic (Appendix C - World Café Activity Summary Excerpt).

Additionally, GMC conducted its first online survey in April 2013 to gather more information from its faculty and staff as to their opinion of potential topics for our QEP. The survey was emailed to faculty, staff, and students. The questions were open-ended text responses desired to elicit as many topic ideas as possible, and then they were rank ordered during the meetings and division work previously mentioned. Fifty faculty and staff members participated in the survey. The QEP committee surmised that the low response rate for this online survey occurred because it was given after the campus meetings and after the spring assembly where faculty and staff had already answered these questions. GMC asked them to identify their role(s) with the college, and they could select more than one role. Twenty-nine self-identified as GMC faculty members; twenty-six self-identified as GMC staff and administrators; thirteen self-identified as student or alumni; and thirteen self-identified as a parent or working outside GMC. The feedback received from this survey was combined with the topics collected at the campus meetings and in the World Café exercise in the division work at the 2013 spring assembly to compile a list of topics. The QEP committee also added a question to the “Bring Your Own Device” survey for students explaining what the QEP was and asking them “What topic(s) would you suggest GMC select in order to improve your learning and prepare you to succeed in a four-year college?” Seven hundred and forty (740) students answered this question and could provide multiple suggestions. The students focused mainly on topics centered on improving research writing (526), oral communication (340), and global awareness (265). The QEP committee recognized issues with the open-ended topic surveys, so with the topic results that they had collected so far in a variety of venues and with the review of the institutional data, discussed in the next section, the QEP committee selected six topics for review that the GMC stakeholders could then rank order as to their selection for a QEP topic for GMC. The QEP committee felt that stakeholders would be more comfortable rank ordering topics rather than having to respond to open-ended questions.

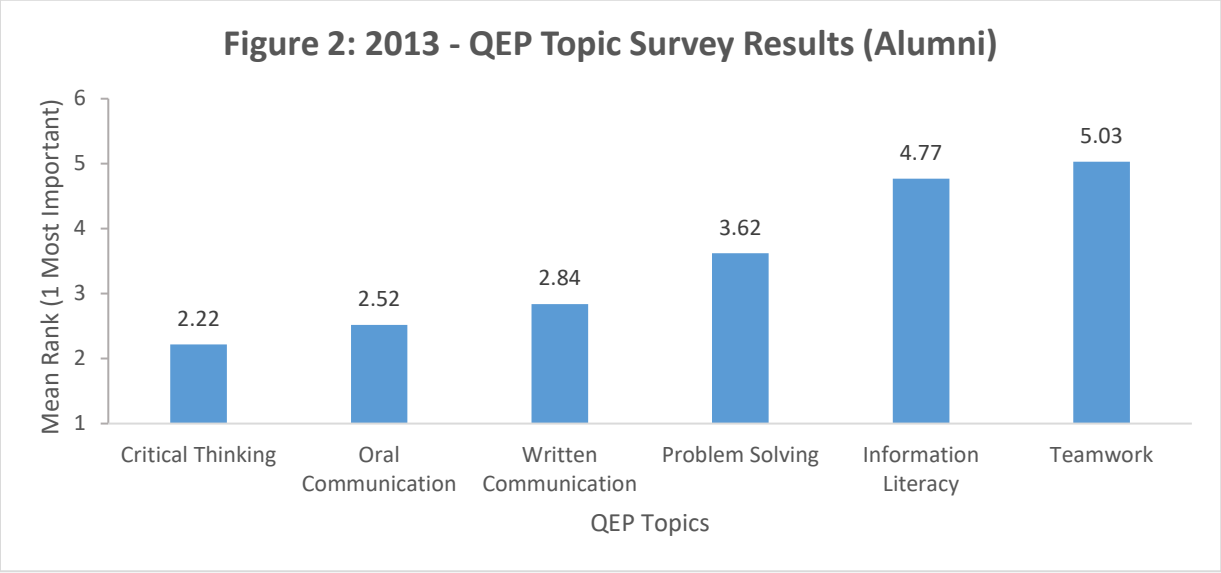
The committee members reviewed institutional data on these six topics if it was available, and then wrote problem statements including this information for these six topics: Oral Communication, Critical Thinking, Written Communication, Problem Solving, Information Literacy and Teamwork (Appendix D - QEP Problem Statements). These problem statements were then edited down for the survey to make them more readable and provided to the GMC stakeholders for them to read and rank order from the most important topic to the least important topic to focus on for GMC’s QEP.

The QEP committee conducted the next set of surveys and reviewed the results in November 2013. The survey had 612 participants with representation from all ten campuses. GMC-Fayetteville and GMC-Dublin campuses were not included since these campuses were not established until August and October of 2015, respectively. The survey participants included

363 students, 148 faculty, 111 staff, 53 Alumni, and 31 parents of GMC students. Survey participants could select more than one identifying category. The survey asked participants to rank order the six topics from most important (1) to least important (6). The problem statement with the lowest mean represent the most important topic for GMC to consider for its QEP. For the faculty, staff, and student survey, GMC found Critical Thinking (2.53) as the top choice for the QEP topic.



The QEP committee also surveyed alumni and opened the survey to community members outside GMC. In this survey, 142 people participated. This survey also asked participants to rank order the six topics from most important (1) to least important (6). The item with the lowest mean represents the most important topic for GMC to consider for its QEP. For the alumni survey, GMC found Critical Thinking (2.22) as the top choice for the QEP topic.



The QEP Chair then sent these results and the original problem statements to the QEP committee members and all twelve voted. All but one person approved critical thinking as the QEP topic. The QEP committee felt that after reviewing the data, listening to the faculty, staff, and students, and reviewing the survey results that critical thinking would make an excellent QEP topic for GMC, especially as it was one of GMC's core competencies. The President then approved the topic, and the QEP committee began to research the topic, discuss assessment instruments, and gather baseline data for the current performance of GMC students in critical thinking.

Georgia Military College has had an interest in critical thinking and has already demonstrated a desire to incorporate the teaching of critical thinking skills into the curriculum. In July of 2008, GMC sent ten employees, eight faculty and two staff, to the 28th Annual International Conference on Critical Thinking to bring ideas back to GMC. From this visit, the Chief Academic Officer appointed a faculty member who had attended this conference to bring Dr. Richard Paul to GMC in the fall of 2009 to host a two-day workshop. The faculty learned some techniques like Socratic questioning that they used in their classrooms. The faculty then decided to redesign the three quarter-hour course, GMC 154A, "Character Development," into PER 102, "Critical Thinking and Character Development," which was then taught starting in the fall of 2012. In 2013, GMC made critical thinking a core competency when they revised the core curriculum, and it became part of the faculty evaluation reporting process in 2014. For this evaluation, faculty write a self-reflection paper on three areas: 1) Teaching, 2) Professional Development, and 3) Service to the College. In the section on Teaching, the faculty have to reflect on what they did in the classroom to improve their students' critical thinking abilities. The college selected critical thinking, along with problem solving and global literacy, as college-level core competencies after utilizing information from the American Association of Colleges and Universities (AAC&U) and the Liberal Education and America's Promise (LEAP) project. AAC&U's report in Appendix E, "College Learning for the New Global Century," listed these three competencies along with written communication and quantitative literacy. They also stated that these competencies were part of a "framework to guide the cumulative progress of students through college" (Appendix F - LEAP Project webpage).

Even after all our efforts, the QEP committee agreed that faculty still did not know how to teach critical thinking skills in a way that the students and faculty could recognize that student learning had occurred. Faculty members were not sure how to teach critical thinking other than the teaching tips acquired from Dr. Paul's workshop. GMC did not have training in place for new faculty to acquire the skills needed for teaching critical thinking or continuing the training of current faculty. The PER 102 course focused more on character development than critical thinking, and the critical thinking that they introduced in PER 101, College Success, utilized Dr. Richard Paul and Linda Elder's charts. However, the faculty teaching this course felt those students had difficulty transferring their critical thinking skills to other courses and that they relied heavily on the charts and book.

In addition to the issues mentioned above, the QEP committee members could not agree on a definition of critical thinking and agreed a standardized definition was needed. Since critical thinking is a nebulous term, GMC wanted to define critical thinking and identify specific skills to target. The literature review provided insight into the problem GMC faculty felt they were facing. First, we learned that faculty were not automatically teaching critical thinking, as part of their college courses and that it had to be deliberately inserted. Second, critical thinking and the

specific skills had to be defined by the college and communicated to faculty and students. Third, the critical thinking approach currently taken by GMC was philosophical and not cognitive, which was shown to improve students' critical thinking abilities, and fourth, critical thinking needed to be taught in a consistent way to students in more than just a couple of courses in order for transference to occur.

Identification of Key Issues from Institutional Assessment

In deciding what QEP topic to select, the QEP participants reviewed data: a) related to the potential QEP topics, b) from the Noel-Levitz Student Survey of Satisfaction, and c) from the Community College Survey of Student Engagement (CCSSE).

Core Competency Data and Six Potential QEP Topics

Of the six topics selected by GMC, five of them either had been or currently were core competencies for the institution. In 2013, Georgia Military College revised its core competencies. Previously GMC had five core competencies: written communication, oral communication, reading, mathematics, and computer literacy. With the revision of the core, three competencies were removed (oral communication, reading, and computer literacy) and replaced with critical thinking, global literacy, and problem solving. These new competencies aligned with the new core and were workforce skills needed by college graduates and students transferring to four-year institutions.

The QEP committee reviewed data from oral competency and written communication as they were selected as potential QEP topics. The college had not yet collected data on the new core competencies: critical thinking and problem solving that were also selected as QEP topics. The college also did not have data on other topics selected, specifically "information literacy and teamwork."

The oral competency data showed that 80% of the students passed the oral presentation in the academic year 2009-2010. Students had the most trouble with delivering an oral presentation (3.04) rather than the speech's organization (3.65), language (3.38), and supporting materials (3.40). This information was incorporated into the problem statement for oral communication.

The written competency data showed that 35% of the students passed the assignment with a 70% pass rate or higher on the rubric. The area of difficulty for students was "syntax and mechanics." The QEP committee felt this topic was one to add to the survey for the topic selection.

The committee also reviewed the Noel-Levitz Student Survey of Satisfaction and Community College Survey of Student Engagement (CCSSE) data.

Noel-Levitz Student Survey of Satisfaction

The Noel-Levitz Student Survey of Satisfaction has been administered by GMC annually until 2014 when the college chose to begin administering it biennially. This survey is an indirect assessment that measures student satisfaction.

The spring 2012 Noel-Levitz Student Survey of Satisfaction listed 13 challenges for GMC to review. Of those challenges, three of them dealt with academic advising. The other areas flagged as challenges dealt with financial aid, class scheduling, parking, faculty understanding students' circumstances, and drop/add policy. However, GMC exceeded the national norm on

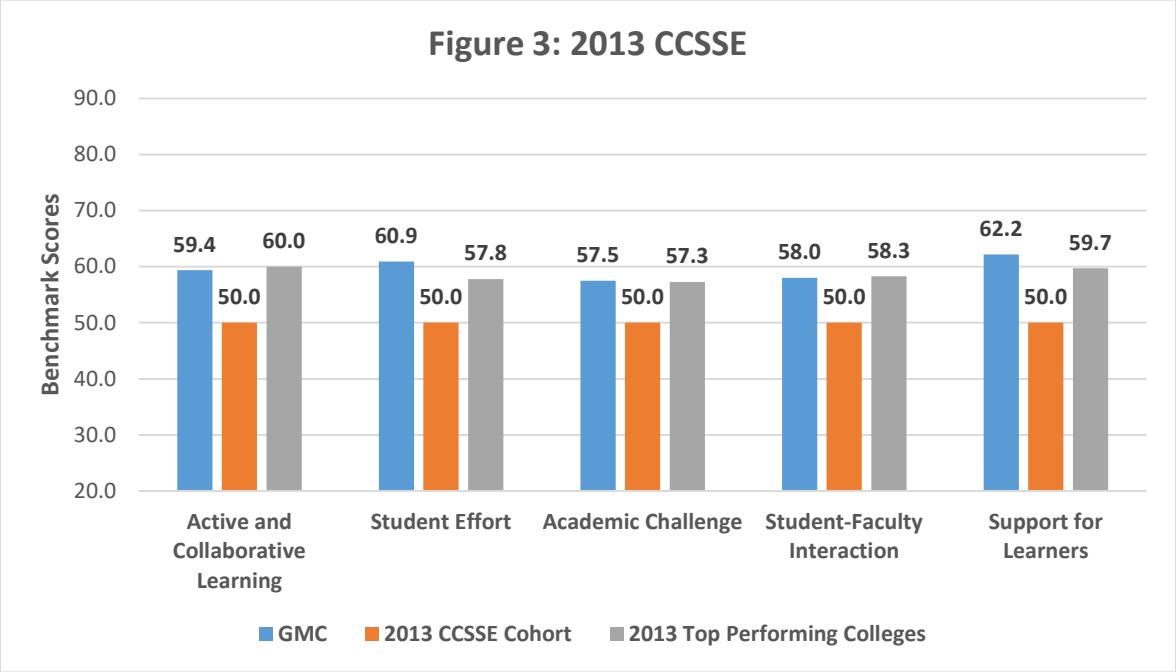
all 13 of these items designated as challenges for the institution. Therefore, the QEP committee did not choose any of these areas as potential QEP topics.

Table 1: Spring 2012 Noel Levitz Student Satisfaction Inventory			
Challenges listed by Noel Levitz for GMC	**GMC Mean**	**National Community College Mean**	**Mean Difference**
8. Classes are scheduled at times that are convenient to me.	5.76	5.48	0.28***
15. I am able to register for classes I need with few conflicts	5.83	5.4	0.43***
20. Financial aid counselors are helpful.	5.66	5.06	0.60***
7. Adequate financial aid is available for most students.	5.76	5.21	0.55***
40. My academic advisor is knowledgeable about the transfer requirements of other schools.	5.65	5.13	0.52***
23. Faculty are understanding of students' unique life circumstances.	5.66	5.24	0.42***
25. My academic advisor is concerned about my success as an individual.	5.7	5.05	0.65***
65. Students are notified early in the term if they are doing poorly in a class.	5.69	4.9	0.79***
12. My academic advisor helps me set goals to work towards.	5.67	5.03	0.64***
24. Parking lots are well-lighted and secure.	5.49	5.14	0.35***
13. Financial aid awards are announced to students in time to be helpful in college planning.	5.46	4.93	0.53***
16. The college shows concern for students as individuals.	5.68	5.12	0.56***
43. Class change (drop/add) policies are reasonable.	5.65	5.47	0.18***
*** Difference statistically significant at the .001 level			

Community College Survey of Student Engagement (CCSSE)

GMC has given the Community College Survey of Student Engagement (CCSSE) to its students since 2007. This survey is also an indirect assessment based on student opinion. It has five main groups of questions: Active and Collaborative Learning, Student Effort, Academic Challenge, Student-Faculty Interaction, and Support for Learners.

The 2013 Key Findings report showed five areas as GMC's aspects of lowest student engagement. Three of these areas were in the Student Effort group with "Came to class without completing reading and assignments" (GMC 1.76/2013 Cohort 1.82). The other two areas were in the Academic Challenge group with the lowest mean in "Using information you have read or heard to perform a new skill" (GMC 2.90/2013 Cohort 2.84). With all five of the CCSSE groups, GMC students rated slightly higher or about the same as the 2013 cohort of similar institutions across the nation and compared to the 2013 Top-Performing Colleges, which are the colleges scoring in the top 10% of the cohort by the benchmark. The CCSSE standardizes the 2013 CCSSE Cohort to have a mean of 50 and a standard deviation of 25 across all respondents.



The committee reviewed the CCSSE results from 2011 and 2013 to assist with the selection of the six topics. Committee members included a summary of this data in the problem statements for critical thinking, writing, teamwork, and oral communication for stakeholders to understand why these topics would be suitable for improvement as a QEP. From 2011 to 2013, little progress was made in these categories, and critical thinking had fewer items demonstrating means above the cohort norms.

Table 2: 2013 Community College Survey of Student Engagement (CCSSE)						
	2011			2013		
	GMC	2011 Cohort	Difference	GMC	2013 Cohort	Difference
Critical Thinking						
5a. Memorizing facts, ideas, or methods from your courses so you can repeat them in pretty much the same form.	2.99	2.85	None	3.01	2.87	None
5b. Analyzing the basic elements of an idea, experience, or theory	2.97	2.89	None	3.03	2.91	None
5c. Synthesizing and organizing ideas, information, or experiences in new ways	2.85	2.76	None	2.95	2.78	None
5d. Making judgments about the value or soundness of information, arguments, or methods	2.70	2.59	None	2.81	2.61	0.22*
12e. Thinking critically and analytically	3.06	2.92	None	3.17	2.95	0.26*
Writing						
4c. Prepared two or more drafts of a paper or assignment before turning it in	2.67	2.50	None	2.94	2.52	0.41*
4d. Worked on paper or project that required integrating ideas or information from various sources	3.03	2.77	0.28*	3.14	2.80	0.37*
6c. Number or written papers or reports of any length	3.03	2.89	None	3.14	2.90	0.22*
12c. Writing clearly and effectively	2.92	2.74	None	3.06	2.78	0.30*
Teamwork						
4f. Worked with other students on projects during class	2.56	2.50	None	2.58	2.50	None
4g. Worked with classmates outside of class to prepare class assignments	2.22	1.90	0.35*	2.11	1.93	None
12h. Working effectively with others	2.94	2.76	None	2.98	2.79	0.20*
Oral Communication						
4b. Made a class presentation	2.50	2.08	0.45*	2.48	2.13	0.38*
12d. Speaking clearly and effectively	2.88	2.65	0.23*	2.96	2.70	0.28*
*T-test, 2 tailed						

Data on Critical Thinking

Once GMC chose critical thinking as its topic, the QEP committee and faculty gathered data on current assessments and implemented new assessments to collect data to baseline student performance. The QEP committee reviewed this data in August 2015 before they finalized the objectives. The data came from three assessments: 1) AAC&U Critical Thinking VALUE rubric, 2) Community College Survey of Student Engagement (CCSSE), and 3) Test of Everyday Reasoning (TER).

First, the in-class assignment rated with the AAC&U Critical Thinking VALUE rubric in the PER 101, PER 102, COM 201, and English literature courses in 2014-2015 demonstrated that students had difficulty in evaluation in the areas of presenting "Evidence" and "Influence of Context and Assumptions," and in inference in the area of presenting "Conclusions and Related Outcomes."

Table 3: 2014-2015 Written Competency Data

	Explanation of Issues	Evidence	Influence of Context and Assumptions	Student's Position (Perspective/Thesis)	Conclusions and Related Outcomes
PER 101	3.10	**2.80**	**2.80**	2.90	3.10
PER 102	3.20	**3.00**	3.10	3.20	3.10
COM 201	3.08	2.79	**2.50**	**2.52**	**2.52**
ENG 221	2.80	2.84	**2.74**	2.80	**2.71**
ENG 222	2.91	**2.58**	2.70	2.95	**2.67**
ENG 201	2.96	**2.75**	**2.80**	2.87	2.86
ENG 202	2.82	2.65	**2.63**	2.75	**2.62**
ENG 231	2.89	**2.48**	**2.44**	2.85	2.70
ENG 232	2.79	2.86	**2.59**	3.00	**2.62**

[1]

Second, the Community College Survey of Student Engagement (CCSSE) has questions that the QEP committee related to the areas of Metacognition (questions 4a, 4b, 4n, and 4r); Analysis (questions 4d, 5b, and 10); Inference (questions 5c, 5d, and 8); Evaluation (question 9); Induction (questions 5e and 5f); Deduction (question 11); and Overall Critical Thinking (question 12e) as shown in Table 22. On the majority of these items, students rated GMC the same as the comparison group. However, the college wants to exceed their comparison group in these critical thinking areas.

Third, the QEP Committee chose the Test of Everyday Reasoning (TER) as a national assessment for community college students to test students on their ability with Analysis, Inference, Evaluation, Induction, Deduction, and Overall score. The definition of each reasoning skill can be seen here: REASONING SKILLS. The QEP committee examined a list of thirteen assessments based on the findings in the literature review. Four committee members led reviews on these four assessments: the California Critical Thinking Skills Test (CCTST),

[1] Data bolded and in red font is the students' weakest performance areas.

Collegiate Assessment of Academic Proficiency (CAAP), Critical Thinking Assessment Test (CAP), and the Test of Everyday Reasoning (TER). The committee reviewed these tests for online implementation since we have an online campus, access for students with disabilities, reporting capabilities, scoring process, and assessment of our five cognitive skills. The QEP committee selected the TER because it assessed the five cognitive skills that GMC selected to demonstrate critical thinking as utilized in our title Bright IDEA (Inference, Induction, Deduction, Evaluation, and Analysis) was normed on Two Year College students, provided scores in each area and an overall score, provided a percentile rank for comparison to other colleges, and could be taken online to ensure our online campus students could participate in this national assessment. The Director of Disability Services also worked with TER to ensure the test would be in an accessible format.

Once chosen, GMC administered this test in the fall of 2015 to students as they completed the PER 102 Critical Thinking and Character Development course to determine the baseline for GMC students' critical thinking abilities. GMC students (n=397) attempted the test, and 314 students completed 60% or more of the test. GMC ranked in the 38th percentile with its students performing "moderate" levels of critical thinking in all areas. These results demonstrated that GMC students' critical thinking abilities are average, and GMC would like to increase the TER overall score from "moderate" to at least "strong" in all areas and "superior" in the overall category. GMC would also like to rank in the 80th percentile or better. Based on this first assessment, these students struggled the most with "Analysis" and "Evaluation."

Table 4: 2015 Fall TER Results

	Percentile	OVERALL	Analysis	Inference	Evaluation	Induction	Deduction
TER Highest Score for each section	96	32	9	15	10	16	18
GMC Scores - Mean (±SD) (Students that completed 60% or more of the test N=314)	38.0	18.5 (5.5)	5.3 (2)	8.2 (2.5)	5 (2.2)	9.2 (2.8)	9.3 (3.3)

Table 5: Recommended Performance Assessments for TER Overall Score

	Not Manifested	Moderate	Strong	Superior
TER Overall Score	0-14	15-23	24-28	29 or higher

Table 6: Recommended Performance Assessments for TER Scale Scores			
TER Scale Scores	Not Manifested	Moderate	Strong
Analysis	0-3	4-6	7 +
Inference	0-4	5-10	11 +
Evaluation	0-3	4-7	8 +
Induction	0-4	5-10	11+
Deduction	0-6	7-12	13 +

After the selection of the QEP from broad-based participation and the review of existing data, the QEP Committee then defined critical thinking and its sub-set skills and selected the Test of Everyday Reasoning as its national test. The committee then gathered baseline data from the TER, CCSSE, and the AAC&U Critical Thinking VALUE rubric in order to utilize this information to write the objectives for the QEP. After determining from the literature review that critical thinking is a subsection of metacognition, GMC's QEP committee members believe that metacognition may be the first stepping-stone for getting students walking toward this goal (Flavell, 1979; Kuhn & Dean, 2004; Lai, 2011; Martinez, 2006). For this reason, the plan includes a focus on metacognition as well.

IV. Desired Student Learning Outcomes

Critical Thinking is defined by GMC's QEP committee as "an active, self-reflective, and deliberate attempt to utilize cognitive skills to support decision-making, problem solving, or mastery of concepts throughout various contexts." The QEP committee agreed upon the following desired goal, objectives, and outcomes for GMC.

GOAL

Provide an atmosphere where students will improve their ability to think critically.

OBJECTIVES & OUTCOMES

Objective 1. GMC Stakeholders (Students, Faculty, Academic Support Staff, and Administration) will demonstrate knowledge of metacognition, critical thinking, and the five reasoning skills.

Outcome 1. Stakeholders will be able to:

- Define metacognition and critical thinking.
- Identify and describe the five reasoning skills.

Objective 2. Faculty will participate in professional development in metacognition, critical thinking, and the five reasoning skills.

Outcome 2. Faculty will be able to:

- Appraise their thinking skills and processes (metacognition).
- Apply critical thinking and the five reasoning skills.

Objective 3. Students will employ metacognitive skills, critical thinking, and the five reasoning skills throughout the core curriculum.

Outcome 3. Students will be able to:

- Appraise their thinking skills and processes (metacognition).
- Demonstrate their ability to think critically and apply the five reasoning skills.

V. Literature Review and Best Practices

Historical Perspective on Critical Thinking

Why is critical thinking so hard to explain and grasp in order to improve student learning? While some educators discuss this topic as a new fad in educational pedagogy, critical thinking and the philosophy of thinking has been around since Socrates first discussed it with his students. As Diane Halpern (2014) points out, an educator cannot just teach content without teaching thinking, or students will become full of useless facts that they cannot manipulate into meaning. Education has focused too long on rote memorization instead of focusing on higher-level learning (Lai, 2011). Many researchers agree that critical thinking skills cannot develop as an automatic by-product from teaching a course (Abrami, et al, 2008; Arum and Roksa, 2011; Boostrom, 2005; Solon, 2003; Van Gelder, 2005). Instead, deliberate training in multiple courses based on a standardized definition of critical thinking can improve students' critical thinking skills (Bailin, Case, Coombs, and Daniels, 1999; Halpern, 1998).

Educators know that teaching students how to think is important, but knowing what defines "thinking" and how to teach it is more complicated. Cuban (1984) refers to this issue with critical thinking as an area that is a "conceptual swamp" (p. 676). This issue occurs because many definitions of critical thinking exist, and in most part, this variance is due to the viewpoints of three different academic disciplines that discuss it: philosophy, psychology, and education (Lai, 2011; Rudd, 2007).

First, the philosophers explored "what it means to think," and depending on which philosopher one reads, Socrates, Plato, Aristotle, Kant, or Russell, a slightly different perspective emerges. Wells (2009) warns professors that it is not possible to be philosophically neutral when teaching reasoning because everyone has a philosophy whether they admit it or not, typically based on something connected to a cultural bias, religious bias, or scientific bias. Therefore, the definition constructed for critical thinking may or may not control for philosophical perspective, which is something that needs to be considered.

Later, cognitive psychologists began discussing "critical thinking" and how people think or how they might be able to think under ideal circumstances with some psychologists viewing critical thinking in its component parts like the ability to analyze or synthesize information, while others argue that critical thinking is more than the sum of its parts taking a Gestalt viewpoint (Halpern, 2014; Lai 2011, p. 7). Peters (2007) states that cognitive psychology viewed critical thinking in

three stages: 1) stages of development and the mental functioning that occur during these stages stemming from Piaget's research; 2) informational processing that occurs like the comparison between a brain and a computer, which comes from Claude Shannon's research; and 3) studying the mind in terms of cognitive styles, which is based on the work of researchers like Howard Gardner (p. 352).

Finally, educators started discussing how to take the information from these two disciplines and develop methods for teaching critical thinking skills. For example, professors utilize Bloom's taxonomy to create student learning outcomes. The three highest levels of Bloom's taxonomy "analysis, synthesis, and evaluation" are used to represent critical thinking (Lai 2011, p. 8). Multiple pathways from philosophical perspective to cognitive psychological theory to educational pedagogy exist. Regardless of the different viewpoints of critical thinking, researchers argue that critical thinking skills can be taught and learned (Lai, 2011; Solon, 2003; Van Gelder, 2005).

According to Mark Mason (2008), the literature from these three disciplines can be funneled into four different teaching methodologies which can be used to examine critical thinking: 1) Teaching critical thinking skills in a general way; 2) Teaching critical thinking in the context of a specific discipline; 3) Teaching critical thinking skills in a general way first and then in a specific context; 4) Teaching critical thinking skills as a means of improving moral and ethical standing.

The first perspective views critical thinking as general skills that a person can learn. According to Mark Mason (2008), Robert Ennis and Richard Paul have provided research supporting this viewpoint. Depending on the theorist, the skills identified that a person needs to learn to be a critical thinker can vary. For example, Robert Ennis and Eric Weir (1985) developed an assessment instrument, Ennis-Weir Critical Thinking Essay Test, which asks students to read a letter to the editor in a scenario and then write a letter to the editor in response. A rubric is then provided for grading the essay in order to examine students' reasoning abilities by how the assumptions are stated and how the students responded, while avoiding illogical thinking like circular or irrelevant responses.

The second perspective views critical thinking as only able to occur after a person is immersed in a discipline. John McPeck (1981) holds the viewpoint that people cannot think critically about a subject unless they have a thorough understanding of that discipline (Mason, 2008). Mason (2008) explains that McPeck (1981) sees critical thinking as inductive and only through seeing patterns and generalization in a discipline can one begin to make connections and utilize critical thinking in order to reason. McPeck (1981) argues that general critical thinking skills are less helpful (Lai, 2011).Therefore, general skills cannot be learned. The only way people learn to think critically is to immerse themselves in a field of study to the extent that they can contribute and build on that field.

The third perspective combines those two beliefs, and Harvey Siegel views critical thinking as skills that someone can acquire and the ability to develop a critical attitude in a discipline (Mason, 2008). While Mason (2008) distinguishes the first and third perspective, most researchers tend to fall into this category. They may focus on teaching general critical thinking skills, but like Nosich (2005), most would probably apply those skills to specific disciplines and support the notion that these skills can be enhanced by learning a specific discipline and applying them.

The fourth perspective takes a more philosophical approach and sees critical thinking as having to be grounded in morals and values. Jane Roland Martin, Barbara Thayer-Bacon, Kal Alston, and Anne Phelan support this viewpoint of critical thinking (Mason, 2008). While the perspective of taking ethical and moral perspectives into consideration when viewing an issue or solving a dilemma, the critical thinker may not be able to accomplish this task without the skills developed using the first, second, or third perspective.

While Mason (2008) argues these four distinct perspectives exist, further research indicates that the lines are more blurred between these methodologies. For example, Richard Paul and Linda Elder (2007), who argue for critical thinking skills, later write a pamphlet called *The Miniature Guide to Critical Thinking: Concepts and Tools* where they provide methods for how to apply critical thinking skills by focusing on the "Elements of Thought," "Three Levels of Thought," and the "Intellectual Traits or Virtues." In this pamphlet the first perspective focusing on skills is discussed, but so is the fourth perspective by focusing on morals and values. While overlap tends to exist between these researchers, none of them agrees on the critical thinking skills in order to develop an overarching standardized definition for critical thinking in the field. Therefore, each institution wanting its students to learn critical thinking will need to construct its own standardized definition and ensure that the assessment selected matches that definition.

Another consideration that educators need to take into account is how critical thinking is perceived. Is it specific skill sets that a person can learn in order to be a critical thinker or is it more holistic using multiple skills at one time? Answering this question for the institution is important because it may determine how the pedagogy and assessments are structured.

Lai (2011) discusses how philosophers like Van Gelder (2005) and Facione (1991) have accused cognitive psychologists of reducing the holistic functioning of critical thinking into separate skills that operate independently of each other. For example, Van Gelder (2005) cautions educators to be wary of utilizing cognitive science for teaching purposes. While he thinks that cognitive science can shed light on critical thinking, he argues that the teacher must realize that cognitive science does not provide everything that teachers should know in order to teach critical thinking. To illustrate his point, he expounds on six lessons that teachers should take into account.

First, Van Gelder (2005) explains that humans exhibit the natural ability to see patterns and tell stories, but critical thinking is hard to learn for most people because it is a complex activity and something that people do not do on their own. He argues that it is a contrived talent only learned through hard work and dedication like the pain and dedication it takes to do ballet versus the natural ability to run. Utilizing his analogy, the ballet dancer must learn specific techniques; yet when asked to perform, those individual skills must be artfully combined to create a whole ballet routine. In other words, do not expect your students to become prima ballerinas overnight or even in two years. Being a critical thinker takes years of practice.

Second, Van Gelder (2005) stresses that students need a lot of practice. Teaching the theory of critical thinking or seeing examples of what constitutes good critical thinking does not replace having students deliberately practice critical thinking techniques for themselves. He further argues that teaching critical thinking in the curriculum must be done in its own right and not through exposure to critical instruction of a specific discipline, which, of course, should take place as well in the content courses.

Third, Van Gelder (2005) emphasizes that teaching and practicing critical thinking in one course alone will not work. Students must be taught to transfer these skills to other courses and to the real world. He mentions how Halpern (1998) notes that educators cannot assume that the skill will transfer from one situation to another, so teaching for transfer must take place as well.

Fourth, Van Gelder (2005) discusses how the theory of critical thinking does need to be taught in order for students to understand and appreciate critical thinking before practicing its skills. As in any discipline, the vocabulary of critical thinking needs to be provided, so students can understand why another person's argument is not good, for example. Students also need to be able to know enough about critical thinking to be able to understand the explanation their teachers provide when correcting them and ultimately be able to monitor themselves and correct errors that they are making in reasoning. He does caution again that while teaching theory is important, it is not a replacement for deliberate practice.

Fifth, Van Gelder (2005) explains that the core of critical thinking is in knowing what an argument is, how to construct one, and how to deliver that argument in writing or orally. He states, "arguments constitute a body of evidence in relation to some proposition (an idea that is true or false)" (p. 44). He also provides an example of "argument mapping" which consists of placing the question and a reasoned response in the top box and drawing boxes beneath it that support the reasoning. He makes the statement that research has shown that "argument mapping" has been used to improve critical thinking skills much faster than students learning critical thinking in a conventional class do and cites Van Gelder, Bissett, and Cumming (2004).

Sixth, Van Gelder (2005) discusses the human mind's flaws that are generally known as "cognitive biases and blind spots" (p. 45). Students need to be aware that these exist, and while Van Gelder does not discuss all of them, literature on metacognition or some critical thinking textbooks like Halpern's (2014) *Thought and Knowledge* have chapters addressing this issue. Van Gelder (2005) does mention one cognitive bias called "belief preservation." He explains that it is the tendency for humans to find evidence or use opinions to support their beliefs instead of using evidence to construct their beliefs.

Overall, researchers have argued that students cannot be critical thinkers until they are immersed with the knowledge and critical thinking skills of a discipline because all disciplines require different critical thinking skills (Bailin et al., 1999; Case, 2005; Willingham, 2008). While Halpern (2014) and Van Gelder (2005, p. 43) agree that thought and knowledge should be taught together, they do not agree that critical thinking skills are only specific to a discipline. Instead, they think that some general skills can be taught across disciplines. However, researchers agree that a stand-alone course in critical thinking is not as effective as teaching critical thinking skills in a variety of courses (Facione, 1986; Siegel, 1988). Solon (2007) demonstrates the successfulness of this theory when he teaches four of Diane Halpern's (2014) chapters in *Thought and Knowledge* to his Introduction to Psychology students and finds that their critical thinking improves in the experimental group, but the content knowledge of both the experimental and control groups remain the same.

However, the opposing viewpoint is that students do not need a lot of background knowledge to think critically, and as Boostrom (2005) pointed out, even Socrates forced his students to think critically to learn a new subject (p. 42). Then, of course, an institution could decide to do both as Baker University did in their study to improve their students' critical thinking skills. They used a combination of stand-alone courses to teach general critical thinking skills and trained their

faculty in the same critical thinking techniques in order for them to embed these skills in their content courses (Hatcher, 2006).

Regardless of the academic perspective on critical thinking, researchers tend to agree that critical thinking needs to be addressed in education. Tsui (2002) aptly states, “Rather than devote so much effort to teaching students what to think, perhaps, we need to do more to teach them how to think” (p. 740).

Critical Thinking Defined

Many definitions of critical thinking exist, and Hatcher (2006) believes that faculty must define what they mean by critical thinking for the institution before they launch into a discussion of how these skills can be taught in either a stand-alone critical thinking course and/or embedded instruction within existing courses (p. 247). In the Baker University study, Hatcher (2006) explains how this institution realized the importance of constructing a definition that they felt was as “clear and concise as possible” and reflected their viewpoint of critical thinking (p. 251). They also chose to distinguish critical thinking from the cognitive activities like creative thinking. Their final definition was “Critical Thinking is thinking that tries to arrive at a judgment only after honestly evaluating alternatives with respect to available evidence and arguments” (Hatcher, 2006, 251). Hatcher (2006) further explains that the inclusion of “alternative perspectives” comes from Aristotle’s works, John Stuart Mill’s (1978) chapter two of *On Liberty*, and Peter Facione’s (1986) early definition of critical thinking in his article, “Testing College-Level Critical Thinking,” and Ralph Johnson’s (2000) *Manifest Rationality* (Hatcher, 2006, 251).

As already stated, institutions need to examine whether they view critical thinking as a set of skills to acquire or as a holistic talent to be developed before crafting their definition of critical thinking. Haskins (2006) views critical thinking as a complex process and “more than thinking logically or analytically, it also means thinking rationally or objectively” (p. 2). As in the Baker University definition above, a laundry list of critical thinking skills does not exist, but the institution focused on the overarching ability that they want their students to exhibit. Nosich (2005) further adds that institutions need to ensure that students understand the definition of critical thinking along with why it is important in order to engage the students and motivate them into wanting to develop their critical thinking skills.

Once the definition is crafted, then translating it across the institution into individual courses can be challenging. Faculty need to understand the institution’s definition of critical thinking, place it in their syllabi, but also examine their critical thinking activities, including ones from textbooks, to ensure that they actually require critical thinking skills.

Scriven and Paul (2004) also provide several lengthy critical thinking definitions from Michael Scriven and Richard Paul (1987), Linda Elder (2007), Richard Paul and Linda Elder (2008), and Edward Glaser (1941). All of these definitions focus on points that are similar to those Van Gelder (2005) made that (1) critical thinking is beyond memorizing content and more of a type of thinking in a discipline like historical thinking; (2) no one is a critical thinker all the time; (3) that it takes deliberate effort and knowing what the tools are to be a critical thinker; and (4) that human error must be acknowledged. In the fall of 2014, the GMC QEP committee compiled these definitions into one document that we then reviewed individually in preparation for attending a workshop that the QEP chair hosted on the Warner Robins campus. During this workshop, the committee members used this document to work in separate groups to create critical thinking definitions for GMC. Once each group had completed its definition, then all groups came

together to read them, discuss what it thought was important in its definition and to work all together to write the final critical thinking definition for GMC.

Metacognition

Metacognition is the study of analyzing one's own thinking skills. John Flavell coined the term, "metacognition," in the late 1970's (Flavell, 1979, p. 906). Lai (2011) provides several definitions for "metacognition," but it means to think about one's own thinking process. Researchers state that critical thinking is a subsection of metacognition (Flavell, 1979; Kuhn & Dean, 2004; Lai, 2011; Martinez, 2006). Norris (1985) defines metacognition as "planning, monitoring, and revising the progress of the cognitive skills," which gives support to Lai's (2011) supposition that metacognition functions at least as a variable supporting critical thinking with the idea that in order for a person to learn to become a deliberate critical thinker, then one must be able to analyze his/her own thinking skills to achieve this goal (Norris, 1985, p. 43). Other researchers, such as Schraw, Crippen, and Hartley (2006), view critical thinking as a subsection of "cognition," but in their view, "cognition," "metacognition," and "motivation" are all subsets of "self-regulated learning" (p. 113).

According to Martinez (2006), three types of metacognition exist: (1) metamemory and metacomprehension, (2) problem solving, and (3) critical thinking (p. 696). First, metamemory and metacomprehension both refer to how one understands and monitors their own thinking. Metamemory is tapping one's own memory to try and remember knowledge that one learned, and during this process, one can either remember the information or not. Metacomprehension is defined as knowing whether or not one comprehends the material that one has read.

Second, Martinez (2006) defines problem solving as the ability to locate the solution for a problem. He discusses how problem solving relies on an individual asking oneself questions that force the person to continually analyze the problem, step back and re-evaluate the problem, and then continue to question and try different solutions until the answer is found. Martinez (2006) views the third type of metacognition, critical thinking, as the ability to evaluate the merit of the ideas one has as to the quality of that idea and judge whether or not that idea makes sense.

Regardless of how critical thinking is viewed as a main category or a subset of another category, students need to learn to become deliberate critical thinkers and move away from "automaticity" defined as "thinking that occurs without much awareness or effort" (Martinez, 2006). Lai (2011) argues that students need criteria for assessing their own critical thinking abilities; therefore, standards to judge their reasoning need to be established (p. 17).

Bailin, Case, Coombs, and Daniels (1999) discuss this issue and provide an analogy of writing and how students learn "good" writing from "bad" writing. What makes a good composition is more than just learning skills and fulfilling specific tasks. They argue that the same is true for critical thinking. The standards need to be defined for the students, so they know when they have performed "good" thinking and "bad" thinking, but explaining the difference between "good" thinking and "extraordinary" thinking may be more abstract (p. 292). Therefore, they recommend that teachers use exemplars or models as a good way of acquainting students with differing characteristics of what defines "good" thinking from "extraordinary" thinking (p. 292). Carlson (2013) found a significant difference in the instructors' perceptions and the students' perceptions on critical thinking instruction; therefore, using models may be one method for aligning the two different perceptions. He further recommends that students actively engage in critical thinking

activities without letting the professor's expectations hamper their learning. Allegretti and Frederick (1995) provide a detailed description of a modeling exercise used in the classroom.

Bailin, Case, Coombs, and Daniels (1999) also suggest that students should engage in discussion and dialogue with someone in the field, like a professor, in order to learn how to perform "good" critical thinking (p. 289). As with other researchers, they stress that professors should not teach isolated skills, but instead, they should characterize critical thinking in terms of the "intellectual resources" needed to perform critical thinking that should be directed toward a goal (p. 290). These resources may also be utilized in defining critical thinking or writing student learning objectives. They list these five "intellectual resources" as, "background knowledge, operational knowledge of the standards of good thinking, knowledge of key critical concepts, heuristics (strategies, procedures, etc.), and habits of mind" (p. 290). Each one of these "intellectual resources" is explained.

First, in gathering "background knowledge," students should investigate the problem or issue from several various and unbiased sources with differing viewpoints in order to gain a holistic view. Gathering "background knowledge" may also require students to research the topic to make sure they fully understand the essence of the problem and the terminology or processes being used. For example, if a person read an article about whether or not to drill for oil in Alaska, then that person would not only want to read unbiased articles on both sides of the issue, but he/she would also want to find out something about the process that will be used to transport or drill for the oil to have some understanding of how it would actually work in that environment (Bailin, Case, Coombs, & Daniels, 1999).

Second, in utilizing "operational knowledge of the standards of good thinking," students need to know that there are two types of standards. First, students need to know the standards for judging it, if there are any. For example, judging an actor's performance differs from judging a scientific experiment. In addition, students need to know the principles that guide deliberation or inquiry such as judging the credibility of authorities discussing the problem, the reliability of reports that observers make, examining the deductive and inductive arguments, and the moral, legal, or aesthetic reasons given (Bailin, Case, Coombs, & Daniels, 1999, p. 291).

Third, students must learn how to identify key critical thinking concepts in order to monitor their own thinking and the thinking of others. Learning these concepts means that students need to know the vocabulary, understand the concepts, and practice the skills in order to identify a good product from a bad product (Bailin, Case, Coombs, & Daniels, 1999).

Fourth, students should learn to look at what a good product is not and be able to discuss it with a person knowledgeable in critical thinking. These types of recommended tasks are referred to as heuristics, which are strategies or procedures for examining the overall product. Some heuristic exercises look at all alternatives before choosing one and may double check supporting facts for an argument, divide a problem into sub-problems, or check their own thinking to make sure they are monitoring for progress.

Fifth, students must develop critical thinking habits. As stated before by Van Gelder (2005) and again by Bailin, Case, Coombs, and Daniels (1999), students have to practice critical thinking with a deliberate effort in order to improve their abilities. They have to exhibit characteristics and the attitude of a critical thinker, such as displaying a "respect for reason and truth, respect for high-quality products and performance, an inquiring attitude, open-mindedness, fair-mindedness, independent-mindedness, respect for others in group inquiry and deliberation,

respect for legitimate intellectual authority, and an intellectual work ethic" (p. 294-295). Lai (2011) also mentioned these traits as demonstrating the disposition of a critical thinker.

Metacognition and critical thinking complement each other and are hard to separate when teaching students how to become deliberate critical thinkers. Metacognition may be the first stepping-stone for students walking toward this goal. The good news is that metacognitive skills appear to improve as we get older (Kuhn & Dean, 2004).

Critical Thinking and Educational Strategies

Several educational strategies were mentioned in the section on defining critical thinking. However, examining them in more depth is warranted. Educators should acknowledge that critical thinking is not a byproduct of education. Instead, they should acknowledge that deliberately teaching critical thinking is important, take the time to teach students the dispositions of a critical thinker, explore different educational models to find one that fits the institution's mission and goals, consider how the critical thinking skills taught in the classroom will transfer to the real world, and discuss how faculty members at the institution will receive and utilize training. To improve students' critical thinking skills, educators must address these types of issues related to viewing critical thinking as a byproduct of education.

Wilbert J. McKeachie stated in 1992, "Everyone agrees that students *learn* in college, but whether they learn to *think* is more controversial" (Boostrom, 2005, p. 3). Boostrom (2005) complains that education has apprenticed students from a young age into a specific subject area like mathematics, art, history, psychology, or English. Therefore, education has forced students to think within the confines of a specific subject area, and furthermore, education has catered to the notion that thinking is only equivalent to knowing a subject well. Boostrom (2005) argues that we must break these boundaries and think beyond the focus of one or two subjects like John Dewey and Sir Frederick Charles Bartlett have argued before. However, some educators believe that they already teach critical thinking skills in their classroom through a more liberal arts' perspective.

Researchers argue that students need to be taught the importance of critical thinking and how to think critically, and they need to see examples of what good critical thinking in a variety of situations is like. Otherwise, they will not know how to model their own decision-making (Bailin, Case, Coombs, & Daniels, 1999; Halpern, 2014). Several studies have demonstrated that students attending classes without deliberate critical thinking instruction and practice do not develop critical thinking skills (Abrami, et al, 2008; Arum & Roksa, 2011; Solon, 2003). In fact, Abrami, et. al. (2008) conducted a meta-analysis examining different effect sizes to find patterns leading to large effect sizes for increasing students' critical thinking skills. When conducting this study, they found that the smallest effect size on improving the critical thinking of students occurred when it was taught as an automatic by-product of a course. So, why do college faculty members have difficulty embracing the teaching of critical thinking skills in their classes?

Nosich (2005) suggests that it is due to the faculty members' beliefs that teaching critical thinking skills takes time away from teaching the content and argues that the choice to teach critical thinking is one that faculty members need to make. Faculty members need to understand that in order for students to learn the content, they must think critically about it. Therefore, faculty should always ask, "How will this (activity/discussion/exercise) help my students' abilities to think critically through the subject matter?" (p. 62). Nosich (2005) makes a pointed statement about rote learning:

Contrary to what one might suppose, teaching students to memorize information does not lay a foundation of knowledge about which students can think critically in the next portion of the class. Such a method is not neutral with respect to fostering students' critical thinking abilities; it is negative. It fosters an uncritical idea of information itself: that information is just a set of words arranged by someone else, divorced from the contexts in which it can be put to use. Such a method assumes that one can have information without interpreting it, without conceptualizing it oneself, without evaluating whether it is accurate (and how one might check), without assessing the problems to which it is relevant, or even whether it is clear (p. 63).

Nosich (2005) advocates that teachers need to make a deliberate effort to teach critical thinking skills in their classrooms, and they need to be careful of the resources that they use to do it.

Educators utilize textbook exercises for assisting students with practicing their newfound skills, but Nosich (2005) cautions that critical thinking exercises in textbooks do not always lead to practicing critical thinking skills. He examined 24 textbooks across 17 disciplines that were typically used at a community college, and he found that the majority of the textbook exercises required the student to do recall or rote applications. The critical thinking questions were typically mislabeled and were still rote applications, and very few true critical thinking and engagement questions existed (p. 60-61). Nosich (2005) stated that whether teachers are trying to embed critical thinking activities into their class on a periodic basis or whether they feel that focusing on content is more important, neither pedagogical approach does justice to improving critical thinking skills for their students (p. 62).

Elder (2011) focuses on community colleges, especially those offering mostly technical degrees, and argues this perspective as well by stating that educators need to stop thinking of content as information only gathered from lectures and textbooks and to realize that content is not separable from thinking. Instead of this push toward rote memorization, students should spend more time on concepts and appropriately applying what they learn. Elder (2011) uses the example of having students explain how they arrived at an answer using mathematical concepts instead of following a procedural process to derive an answer without knowing the logic behind it. The same mistake of teaching process without theory as applied to the mathematical example could also apply to the teaching of the sciences. Educators need to have students practice strengthening their judgments by first having them realize the difference between being asked to produce a fact, an opinion, or a reasoned judgment (Elder, 2011; Foundation for Critical Thinking, 2013). Once students see the difference, they can make the leap to understanding that facts support their reasoning and not the final product.

If looking for a critical thinking textbook, Herman (2005) recommends Marlys Mayfield's *Thinking for Yourself* (2003) (p. 69). He supplemented his course content with three assignments from this textbook to improve critical thinking skills. His first assignment focused on improving observational skills, and he asked his students to take an hour and observe a fruit or vegetable and to describe it in a detailed essay. He gave students specific instructions and even had them monitor their own thinking. His students were at first skeptical of this assignment, but then after the assignment was completed, they found an hour not to be enough time.

Herman's (2005) second assignment focused on facts and how facts become facts. They discussed the difference between a fact and an approximation. His goal was to disabuse the students of the notion that facts are only what they experience. He used the existence of New Zealand and the historical experience of slavery in the United States before 1865 as facts that

they may have never experienced. He did an exercise in class where he defined what a chair was and asked students how many chairs were in the room. The students all had different numbers as they tried to estimate it. He asked them what they would do to come to consensus on the number. They agreed to have one student touch each chair and count them and then as a class, they decided on the number of chairs in the room. He said that as they went through the term that exercise was repeatedly brought up again as an example of not taking a fact for granted and that information should be scrutinized for its accuracy. This exercise was followed by another assignment which was writing a process essay where he asked them to select a fact from a list that he provided and to work to verify that fact. Once again, his assignment instructions were very detailed.

Herman's (2005) next assignment was a group project with four to six members. They were asked to give an hour presentation to their class on one of the topics from a list of current topics that the professor provided to the students. The professor randomly assigned students to groups using a lottery system. He discussed with them about scheduling meetings, allotting tasks, researching and analyzing the topic, and creating and organizing the presentation all while utilizing the critical thinking skills they had learned in the class that term.

Faculty members do not have to view instruction of the content and instruction of critical thinking as vying for the same class time. While Herman (2005) utilized these critical thinking exercises, Solon (2003) used four chapters from Halpern's book, *Thought and Knowledge*, and demonstrated that his students improved their critical thinking skills.

Utilizing test-banks can be another concern when giving in-class assessments to determine whether critical thinking has occurred. Krentler, Hampton, and Martin (1994) had four professors examine four test-banks to determine if the questions in the test-banks were knowledge questions or intellectual skills questions. They concluded that these test-banks focused more on knowledge questions than intellectual skills. They suggested that professors learn to classify test-bank questions as either knowledge or intellectual skills' questions, and they should be selective when picking questions (p. 19). They also suggested taking the time to revise test-bank questions to make them more intellectual, or to teach the students the difference between the two question types and have them produce a bank of intellectual questions for the test (p. 20). They recommended that an instructor use a blend of assignments and include written assignments instead of using only tests (p. 20).

Students need to understand what critical thinking is, why it is important, and what skills they can develop to practice it. Before that can happen, institutions need to recognize the importance of critical thinking instruction and practice, and faculty members should want to assist their students in becoming better critical thinkers.

Students can Improve Critical Thinking Skills

Most researchers agree that critical thinking skills can be taught and learned by students. However, little empirical work exists demonstrating this fact. One of the difficulties researchers have had with measuring students' abilities to improve critical thinking lies in the multiple definitions of critical thinking in the fields of philosophy, psychology, and education, and in turn, in the various assessment methods. Aligning the critical thinking definition of the institution with the assessment measure is critical, and some researchers have demonstrated that they can measure students' improvements on critical thinking tasks.

Baker University over a fifteen-year study demonstrated students' improvements in critical thinking (Hatcher, 2006). They first utilized the Ennis-Weir Critical Thinking Essay Test because of the combination of writing and critical thinking that they wanted the students to exhibit at their institution (Ennis, 1989). Basing their research design on Pascarella and Terenzini (2005), they chose to compare the mean gain in the standard deviation where a score over +0.50 was considered successful. Over the five year period of testing seniors who completed the entire program, they had a mean gain in standard deviation ranging from +0.94 to +1.87 (p. 256). The advice Baker University gives to its readers is to keep the critical thinking material focused and try not to cover too much material. They focused on having students develop the ability to practice critical thinking skills through writing argumentative papers and being able to analyze readings. They utilized critical thinking skills such as "deduction (with proofs), induction, informal fallacies, and sometimes quantification theory" (p. 258). Hatcher (2006) also stresses that giving a grade on the capstone paper was important as well as ensuring that students could see the value of critical thinking in their everyday lives.

Later, Baker University switched assessments to the California Critical Thinking Skills Test (CCTST) because it was more widely used, and they wanted to compare it to other programs. The mean gain in standard deviation was between 0.55 and 0.65, but the validation study for the CCTST was 0.32. Baker University increased their students' abilities to think critically as measured by these instruments. However, they are a four-year institution, which leads to the question: Can community college students improve their critical thinking in two-years?

Tom Solon (2003) conducted an experiment using two of his Introductory Psychology courses at the community college for which he taught. He kept one group as the control group and one as the experimental group. The experimental group received critical thinking instruction in nine areas: 1) Inference and non-inference; 2) assumptions (covert as well as overt) and conclusions; 3) consistent and inconsistent statement sets; 4) deductive and inductive reasoning; 5) valid and invalid arguments; 6) credible versus seriously questionable claims and sources; 7) meaningful versus vague, ambiguous, and/or meaningless language; 8) relevant versus irrelevant evidence; and 9) scientific versus pseudo-scientific procedures (Solon, 2003, p. 26-27). Solon (2003) found on the Cornell Z Test that the experimental group demonstrated a statistically significant increase in critical thinking instruction compared to the control group, and he found that the learning of the content material did not differ between the two groups. Therefore, he demonstrated that embedding critical thinking instruction did not detract from learning the content of the course.

In a study of four colleges, Tsui (2002) performed a qualitative analysis. She chose these four colleges based on high and low factors for institutional selectivity and score on the students' self-perceptions as measured by the Institutional Growth in Critical Thinking (IGCT) assessment conducted by the Cooperative Institutional Research Program (CIRP). Tsui (2002) interviewed students from these four colleges and found that colleges with high IGCT scores demonstrated an increase in the number of challenging statements that students made, an increase in the number of students' comments, and an increase in the number of faculty compliments made to students concerning their comments. She also found that students from colleges with high IGCT scores had writing assignments with rewriting exercises embedded in more courses and had less multiple-choice tests and had more class discussions in a seminar format with less emphasis on lecture.

In contrast, colleges with lower IGCT scores emphasized lectures, which Tsui (2002) refers to as a “passive learning method.” They had students who were more fearful of asking questions during class and felt that doing so interrupted the lecture; therefore, they waited until after class to ask their questions.

Other researchers also commented on findings for improving student learning in relation to critical thinking and its variables. Halpern (1993) mentioned teaching strategies that cognitive psychologists have identified as being “effective educational techniques” (p. 244). These effective teaching strategies included: active learning, practicing critical thinking skills in a variety of settings, utilizing real-world scenarios, metacognition training and practice, providing students with a rationale for why they need critical thinking skills, increasing intrinsic motivation in students, and using multiple educational strategies” (p. 244).

Abrami et al., (2008) found in their meta-analysis that the instructional approach with the largest effect size on improving critical thinking instruction was the mixed method approach “where critical thinking is taught as an independent track within a specific content course” (p. 1121).

Lai (2011) mentioned three components that must be addressed in order to improve critical thinking with instruction: (1) students must apply critical thinking skills in a variety of academic subjects and contexts; (2) students must utilize metacognitive strategies to monitor their thinking; (3) students must learn to focus on deep learning instead of focusing on superficial aspects of the problem.

The literature tended to support that critical thinking skills can be developed through theory and repeated practice. However, it is up to the institution to make the deliberate teaching of critical thinking a college-wide initiative in order to influence its students.

Teaching Students the Disposition of a Critical Thinker

Being a critical thinker takes thought and effort. In 1990, the Delphi project sponsored by the American Psychological Association (APA) agreed that critical thinking must be viewed on two dimensions: general skills and disposition (Stupnisky, et. al., 2008). Lai (2011) agreed that critical thinkers must possess the ability to think critically, must choose to use their ability to think critically, and must use their critical thinking ability for ethical purposes (p. 12). People need to acknowledge and recognize their own human behaviors and predilections in order to become an effective critical thinker. For example, some people jump to conclusions when they see patterns instead of thinking through the problem or issue to form a rationale conclusion.

Boostrom (2005) explained how people are natural storytellers, so patterns tend to be forced into stories even when that explanation is not the one that makes the most sense. He discussed the danger of the lecture and reminded educators that lectures are retelling of stories, but what happens when important details are accidentally left out, definitions or facts are assumed to be known, or a teacher accidentally tells students the story incorrectly. Teachers also discourage thinking when they tell the students what they need to know. However, he acknowledged that avoiding all telling is not realistic, but it should not undermine students being forced to think and wrestle with the material for themselves. This wrestling with the material to get students to think for themselves helps students develop a disposition for being critical thinkers.

Halpern (2014) also discussed the dispositions for being a critical thinker. She stated that critical thinkers must be habitual planners, demonstrate cognitive flexibility when confronted with new

evidence, have a drive to want to address problems, be willing to make and admit mistakes, be mindful, be able to reach consensus with others, be able to utilize critical thinking strategies in a variety of settings, use metacognitive strategies, and understand how critical thinking interacts with intelligence. Halpern (2014) also covered human behavioral issues that flaw human thinking such as ineffectiveness to store and accurately recall memories, disposition for stereotyping, failure to seek evidence and believe opinion, and tendency to be overconfident.

Stupnisky, et. al. (2008) found a correlation between critical thinking and students' perceptions of their own control over the material learned, referred to as internal-locus of control. As the students' critical thinking abilities increased, so did their "perceived academic control." This term means that when students realize that their grades or thinking abilities are based on their own actions, then they are more likely to succeed. This idea compliments the notion that metacognition is important for critical thinking because if students can criticize their own thought processes, then that should give students a sense of control over their own thinking abilities. Students can also exhibit an external-locus of control, where they blame the environment, teacher and others for their inability to learn whereby causing students to feel that their success is based more on chance or external factors beyond their control, which is a behavior that all professors want their students to avoid exhibiting.

Haskins (2006) also believed that it is important for students to adopt the disposition of a critical thinker, and he outlined four steps. First, he said students should "adopt the attitude of a critical thinker" by being open-minded, possessing healthy skepticism, being intellectually humble, and being a free thinker (p. 3-4). Secondly, Haskins (2006) said to "recognize and avoid critical thinking hindrances" such as human limitations. For example, humans are manipulated by their emotional responses, sensory perceptions, and memory deficiencies, language usage, faulty logic, psychological or sociological constraints including our zeitgeist, which is our dominant thinking structured by the age in which we were raised (p. 4-5).

The third step to being a critical thinker is to "identify and characterize arguments" (Haskins, 2006). He explained that arguments are not related to arguing in the essence of fighting, but are arguments in relation to a "presentation of a reason(s) to support a conclusion(s)" (p. 4). Critical thinkers utilize inductive and deductive reasoning and understand if the argument is cogent (p. 4-6).

Haskins (2006) explained that inductive reasoning is the process of examining premises to arrive at a conclusion like what occurs in a courtroom case where evidence is used to build a case against the defendant. Haskins (2006) described deductive reasoning as a conclusion that is derived from the premises. For example, Sherlock Holmes, who is known for his deductive reasoning, sees an indentation on a deceased woman's left hand ring finger, which had been broken in an assault and deduces that the assailant forcefully removed her wedding ring; therefore, he makes the logical leap that she must have been married.

The fourth step of a critical thinker is to "evaluate information sources" (Haskins 2006). He reminded his readers, "an argument is only as strong as its weakest link;" therefore, every fact utilized in the argument needs to be examined, evaluated, and potentially weeded out (p. 6). Critical thinkers utilize techniques such as determining if the author of a source is biased, has an agenda, or is reputable. Even when all of those criteria are met, a person still needs to weigh the argument against what is known to be true (p. 6-7).

For example, a television show, *Your Bleeped Up Brain*, had their reporter go to a city and make the claim that a scientist was publishing a book with new evidence finding that the moon landing was faked. The people they talked with on the street did not argue that the information was not true even though it was clear that they did not want to believe it. The reason was because the people found this television personality to be unbiased, reputable, and having no agenda for wanting people to believe the moon landing was faked, and he was citing what they believed to be a credible source from a scientist, whom they believed to be an authority in the field (2013, Season One, A&E Documentary). One must examine the evidence instead of believing everything that is written or stated, even by credible sources. Some people are still upset about the Discovery Channel showing a supposed documentary on *Megalodon*, a prehistoric shark thought to have been found living. While they filmed it as a real scientific discovery, the documentary was found to be a hoax with actors playing scientists.

In another experiment demonstrating what can occur when people blindly follow authority figures, Norris (1985) reminded his readers of the 1963 Stanley Milgram experiment at Yale University. In Milgram's case, some of his administrators gave electroshock volts up to 450 that were clearly labeled "extreme intense shock" when ordered by a supervisor to do so each time the learner failed to answer items correctly. Luckily, the true test subject was the administrator of the shocks and not the learner. The learner never actually received any shocks and was in fact an actor pretending to be in pain (p. 41).

Haskins (2006) fifth step to being a critical thinker is to "evaluate arguments." He stated that there is a three-step process for evaluating arguments by assessing whether (a) "assumptions are warranted;" (b) "reasoning is relevant and sufficient;" and (c) "relevant information has been omitted" (p. 7). Haskins (2006) walked his readers through what each of these steps means and how to perform those steps, including attaching tables that can serve as checklists for evaluating arguments.

As these researchers have discussed, learning critical thinking skills and even practicing them occasionally will not make a person a critical thinker (Halpern, 2014; Haskins, 2006; Lai, 2011). Critical thinkers have the disposition and determination to continue to practice these skills until they are habitual. As Van Gelder (2005) noted, one cannot be a critical thinker without years of practice. He even explained that Karl Anders Ericsson found that the highest levels of critical thinking were reached by practicing these skills four hours a day for ten years, so educational institutions need to start teaching these skills and having students practice them as early in their educational experience as possible. Georgia Military College intends to assist students with becoming lifelong learners by understanding our definition of critical thinking and learning metacognition and the five cognitive skills: Induction, Inference, Deduction, Analysis, and Evaluation.

Developing Critical Thinking Educational Models

Many institutions have built educational models to improve student learning and not all have been successful. However, Baker University underwent a fifteen-year study devoted to improving their students' critical thinking abilities and demonstrated the ability to improve students' critical thinking skills (Hatcher, 2006). The model that they developed had two approaches. Baker University believed that integrating critical thinking skills into the courses was better than teaching one or two stand-alone courses in critical thinking (Hatcher, 2006, p. 248).

When explaining their model, Hatcher (2006) divided critical thinking instruction into two camps. The first camp supported the model of integrating critical thinking skills into courses, which stems from John McPeck's (1981) book *Critical Thinking and Education*. McPeck (1981) does not view critical thinking as a separate set of skills that make up a subject. However, the second camp supported by researchers like Pete Facione (1986) and Harvey Siegel (1988) support the idea that there are generic critical thinking skills that can be applied in any subject and taught in a general course (Hatcher, 2006, p. 249).

Baker University utilized both models and designed two freshmen core courses taught over twenty weeks to serve as the general skill building for critical thinking. They trained faculty in the skills and materials for these two general courses and taught them how to apply these techniques to teach critical thinking in their own courses. Then, they added a senior capstone course (Hatcher, 2006, p. 249). These courses focused on critical reading strategies and writing argumentative papers, while focusing on basic critical thinking skills such as "argumentation, identification, analysis and evaluation of the argument's construction" (p. 249).

The first freshman course entitled "Critical Thinking and Effective Writing" started by defining critical thinking for the students and instructing the students of the importance of critical thinking. They reflected on Plato's "Allegory of the Cave" and received instruction in basic critical thinking skills such as paraphrasing and summarizing readings, evaluating arguments in readings, and learning to identify positions, examining premises in relation to conclusions to establish if the argument is weak or strong, learning about deductive and inductive reasoning, learning about some common fallacies, and practicing how to use these skills to write their own papers following a five part model: "introduction, clarification and thesis, supporting reasons and arguments, possible objections and replies, and then a summation and conclusion" (Hatcher, 2006, p. 252-254).

In the second freshman course entitled, "Ideas and Exposition," the students applied what they learned in the first course to five sets of readings and were asked to write five additional critical papers. The instructors for this class were free to choose their own set of readings for the students. However, the papers followed the same process as in the first course and were rated with a standardized rubric. Both courses focused only on one essay type, the argumentative essay, and while grammar, style and mechanics were considered important and corrected, the instructor and students focused mainly on the composition of the argumentative essay.

The senior capstone course entitled "Science, Technology, and Human Values," had students write a 15 to 20 page research paper that they had to defend on a public policy concerning current scientific and technological developments. The student had to take into account multiple viewpoints and any "objections or alternatives to the proposed policy" (Hatcher, 2006, p. 250).

In addition to these courses, Baker University also had summer workshops for the faculty that covered the material in the critical thinking instruction for those courses, so faculty could also incorporate these critical thinking skills into their own courses (Hatcher, 2006, p. 267).

Regardless of the educational model chosen, improving students' critical thinking abilities has to be sustained after the program has been initiated. Barnes (2005) examined three colleges and how effective they were at sustaining critical thinking initiatives: Community College of Aurora, LaGuardia Community College, and Alverno College. Based on her investigation, Barnes (2005) concluded that colleges must select a champion from the faculty to spearhead the initiative, make the initiative cross-disciplinary, and document and report successes outside the college.

Once an educational model is chosen, the faculty members can focus on developing pedagogy. Many resources exist providing examples of in-class activities to enhance critical thinking skills. Georgia Military College has chosen to focus on the cognitive psychological approach by students learning the skills of metacognition and the five reasoning skills and to combine Mark Mason's (2008) 3rd and 4th view of teaching methodologies: 1) Teaching critical thinking skills in a general way; 2) Teaching critical thinking in the context of a specific discipline; 3) Teaching critical thinking skills in a general way first and then in a specific context; 4) Teaching critical thinking skills as a means of improving moral and ethical standing. Georgia Military College will introduce the skills of metacognition and the five reasoning skills in a course taken in the first term called PER 101, College Success. Then, students will learn critical thinking within a specific context in several 100 level college courses. Finally, students will practice their critical thinking skills in combination with ethical reasoning in a capstone course, PER 201- Critical Thinking and Character Development, taken in their sophomore year at GMC. Selecting an educational model and researching specific pedagogical practices related to the institution's definition of critical thinking can help build a solid foundation for the teaching and learning of these skills.

Transference of Critical Thinking Learning

Educators must also consider how students transfer the critical thinking skills that they learned in the classroom to other classes and to the real-world. Georgia Military College has considered the issue of transferring critical thinking skills in the curriculum. The students will be introduced to the basics of metacognition and the five reasoning skills in an introductory First Year Experience course, PER 101 College Success. Then, students will practice these skills in selected 100 level freshmen courses. Finally, students will experience a capstone course taken in their second year by bringing their knowledge and practice together in PER 201, Critical Thinking and Character Development. Halpern (1993) emphasized that if critical thinking skills are to be taught to encourage lifelong learning in students, then students need to become better thinkers in real-world settings and not just in the classroom environment, and the transferability of critical thinking skills from the classroom to the real world is "the most important outcome measure" (p. 250). However, transferability of critical thinking skills from the classroom to the real world is not easy to do (Willingham, 2008; Ennis, 1989). Transferability from one discipline to another discipline within the same domain is more likely to happen than transferability from the discipline to the real world (Lai, 2011, p. 16). Therefore, practicing real world problems is essential for assisting with that transferability (Halpern, 1993; Lai, 2011).

Faculty Training

As Solon (2001, 2003, & 2007) has demonstrated, embedding critical thinking instruction into a course can influence students' abilities to think critically. However, institutions must consider how their definition of critical thinking will be communicated and how professors will learn the selected critical thinking educational model and pedagogical strategies in order to use them in their classrooms. Abrami, et. al. (2008) found large effect sizes when faculty members received critical thinking training before teaching their courses. Tsui (2002) and Simon (2010) also argued for the need to support faculty in learning how to teach critical thinking and promote active learning in the classroom. Baker University took time to teach their faculty the critical thinking instruction that they designed to teach their own students in the two freshmen courses, so the faculty members could then continue to teach these skills embedded in their own courses (Hatcher, 2006). However, Tsui (2002) stressed that training "should not be a one-time event

but rather a regular component of an institution's ongoing professional development program for faculty" (p. 759). Therefore, institutions need to consider how they will train their faculty members and ensure that the training is ongoing. Georgia Military College has taken this advice and has already created a Professional Development subcommittee from faculty volunteers, who will read selected books, attend workshops and conferences and utilize this information to build a series of training modules in our learning management system, Moodle, to train other faculty and to ensure that new faculty will be trained in GMC's definition of critical thinking, metacognition, and the five reasoning skills.

Critical Thinking Assessments

Researchers have developed as many assessments as there are definitions for critical thinking, and the QEP committee created a table detailing thirteen standardized assessments. The QEP committee utilized this information when it decided on which assessment aligned with its definition of critical thinking. This section discusses home-grown assessments along with some of the more popular standardized assessments. The information from this section helped the QEP committee members develop the assessment plan.

Peach, Mukherjee, and Hornyak (2007) at the University of West Florida constructed a home-grown instrument for their business program based on Wocott's (2005) statement that one accepted assessment of critical thinking did not exist. They had students review policy cases in class and then write an analysis of the case on their own, which was rated with a standardized rubric that they developed. They ultimately changed this assessment because the faculty varied in how the rubric was utilized, rating projects took a long time for faculty to do, and students were not applying the analytical model effectively. Additionally, the faculty could not figure out what areas they needed to concentrate on improving. Therefore, they developed questions that students answered to apply the analytical model to the case.

Many standardized assessments exist to measure critical thinking. To begin, Norris (1985) stated that the most widely known critical thinking tests are the Cornell Critical Thinking Tests, Levels X and Z developed by Ennis and Millman in 1985 and the Watson-Glaser Critical Thinking Appraisal Forms A and B developed by Watson and Glaser in 1980 (p. 40).

The 2005 Cornell Critical Thinking test defines critical thinking as one's process for deciding what to believe is true, and test items show whether the participant knows these principles and the application of these principles. It is a multiple-choice test with a median score on Level X as a 48 out of 71 obtained by 10th grade history students with the lowest score as a 29. The Level Z test had a median of 30 out of 52 for undergraduate college students. The Level X test assesses "induction, creditability, deduction, and identification of assumptions" (Norris, 1985). The Level Z test assesses "induction credibility, prediction in planning experiments, semantics, deduction, definition, and identification of assumptions" (Norris, 1985). The test is paper and pencil and is scored by raters at the institution, but they provide the information for administration, scoring, norms, consistency, reliability, item analysis, validity, and the answers.

Another standardized test, the Watson-Glaser test measures "the ability to recognize assumptions, to evaluate arguments, and to appraise inferences" (p. 41). College students showed median scores ranging from 52 to 60 on a scale of 80 (p. 41). This assessment is also a multiple-choice test. It was originally aimed at grades 9 through adulthood, but it is mainly used now for hiring managers and business leaders.

Norris (1985) also mentioned the Ennis Weir Critical Thinking Essay Test (Ennis & Weir, 1985).

Baker University used the Ennis Weir Critical Thinking Essay Test for six years from 1990 to 1996 to assess whether their students were able to write an essay displaying critical thinking skills (Hatcher, 2006, p. 255). For this assessment, the educational gains are measured in effect size as recommended by Pascarella and Terenzini (2005), who also stated that a score over +0.50 is considered good (Hatcher, 2006, 256).

Baker University consistently had scores over +0.50 all six years with a mean effect size of +0.97 (Hatcher, 2006, p. 257). Hatcher (2006) stated that it took Baker University well-trained, upper-level student workers "approximately 10 minutes per essay" to rate them, and their inter-rater reliability was 0.85 or better. With this assessment, students read a letter to the editor in a scenario and then wrote a letter to the editor in response. A rubric was provided for grading. It was done by paper and pencil. The download of the test is free and photocopying in large quantities is allowed. This assessment is aimed at grades 7 through college and is intended to be used as either a formative or summative assessment.

Baker University discontinued using this assessment due to the time consuming nature of rating the letters and moved to the California Critical Thinking Skills Test (CCTST) in the fall of 1996 (p. 260). Hatcher (2006) explained that this test has three forms: A, B, and 2000. It is a 34-item multiple-choice test that covers critical thinking skills: analysis, evaluation, inference, deductive reasoning, and inductive reasoning (Facione & Facione, 1994, p.4 – as cited by Hatcher 2006). It is administered either online through Learning Management Systems like Moodle or paper and pencil. The assessor is provided a total score and subscale scores on all critical thinking areas assessed.

The mean gain of five other colleges that took the CCTST was "between 0.55 and 0.65," and Baker students did better with an average effect-size gain of 0.88 of the graduates between their freshman and senior scores (Hatcher, 2006, p. 263).

In the fall of 2005, Baker University moved to the Cornell Level Z Critical Thinking Test based on Alec Fisher and Michael Scriven's recommendation in their book, *Critical Thinking: Its Definition and Assessment* (Hatcher, 2006, 265; Fisher and Scriver, 1997). Hatcher (2006) also mentioned that Leo Groarke (2009) brought up some troubling questions with the CCTST (p. 265). Hatcher (2006) compared the Baker University mean gain of 0.54 with research conducted by Solon (2007) where he incorporated critical thinking skills from Halpern's book, *Thought and Knowledge,* into his Introductory Psychology course.

Solon (2007) also used the Cornell Level Z test and his experimental group had a mean gain of 0.87. His control group had a mean gain of 0.10. Both groups had around 25 to 26 students in the study. Solon (2007) also used the same course final exam to measure content, and he found that student performance over the course content in both classes did not differentiate.

Another critical thinking assessment similar in name is the California Critical Thinking Disposition Inventory (CCTDI), which should not be confused with the CCTST. This test is also multiple-choice and can be administered online through learning management systems like Moodle or with paper and pencil. However, this test measures different critical thinking areas than what GMC chose: truth seeking, open-mindedness, analyticity, systematicity, confidence in reasoning, inquisitiveness, and maturity of judgment. The assessor is given a total score along with sub-scale scores for all of these items.

Gellin (2003) conducted a meta-analysis to examine the effect of undergraduate student involvement on critical thinking. They pulled studies where critical thinking was the dependent variable, and the independent variables were athletics, Greek Life, student clubs and organizations, and faculty interaction (p. 748). Gellin (2003) used the Pearson r effect sizes and used the "traditional guidelines suggested by Cohen (1977): r = .10 is a small effect; r = .30 is a medium effect; and r = .50 is a large effect (Rosenthal, 1991)" (p. 749). He found that student clubs and organizations had a small effect size of .11, peer interaction also had a small effect size of .14, and living on campus had small effect size of .23 (p. 755). Gellin (2003) also stressed that the effect between the dependent and independent variables indicated a correlation and not causation (p. 757).

The research Gellin (2003) reviewed came from different standardized instruments that he listed as the "Watson-Glaser Critical Thinking Appraisal (WGCTA), Cornell Critical Thinking Test (CCTT), the California Critical Thinking Skills Test (CCTST), and the Collegiate Assessment of Academic Proficiency (CAAP)." The last assessment listed, the CAAP, is also a multiple-choice exam developed by American College Testing (ACT). The students are given passages, such as case studies, debates, dialogues, and statistical arguments. They are asked questions about these passages to measure students' abilities to clarify, analyze, evaluate, and extend an argument. This test was normed on college sophomores.

Whichever assessment is chosen, Halpern (1993) cautioned researchers to make sure that they tie their assessments to their critical thinking goals and that the assessments need to be sensitive enough because some of the improvements in critical thinking may be too subtle to be detected by a standardized instrument. Therefore, the committee needs to choose multiple assessment methods in order to triangulate improvements in critical thinking and detect more subtle changes that may occur. Halpern (1993) suggested using a pre/post-test method for students to see if their critical thinking skills have changed from being in the course, and she believed a good assessment will have "simulated scenarios" in order to simulate real-world encounters (p. 242). Both multiple-choice tests and open-ended written tests can have measurement problems. Multiple-choice tests may have issues with validity, but open-ended written assessments may have issues with reliability (Halpern, 1993).

Lai (2011) listed some critical thinking assessments already discussed that measure general critical thinking skills: "California Critical Thinking Skills Test (CCTST)," "Cornell Thinking Tests," "Ennis-Weir Critical Thinking Essay Test," and the "Watson-Glaser Critical Thinking Appraisal test" (p. 38). However, Lai (2011) promoted the use of open-ended assessments and stated that if an institution is going to give a multiple-choice assessment at least follow it with an open-ended exercise in order to probe more deeply into the critical thinking ability of these students (p. 39).

With the variety of critical thinking assessments available, GMC needs to ensure that the assessment instrument chosen aligns with its definition of critical thinking. Once the assessment is selected, then more research on that instrument needs to be conducted to ensure that the analysis can be compared with other institutions.

Summary

Critical thinking is an important skill to acquire, and GMC must explore the literature in the field in order to understand the difficulty of teaching, learning, and assessing critical thinking. The history behind this concept stems from three different disciplines (philosophy, cognitive

psychology, and education) leaving no common definition or understanding of what it means to "critically think." Therefore, GMC must define this term for itself and communicate it clearly to students, faculty, and staff all while ensuring that the assessments used to measure whether or not critical thinking skills improved match the institution's definition.

In defining critical thinking, GMC needs to discuss which approach it wants to embrace, what it means to have the disposition of a critical thinker, how to write student learning outcomes that are specific and measurable, and what variables need to be considered and addressed in the learning process. If critical thinking is a sub-set of metacognition, then GMC needs to teach students how to monitor their own thinking.

GMC also needs to decide if problem solving should be taught and/or measured. Problem solving may be part of critical thinking, or it can be seen as another sub-set of metacognition. If problem solving is not incorporated into the pedagogy and assessment, then it might affect how science, technology, engineering, and math (STEM) majors are rated.

Once the definition for critical thinking has been crafted, faculty members need to focus on the educational strategies for students to learn critical thinking strategies and hurdles that may cause critical thinking instruction to fail. Helping faculty realize the importance of critical thinking is an important motivator for creating and incorporating educational strategies and for overcoming the notion that critical thinking instruction is separate from content and too time consuming. Combined with learner-centered instruction, critical thinking instruction can be the next step to getting students to work and think about the content of the courses instead of just having students memorize forgettable facts. Professors should focus on the three highest levels of Bloom's (1956) taxonomy, "analysis, synthesis, and evaluation." Some faculty members may argue that community college students cannot rise to the higher levels of Bloom's taxonomy. However, Solon (2007) demonstrated that even in an Introductory Psychology course at a community college, faculty members can help improve students' critical thinking abilities by focusing on specific skill sets, such as inference, deduction, induction, evaluation of sources, and argumentation. As Hatcher (2006) cautioned, institutions may want to select a small set of critical thinking skills instead of trying to tackle them all.

None of these educational strategies will be successful without a strong professional development plan for the faculty. Faculty needs to learn about critical thinking and understand GMC's definition versus other definitions of critical thinking that exist. They need to know the student learning outcomes and assessments. They also need workshops in developing pedagogy for teaching critical thinking in the classroom. If GMC also decides to have stand-alone critical thinking courses, then the building of those courses needs to match the institution's definition and student learning outcomes as well. Course building starts with clear communication and faculty training.

VI. Actions to be Implemented and Timelines

Georgia Military College's QEP strives to provide an atmosphere where students can improve their critical thinking abilities. The implementation process will reflect this goal through five different areas: 1) professional development, 2) marketing the QEP, 3) course enhancement, 4) assessment, and 5) reporting.

Professional Development

Over a period of two years, faculty will be exposed to many variations and levels of professional development and training that will help improve their own critical thinking skills and their abilities to implement those into the classroom for the students' benefits. The first phase of the professional development plan is to train the trainer. The professional development subcommittee (PDS) has recruited 14 faculty members selected by their Campus Academic Deans and Executive Directors from across all campuses and disciplines to undergo intense critical thinking training to become experts in this area. The eight PDS members, First Year Experience (FYE) Director, and QEP chair are undergoing the same extensive training, making the total count 24. Following training, this core group of faculty will earn the distinction of "critical thinking (CT) experts" and are paid upon completion of faculty training. Half of the CT experts will complete their tasks during year two and the other half finish in year three. The full CT expert roster can be seen here: CT Expert Roster. During year 1 of the QEP, all CT experts will complete a minimum of the five following tasks:

Table 7: CT Expert Tasks

Task 1: Attend a minimum of one conference (options listed below). • The University System of Georgia Annual Teaching and Learning Conference: focuses on developing students' critical thinking skills • The International Conference on Critical Thinking and Educational Reform: improves the understanding of critical thinking, as well as the ability to more substantively foster it in the classroom and in all aspects of work and life • The Spring Academy on Critical Thinking by The Foundation for Critical Thinking: discusses the foundation of critical thinking at the college and university level • The i2a Institute: focuses on old and new approaches to putting critical thinking concepts and tools into everyday practice inside and outside the classroom
Task 2: Read Dr. Saundra McGuire's book, *Teaching Students How to Learn*. Participate in a book summit to discuss the book's content with the PDS and how it can improve the QEP.
Task 3: Complete five hours in an online Critical Thinking Course or webinar (recommendations were included).
Task 4: Research and read another book or four articles/lesson plans on critical thinking and/or metacognition (recommendations were included). An additional required reading is the chapters "Introduction" and "Critical Thinking and Educational Strategies" in our QEP literature review.
Task 5: Provide 5 resources or activities in Word or PDF format. • Critical Thinking homework or project assignment that covers the 5 reasoning skills. • Critical thinking activities for the classroom. • Relevant articles or resources on critical thinking.

During the training year, all CT experts will be required to complete the training packet that was designed by the PDS (CT Expert Training Packet). The purpose of the packet is to track CT expert training, keep the training consistent, ensure the training has been completed, and gain resources/activities/insight into critical thinking, metacognition, and incorporating them into the classroom. The packet details every task, what was learned and completed, what can be used for faculty training, when the training was completed, and a description of what the CT expert thought of the training.

Three guest speakers have or will facilitate a workshop for GMC faculty. Dr. Cathal Woods, who holds a Ph.D. in Philosophy, and is the author of *Introduction to Reasoning*, attended the spring 2016 faculty workshop and discussed critical thinking in the classroom, with a focus on the five reasoning skills: induction, inference, deduction, evaluation, and analysis.

Dr. Saundra McGuire, who holds a Ph.D. in Chemical Education, and is the author of *Teach Students How to Learn*, will attend the spring 2017 faculty workshop and discuss metacognition and methods to improving student learning by teaching them how to think about their thinking. She will facilitate a workshop for faculty on the importance of helping students acquire simple but effective learning strategies based on cognitive science principles. She will engage in interactive reflection activities that will allow faculty to experience strategies that significantly improve learning while transforming student attitudes about the meaning of learning.

The QEP committee will determine a guest speaker to attend the spring 2019 faculty workshop for additional faculty professional development. The decision will be based on the needs for faculty during that time after the previous years' data has been assessed and discussed.

The Director of Library Services and PDS have built and launched a library guide providing resources on critical thinking and metacognition that is accessible to all faculty, staff, students, and stakeholders. The CT experts will be required to review the resources and locate additional useful resources to add to the page.

After approximately one year of professional development and intense training for the CT experts, they will assist the FYE division in creating a course in Moodle (GMC's LMS platform) for training faculty on critical thinking. Included in this course will be an assessment to measure faculty understanding of critical thinking and how well the course is facilitating further understanding of critical thinking. This critical thinking/credentialing course will serve as an opportunity for professional development and training on critical thinking for all faculty/staff on any GMC campus. Over the period of spring 2017-spring 2018, all faculty will be required to complete the Moodle course with a score of 90% or higher.

The CT experts and PDS will create and manage a resource page on Moodle that is available for all faculty to upload and share critical thinking assignments, projects, and ideas with each other. The page will be divided by academic discipline for easier access to resources, but faculty will have access to all department pages since many assignments and projects can be used or modified to suit another discipline. This page will also give the faculty a discussion area to communicate ideas that were successful, faulty, or could be modified for improvement. In addition, the CT experts and PDS will meet to begin developing the faculty training. This training program will focus on critical thinking in the classroom, how to incorporate critical thinking and the five reasoning skills into lesson plans, assignments, and projects, and how to properly assess them. There will be a focus on the AAC&U critical thinking VALUE rubric and applying that to assignments in the classroom, as well as a training session on standardized grading of

assignments using the rubric. Training of faculty will occur in phases, as outlined in the timeline (Table 8).

By fall 2018, all current faculty at GMC will be fully and equally exposed to professional development, training, resources, and ideas on critical thinking and incorporating it into the classroom, so students can improve their skills and abilities.

The guest speakers and faculty training workshops will be video recorded and made available online through the GMC portal for all faculty, staff, and stakeholders. As new full time and adjunct faculty members are hired, part of their hiring process and requirements will be to finish the training by watching the guest speaker and training workshop videos, completing the Moodle training course, and accessing all resources provided by the PDS and CT experts.

Table 8: Professional Development Timeline

Actions **P-plan** **D-develop** **X-execute** **A-as needed**			Year 1: 16-17					Year 2: 17-18					Year 3: 18-19					Year 4: 19-20					Year 5: 20-21					Responsible Unit/Person
	Spring 2016	Summer 2016	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	
CT Experts are nominated and selected	X																											Academic Deans and Professional Development Subcommittee
CT Experts attend USG critical thinking conference	X																											Professional Development Subcommittee
CT Experts read Saundra McGuire's book and meet for a book review summit	X																											Professional Development Subcommittee
Cathal Woods holds workshop for faculty about critical thinking and the 5 reasoning skills	X																											QEP Chair
Moodle CT training course is launched		P	P	D	D	X																						Professional Development Subcommittee, CT Experts, FYE Director
All college faculty members must complete Moodle CT training course							X	X	X	X	X	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	Division Chairs, Professional Development Subcommittee
All faculty members receive Saundra McGuire's book			X																									Professional Development Subcommittee Chair, Associate CAO
Select group of CT Experts, QEP Chair, and Professional Development Subcommittee Chair attend the International Conference on Critical Thinking and Educational Reform	P	X																										QEP Chair, Professional Development Subcommittee
Select group of CT Experts attend i2a Institute Critical Thinking Conference				P	X																							QEP Chair, Professional Development Subcommittee
Saundra McGuire holds workshop for faculty about metacognition				P	D	X																						QEP Chair, Professional Development Subcommittee Chair

Actions **P-plan** **D-develop** **X-execute** **A-as needed**			Year 1: 16-17					Year 2: 17-18					Year 3: 18-19					Year 4: 19-20					Year 5: 20-21					Responsible Unit/Person
	Spring 2016	Summer 2016	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	
Select group of CT Experts attend the Spring Academy on Critical Thinking by The Foundation for Critical Thinking				P	X																							QEP Chair, Professional Development Subcommittee Chair
Training is created for faculty				P	D	X																						Professional Development Subcommittee, CT Experts
CT library guide is launched	X																											Professional Development Subcommittee, Director of Library Services
CT resource page in Moodle is launched				P	D	X																						Professional Development Subcommittee, CT Experts, Director of Library Services
PER, CRJ, Social and Behavioral Sciences, and Humanities faculty undergo training								X																				Professional Development Subcommittee, CT Experts
Math, Business, CIS, and Natural Sciences faculty undergo training													X															Professional Development Subcommittee, CT Experts
All faculty undergo training based on data from surveys, Moodle training course, and CCSSE (as needed)											P	D	X			P	D	X			P	D	X			P	D	Professional Development Subcommittee, CT Experts
Guest Speaker for Faculty Professional Development																					X							QEP Committee

Marketing

The QEP committee's marketing strategy focuses on keeping students, faculty, staff, and all other stakeholders informed, updated, and involved in GMC's QEP initiative. This plan includes a series of tasks:

1. Purchasing and distributing of souvenirs, wearables and gifts (SWAG). All QEP committee members and the President's Office Administration have received a QEP polo shirt. All faculty members, student ambassadors, and the Board of Trustee members will receive a QEP t-shirt. Additional t-shirts will be used as giveaway prizes for student events. In addition, USB flash drives, hand fans, lanyards, tech pockets, and pens, all displaying the GMC QEP logo will be ordered and distributed as giveaway prizes at a school-year kickoff party on each campus. Student ambassadors will give the SWAG away to students in PER 101 and PER 201 classroom visits at the start of each fall 1 term. All faculty will receive a tech pocket, pen, and USB drive at a fall faculty workshop. New SWAG will be ordered each year for giveaways.

2. Social media and campus displays. All GMC computers for students will have the QEP logo displayed as the background wallpaper by the Information Technology (IT) department. They will also assist the QEP committee in placing the GMC QEP webpage under the "favorites" tab on all Internet Explorer browsers on GMC computers. All TV's in the lobbies of GMC campuses will display a slideshow about the QEP initiative. There will be Facebook, Twitter, and Instagram blasts released with the QEP information and active links to the GMC QEP webpage. Banners, posters, flyers, and podium stickers with the QEP logo and information will be placed throughout all campuses in various locations.

3. Online resources. A library guide with critical thinking resources, designed and facilitated by the Director of Library Services and the CT experts, has been launched on the GMC library page. It will be available to all faculty, staff, students, and stakeholders. The GMC QEP webpage will be regularly updated and maintained. A biannual newsletter will be written by the QEP chair and sent out to the entire college every spring and fall term, and posted on the GMC QEP webpage (see the first newsletter HERE). There will be a QEP update and presentation for all faculty at the biannual faculty workshops, focusing on the current QEP status, any recent changes, and what to expect next.

4. Annual student events. In August of each school year, the marketing subcommittee will facilitate a school year kickoff party on each campus. The students will receive updates on the QEP, participate in a QEP t-shirt design contest, and discuss critical thinking strategies in the classroom. They will be given information on how to access QEP resources, such as the library guide page and the QEP webpage. The marketing subcommittee will meet over the summer of each school year to determine new and exciting critical thinking activities or competitions for the students to participate in at the events. During the first term of each school year, the student ambassadors will visit all PER 101 and PER 201 courses and discuss the QEP and critical thinking.

5. Focus groups. The QEP chair, Marketing Subcommittee, and student ambassadors will conduct focus groups on campus each spring to gather feedback from the students. These group meetings will allow the QEP committee to collect qualitative feedback from the students on the critical thinking lessons and assignments in their courses.

Table 9: Marketing Timeline																															
Actions **P-plan** **D-develop** **X-execute** **A-as needed**			Year 1: 16-17					Year 2: 17-18					Year 3: 18-19					Year 4: 19-20					Year 5: 20-21					Responsible Unit/Person
	Spring 2016	Summer 2016	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	
QEP Polo Shirt distribution to QEP committee members and President's Office	X																											Marketing Subcommittee
QEP T-shirt giveaway at Faculty Workshop	X																											Marketing Subcommittee
QEP T-shirt distribution to student ambassadors		D	X																									Marketing Subcommittee
QEP wallpaper placed on all GMC computer desktops - students			X																									Marketing Subcommittee
Critical Thinking library guides are launched	X																											Marketing Subcommittee
Link to QEP webpage is placed under "Favorites" on all GMC computers	X																											Marketing Subcommittee
All TVs in GMC lobbies play QEP slideshow	X	X	X																									Marketing Subcommittee
Facebook Blasts		D	X																									Marketing Subcommittee
Ordering of SWAG	D	X				D	X					D	X				D	X				D	X				D	Marketing Subcommittee
Banners, posters, flyers, and podium stickers are placed throughout all campuses		D	X																									Marketing Subcommittee
QEP party for students on all campuses	P	D	X			P	D	X			P	D	X			P	D	X			P	D	X					Marketing Subcommittee and FYE Director
QEP webpage is updated with latest documents and news	X	A	A	A	A	X	A	A	A	A	X	A	A	A	A	X	A	A	A	A	X	A	A	A	A	X	A	QEP Chair
QEP Update to all faculty at workshops: PowerPoint presentation and handouts	X		X			X		X			X		X			X		X			X		X			X		QEP Chair
QEP biannual updates/newsletters: sent to all students, faculty, staff, and stakeholders	A	A	A	X	A	X	A	X	A	A	X	A	X	A	A	X	A	X	A	A	X	A	X	A	A	X	A	QEP Chair
Student ambassadors visit all PER 101 and 201 courses and discuss QEP and critical thinking			X					X					X					X					X					FYE Director
Focus groups with students											X					X					X					X		Marketing Subcommittee and QEP Chair

Course Enhancement

The primary goal of implementation of critical thinking into courses is to introduce and expose students to critical thinking lessons and assignments throughout their core curriculum. The GMC QEP committee believes that students need to understand how to critique their own thinking, to learn GMC's definition of critical thinking and its skills, and to recognize when it is needed and being applied before they can improve their own critical thinking abilities. In conjunction with the faculty, FYE coordinators, and Division Chairs, the implementation subcommittee (IS) will work to expose students to critical thinking lessons and assignments that are relevant and applicable to the content and material in some of their 100-level core classes across academic disciplines.

The QEP committee decided unanimously that the first place to start with this initiative is in the FYE courses: Perspectives (PER) 101: College Success, and PER 201: Critical Thinking and Character Development. The FYE division and QEP committee are working together to revise these courses to enhance them with metacognition and critical thinking in support of the QEP.

PER 101 is a required course for all degree-seeking students, except those who upon admission have successfully completed or transferred in 24 quarter hours and are in good academic standing according to GMC standards of academic progress. If required, PER 101 must be completed during a student's first term of enrollment at GMC. This course is relevant to GMC's QEP initiative because of the addition of the following student-learning outcome (SLO):

> *Students will demonstrate metacognition and critical thinking through research based on career and academic goals.*

In PER 101, students will be exposed heavily to metacognition and introduced to critical thinking and the five reasoning skills (induction, inference, deduction, evaluation, and analysis).

PER 201 was added to the curriculum after discussion amongst the QEP committee and faculty. It was decided that the current PER 102 will be replaced with PER 201 which will maintain its focus on character development by using it as a vehicle to teach critical thinking, and add in additional content on critical thinking. The faculty agreed by unanimous vote to delete PER 102 from the curriculum and to add PER 201 in its place. Students who have completed PER 101, PLS 101: Introduction to American Government, and ENG 102: Composition II will then take PER 201 as a required capstone course. All of these courses are required for students and are a part of the QEP initiative. PLS 101 and ENG 102 are considered "critical thinking enhanced courses" and the condition of using these as pre-requisites would ensure that 1) students have been exposed to at least two critical thinking enhanced courses, and 2) the likelihood that students are further along in completion of their credit hours at GMC prior to taking PER 201 would increase. PER 201 supports GMC's QEP initiative through the following SLO's:

> *Students will evaluate their metacognitive skills through research of opposing viewpoints to reach their own conclusions.*
>
> *Students will apply the critical thinking process pertaining to contemporary and real-world issues.*

In PER 201, students will discuss metacognition and be exposed heavily to critical thinking and the five reasoning skills. The new PER 201 course and revised PER 101 course will be launched together by the start of year two of GMC's QEP. These courses will also house several assessments: a pretest (PER 101) and posttest (PER 201) over critical thinking, the

Metacognition Awareness Inventory (pretest in PER 101 and posttest in PER 201), and the Test of Everyday Reasoning (PER 201).

The additional enhancement of twelve first-year courses with critical thinking activities will occur in the following phases.

- Phase 1: Course Selection. The following courses were selected by faculty in a discussion within each academic division. Each course was nominated and agreed upon by all faculty based on the criteria of enrollment numbers, the need for critical thinking in the content area, and the need for the improvement of critical thinking in the courses in general (i.e., what courses faculty noticed a consistent struggle with students' critical thinking abilities). Because the Mathematics and Business/Computer Information Systems divisions have a limited number of first-year courses, they were grouped together to select courses. Because the Justice Studies and Social and Behavioral Sciences divisions have a limited number of first-year courses, they were also grouped together to select courses. The Natural Sciences and Humanities divisions offer many 100-level courses, so their divisions selected courses independently. Each area selected a minimum of three first-year courses for a total of 14 critical thinking enhanced courses. The Humanities area selected five courses because students are required to take one of the three options (ART 194, MUS 194, or THE 194). Each of these Humanities courses will be treated as the same; therefore, collectively GMC considers there to be a total of 12 critical thinking enhanced courses. The following were chosen:

Table 10: CT-Enhanced Courses

Area	Courses Selected		
Natural Sciences	BIO 103 Medical Terminology	BIO 123 General Biology I	CHE 101 General Chemistry I
Humanities	ENG 102 Composition II	COM 201 Public Speaking	ART/MUS/THE 194 Art Appreciation Music Appreciation Introduction to Theater
Math and Business	CIS 120 Introduction to Computer Science	MAT 109 College Algebra	MAT 112 Precalculus
Justice Studies and Social and Behavioral Sciences	PLS 101 Introduction to American Government	HIS 122 American History II	CRJ 100 Introduction to Criminal Justice

The Natural Sciences division selected BIO 103, BIO 123, and CHE 101 because these are high enrollment courses that are offered on every campus and would capture more students with varying majors.

The Humanities division selected ENG 102, a required core course for all students, to focus on the use of critical thinking to improve thesis development that is debatable, plausible and consequential. The QEP initiative of implementing critical thinking supports this previously defined goal for the Humanities division. In addition, ENG 102 currently

utilizes the AAC&U critical thinking VALUE rubric so addition of an assignment into the course should be a smooth transition. COM 201 was selected because it is an introductory course for public speaking and would be another good course where critical thinking could help students master thesis development. Faculty selected ART 194, MUS 194, and THE 194 because the division felt that the arts would provide a perfect base for experimentation and critical learning. The faculty plan to develop a common project (oral, written, or visual) for all three courses so more students are affected.

The Mathematics and Business/Computer Information Systems divisions selected CIS 120, MAT 109, and MAT 112 because of the high enrollment numbers and the ease of incorporating critical thinking lessons and assignments that can relate to the content in the courses.

The Justice Studies and Social and Behavioral Sciences divisions selected PLS 101 since it is a required course within the core curriculum and because critical thinking is built into the context of the course. Division faculty selected HIS 122 because of the high enrollment numbers. CRJ 100 was selected because it has embedded critical thinking themes that could use further enhancement.

- Phase 2: Reasoning Skills Selection. After all faculty chose the courses to enhance with critical thinking, the QEP chair requested another discussion among the divisions about the five reasoning skills and which skill(s) each course would cover. This task was done to ensure that all reasoning skills were covered equally across the CT-enhanced courses prior to the division work described below. The table below depicts which reasoning skills will be covered in the CT-enhanced courses based on the faculty discussions:

Table 11: Reasoning Skills in CT-Enhanced Courses

Division	Course	Reasoning Skill(s)
Natural Sciences	BIO 103	Induction, Evaluation, Inference
	BIO 123	Analysis, Induction, Inference, and Evaluation
	CHE 101	Inference, Deduction, Analysis
Humanities	ENG 102	Analysis, Evaluation
	COM 201	Analysis, Inference, Evaluation, Deduction and Induction
	ART/MUS/THE 194	Evaluation, Analysis
Justice Studies	CRJ 100	Analysis, Evaluation
Social and Behavioral Sciences	PLS 101	Inference, Deduction, and Induction
	HIS 122	Analysis and Evaluation
Business/Computer Information Systems	CIS 120	Analysis and Deduction
Mathematics	MAT 109	Evaluation
	MAT 112	Evaluation

- Phase 3: Division Work. After faculty training and professional development is complete, faculty will work with their divisions over a spring faculty workshop weekend to create a lesson and assignment specific to the content of each course that involves critical thinking, specifically focusing on the reasoning skill(s) selected for each course. Since

the AAC&U critical thinking VALUE rubric will be used to assess general critical thinking, the faculty will use the rubric as a guide to create the assignments. In addition, the CT experts and Implementation Subcommittee (IS) will provide the following instructions for faculty:

- Lessons must reflect course content-specific examples of using critical thinking and include group or partner work followed by an instructor-facilitated class discussion.
- Assignments must be applicable to and graded using the AAC&U Critical Thinking VALUE rubric.
- Assignments must utilize at least one of the five reasoning skills: induction, inference, deduction, evaluation, and/or analysis.
- Assignments must tie to one or more SLO's in the master syllabus.
- Assignment instructions must be detailed and clear.
- Assignments should attempt to improve student learning using critical thinking.

After the lessons and assignments are created, the Division Chairs are responsible for submitting them to the IS. The IS, in conjunction with the CT experts, will meet for a summit to review the assignments using the following rubric that was designed by the IS:

Figure 4: Rubric for CT Assignments/Lessons

	SATISFACTORY	UNSATISFACTORY	COMMENTS
Lesson(s)	Lesson reflects course content-specific examples of using critical thinking, and includes group work followed by an instructor-facilitated class discussion.	One or more of the following are not included: course content-specific examples of using critical thinking; group work; instructor-facilitated class discussion.	
Reasoning Skills	One or more reasoning skills are utilized in the assignment.	No identifiable reasoning skills are utilized in the assignment.	
SLO's	Assignment relates to one or more SLO(s) in Master Syllabus.	Assignment does not relate to one or more SLO(s) in Master Syllabus.	
Assessment	Assignment can be graded using, and is applicable to, the AAC&U Critical Thinking VALUE rubric.	Assignment cannot be graded using, and/or is not applicable to, the AAC&U Critical Thinking VALUE rubric.	
Instructions	Assignment instructions are detailed and clear.	Assignment instructions are vague or confusing.	
Student Learning	The assignment improves student learning through critical thinking.	The assignment does not improve student learning through critical thinking.	

The IS and CT Experts will fill out this rubric for each course lesson/assignment pair and send a copy to the Division Chair. If there is any unsatisfactory scoring, the Division Chair is responsible for making the changes as indicated and suggested by the IS and CT experts prior to implementation. The IS and CT experts will be specific in what changes should be made and will include suggestions in the rubric for the Division Chair. Because of this approval process, the lesson and assignments will not need to be approved again prior to implementation.

- Phase 4: Implementation. The revised PER 101 course and the new PER 201 course will be launched first, at the start of year 2. The QEP committee will meet four terms after implementation, gather data from the courses, and determine, based on majority votes, if any changes or recommendations need to be made to PER 101 and/or PER 201. Specifically, the QEP committee will review the results of the Metacognition Assessment Inventory (MAI) and the critical thinking pretest and posttest. Baseline posttest data will be collected through summer 2018, after which posttest data will be reflective of students who have completed at minimum two CT enhanced courses. If changes need to be made, they will be implemented the following term. Due to the nature of their courses (already heavy in critical thinking), there will not be implementation of additional critical thinking assignments. The Humanities and Justice Studies/Social and Behavioral Sciences divisions will implement the critical thinking assignments in their courses at the start of year 3. Courses in these divisions were selected first for implementation so that ENG 102 and PLS 101 (the PER 201 pre-requisites) would be launched first. The Natural Sciences and Mathematics/Business and Computer Information Systems divisions will implement the critical thinking assignments in their courses at the start of year 4. The QEP committee will meet four terms after each implementation, gather data from the courses, and determine based on majority votes if any changes or recommendations need to be made to the lessons or assignments based on the results from the AAC&U critical thinking VALUE rubrics and TER. If changes need to be made, they will be implemented the following term. In addition, after implementation of each division's critical thinking assignments, the Division Chairs will be responsible for planning, developing, and executing the addition of the projects to the course master syllabi. By the end of year 4, all of the courses will be enhanced with critical thinking, will be reviewed by the QEP committee at least once for recommended changes, and all assignments will be added to the master syllabi.

Table 12: Implementation of CT Timeline

Actions **P-plan** **D-develop** **X-execute** **A-as needed**			Year 1: 16-17					Year 2: 17-18					Year 3: 18-19					Year 4: 19-20					Year 5: 20-21					Responsible Unit/Person
	Spring 2016	Summer 2016	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	
Revised PER 101 and 201 courses are launched		P	P	P	D	D	D	X																				FYE Director
PER data is reviewed /recommendations are made if needed											X					X					X					X		QEP committee
Changes are implemented to PER courses based on committee recommendations												A					A					A					A	FYE Director
Division work to create CT projects: Humanities and Social and Behavioral Sciences/Justice Studies											X																	Humanities and Social and Behavioral Sciences/Justice Studies Division Chairs
Review of Humanities and Social and Behavioral Sciences/Justice Studies CT projects for approval or recommendations												X																Implementation subcommittee (IS), QEP Chair, and CT experts
CT Projects are launched in Humanities and Social and Behavioral Sciences/Justice Studies courses											D	D	X															Humanities and Social and Behavioral Sciences/Justice Studies Division Chairs, ISC Chair
Humanities and Social and Behavioral Sciences/Justice Studies data is reviewed/ recommendations are made																X					X					X		QEP committee
Changes are implemented to Humanities and Social and Behavioral Sciences/Justice Studies courses based on committee recommendations																	A					A					A	Humanities and Social and Behavioral Sciences/Justice Studies Division Chairs

Actions **P-plan** **D-develop** **X-execute** **A-as needed**			Year 1: 16-17					Year 2: 17-18					Year 3: 18-19					Year 4: 19-20					Year 5: 20-21					Responsible Unit/Person
	Spring 2016	Summer 2016	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	
CT projects are added to Humanities and Social and Behavioral Sciences/Justice Studies master syllabi															P	D	X											Humanities and Social and Behavioral Sciences/Justice Studies Division Chairs
Division work to create CT projects: Mathematics/Business and CIS Divisions and Natural Sciences Division																X												Mathematics/Business and CIS Division Chairs and Natural Sciences Division Chair
Review of Mathematics/Business and CIS Divisions and Natural Sciences Division CT projects for approval or recommendations																	X											Implementation subcommittee (IS), QEP Chair, and CT experts
CT projects are launched in Mathematics/Business and CIS Divisions and Natural Sciences Division																D	D	X										Mathematics/Business and CIS Division Chairs and Natural Sciences Division Chair
Mathematics/Business and CIS Divisions and Natural Sciences Division data is reviewed/ recommendations are made																					X					X		QEP committee
Changes are implemented to Mathematics/Business and CIS Divisions and Social and Natural Sciences Division courses based on committee recommendations																						A					A	Mathematics/Business and CIS Division Chairs and Natural Sciences Division Chair
CT projects are added to Mathematics/Business and CIS Divisions and Social and Natural Sciences Division master syllabi																				P	D	X						Mathematics/Business and CIS Division Chairs and Natural Sciences Division Chair

Reporting

For reporting purposes, the Director of Institutional Effectiveness is responsible for compiling the assessment results turned in by faculty and collecting data from surveys. The QEP committee will assemble at planned and consistent intervals to review and analyze assessment data for all courses as it is available and collected. Working with the IS, they will develop surveys to be administered to students, faculty, and/or staff, as appropriate, to measure the effectiveness of course enhancement and professional development activities. The reporting timeline is outlined below in Table 13, and the assessment timeline can be found in the assessment section.

Table 13: Reporting Timeline

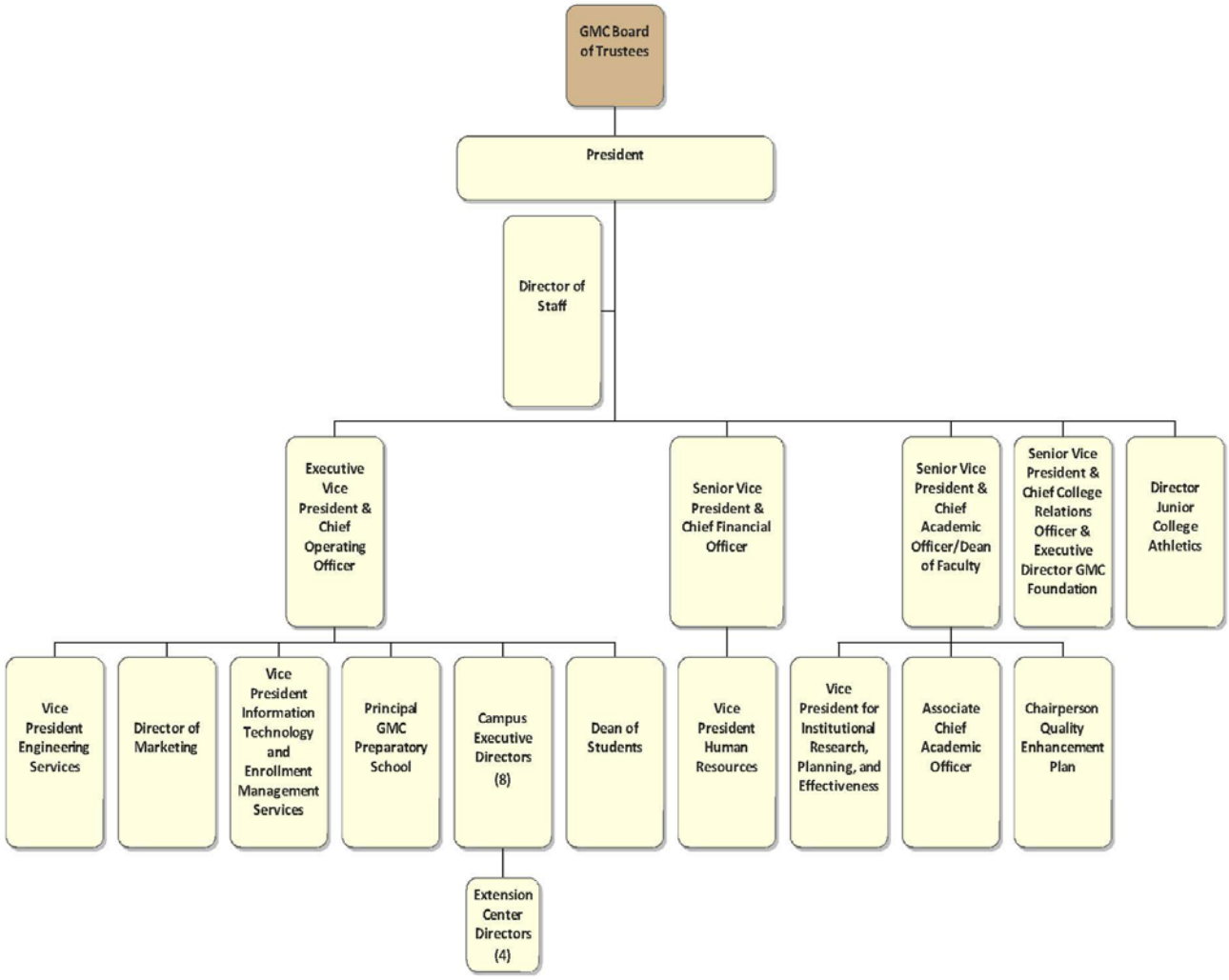
Actions P-plan D-develop X-execute A-as needed			Year 1: 16-17					Year 2: 17-18					Year 3: 18-19					Year 4: 19-20					Year 5: 20-21					Responsible Unit/Person
	Spring 2016	Summer 2016	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	
Summarize marketing subcommittee activities	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Marketing Subcommittee Chair
Summarize implementation subcommittee activities	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Implementation Subcommittee Chair
Summarize professional development subcommittee activities	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Professional Development Subcommittee Chair
Summarize assessment activities	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Director of Institutional Effectiveness
Prepare biannual updates/newsletter	X			X		X			X		X			X		X			X		X			X		X		QEP Chair
Prepare annual QEP report						D	X				D	X				D	X				D	X				D	X	QEP Chair
Prepare 5 Year QEP Impact Report																								P	D	D	X	QEP Chair

VII. Organizational Structure

The organizational structure for Georgia Military College's QEP is extensive, involving administration, full-time and adjunct faculty, and staff members. A complete roster of the QEP Committee members can be found at the following link: QEP Committee Roster.

Below is the GMC Organizational Chart for the college:

Figure 5: GMC Organizational Chart



The QEP Chair and QEP Committee

The QEP Chair reports directly to the Senior Vice President/ Chief Academic Officer and Dean of Faculty (CAO/DF) as shown in the diagram above. The CAO/DF is a direct report to the Georgia Military College President. The QEP Chair provides leadership for the QEP, and with members of the QEP Committee, will oversee the implementation and assessment processes for the QEP and will regularly update the President's Senior Leadership Team on the status of

QEP initiatives as well as assessment outcomes. The QEP Chair will also oversee the QEP budget.

Membership of the QEP Committee includes faculty (full-time and adjunct), staff, and administrators, with additional administrative staff serving as executive advisors and providing additional institutional support to the leadership team. The QEP Committee includes representation for all GMC campuses and from a variety of academic disciplines (see below) to ensure the successful implementation of QEP initiatives across the institution.

The QEP Committee is subdivided into smaller subcommittees, with leadership provided by a subcommittee chair, in order to better facilitate the implementation of QEP initiatives and activities in the following areas: (1) Marketing, (2) Faculty Training/Professional Development, and (3) Course Implementation. An extension of the Professional Development Subcommittee is the group of CT Experts, who report directly to the Professional Development Subcommittee Chair and the QEP Chair. The QEP Chair provides oversight for all subcommittees and each chair of the subcommittee reports directly to the QEP Chair.

(1) Table 14: Marketing Subcommittee. The marketing subcommittee will design, order, and distribute marketing materials for the QEP across the institution. This committee will ensure that all constituents of the college are aware of and understand the objectives of the QEP. The subcommittee members are as follows:

Name	Campus Location	Employment Classification	Job Title or Academic Division
Jessica Bahn, QEP Chair	Online Campus	Full-time Faculty	Natural Sciences
Kara Maddox, Subcommittee Chair	Warner Robins	Full-time Faculty	Humanities and Education
Joy Hughes, Committee Recorder	Institutional	Staff	Institutional Data and Research Analyst
Erin Newton	Institutional	Staff	Library Director
Nevada McPherson	Milledgeville	Full-time Faculty	Humanities and Education
Ramona Rice	Milledgeville	Full-time Faculty	Natural Sciences
April Shoemaker	Augusta	Full-time Faculty	Humanities and Education

(2) Table 15: Professional Development Subcommittee. The faculty training / professional development subcommittee will coordinate, organize, and design training in critical thinking for GMC faculty. The subcommittee members are as follows:

Name	Campus Location	Employment Classification	Job Title or Academic Division
Jessica Bahn, QEP Chair	Online Campus	Full-time Faculty	Natural Sciences
Jeff Wells, Subcommittee Chair	Online	Staff	Academic Dean-Online Campus Social and Behavioral Sciences
Marty Cummings	Fayetteville	Adjunct Faculty	First Year Experience
Elizabeth Hutchings	Sandersville	Adjunct Faculty	Natural Sciences
Penny Barber	Fairburn	Adjunct Faculty	Humanities and Education
Jillian Koopman	Fairburn	Full-time Faculty	Humanities and Education
Ann Moore	Madison	Adjunct Faculty	Business and Computer Information Systems
Twilla Sleeth	Warner Robins	Full-time Faculty	Director, First Year Experience/ Social and Behavioral Sciences
April Trussell-Smith	Dublin	Full-time Faculty	Humanities and Education
Charles Wright	Valdosta	Full-time Faculty	Natural Sciences

****Table 16: CT Experts.** The CT Experts are a subgroup of the Professional Development Subcommittee, and the core group of faculty who are heavily trained, along with the subcommittee members listed above, in critical thinking and metacognition. These experts are in charge of training all faculty members at GMC in critical thinking. The list includes faculty who are full-time and adjunct, spanning all campuses and academic divisions. The CT Experts are as follows:

Name	**Campus Location**	**Employment Classification**	**Job Title or Academic Division**
Janis Anderson	Stone Mountain	Administration	Extension Center Director First Year Experience
Kayla Brownlow	Online Campus	Staff	Academic Advisor Social and Behavioral Sciences
Everett Cordy	Dublin	Adjunct Faculty	Business and Computer Information Systems
Brenda Davis	Warner Robins	Full-time Faculty	Social and Behavioral Sciences
Terri Davis	Sandersville	Adjunct Faculty	Social and Behavioral Sciences
Joshua Fields	Augusta	Full-time Faculty	Natural Sciences
Brandi Jones	Warner Robins	Full-time Faculty	Natural Sciences
Angela Kimbrough	Columbus	Adjunct Faculty	First Year Experience
Michael Laws	Milledgeville	Full-time Faculty	Mathematics
Jennifer O'Leary	Augusta	Full-time Faculty	Social and Behavioral Sciences
Judy Parks	Milledgeville	Full-time Faculty	Humanities and Education
Kurt Reinhard	Milledgeville	Full-time Faculty	Humanities and Education
Todd Thomas	Valdosta	Full-time Faculty	Humanities and Education
Heyward Washington	Fairburn	Full-time Faculty	Mathematics

(3) Table 17: Course Implementation Subcommittee. The course implementation subcommittee will oversee the implementation of all critical thinking-enhanced courses, including making on-going necessary changes to the plan based on data assessment. This subcommittee will also ensure compliance regarding implementation and data reporting for all GMC campuses. The subcommittee members are as follows:

Name	Campus Location	Employment Classification	Job Title or Academic Division
Jessica Bahn, QEP Chair	Online Campus	Full-time Faculty	Natural Sciences
Scott Dickson, Subcommittee Chair	Valdosta	Full-time Faculty	Humanities and Education
Christopher Babb	Institutional	Staff	Director of Institutional Effectiveness
Amanda Bond	Columbus	Full-time Faculty	First Year Experience
Randy Elvidge	Augusta	Full-time Faculty	Natural Sciences
Dr. Susan Isaac	Institutional	Administration	Vice President of Institutional Research, Planning, and Effectiveness
Katie Johnson	Institutional	Staff	Director of Academic Support Services and Manager of Student Disability Services
Tarria Whitley	Fayetteville	Full-time Faculty	Social and Behavioral Sciences

Table 18: Executive Advisors. These individuals will provide access to all aspects of the institution and assist the QEP Committee as needed.

Name	Campus Location	Employment Classification	Job Title or Academic Division
LTG William Caldwell	Institutional	Administration	GMC President
BG Curt Rauhut	Institutional	Administration	Executive Vice President and Chief Operating Officer
Dr. Mike Holmes	Institutional	Administration	Senior Vice President, Chief Academic Officer and Dean of Faculty
James Watkins	Institutional	Administration	Senior Vice President and Chief Financial Officer
Dr. Derek Stone	Institutional	Administration	Associate Chief Academic Officer
Col Patrick Beer	Institutional	Administration	Dean of Students and Commandant of Cadets
Jody Yearwood	Institutional	Administration	Vice President of Information Technology and Executive Director-Online Campus
Jeannie Zipperer	Institutional	Administration	Director of Staff and SACSCOC Liaison

The GMC Director of Institutional Effectiveness is also a member of the QEP Committee and will be responsible for working with the QEP Chair and the college's Division Chairs to implement the approved assessment plan for QEP, which will include ensuring that the QEP objectives tie directly to QEP assessments. This individual will also collect QEP-related data, perform data analyses, and report results to constituents (in QEP documents and reports at QEP meetings, including meetings of the QEP Committee and the President's Senior Leadership Team).

Division Chairs

As GMC's QEP involves many curriculum-based critical thinking initiatives, Division Chairs will work with faculty to implement these initiatives within their academic disciplines. Division Chairs will also work with the Director of Institutional Effectiveness to ensure that all assessments are carried out appropriately and that assessment data is submitted in a timely manner. They will also serve a significant communication role between the members of their division and the QEP Leadership Team.

The college's academic programs and curriculum are organized under academic divisions and are led by a Division Chair (a full-time GMC faculty member). There are six academic divisions (in addition to the First Year Experience Program) at Georgia Military College:

• Division of Business and Computer Information Systems
• Division of Humanities and Education
• Division of Justice Studies
• Division of Mathematics
• Division of Natural Sciences
• Division of Social and Behavioral Sciences
• First Year Experience (FYE) Program

Executive Directors / Extension Center Directors and Campus Academic Deans

These individuals provide leadership at all of GMC's campus locations and will be instrumental in communicating information regarding the QEP (the plan, updates on initiatives and progress, etc.) to faculty, staff, and students at each GMC location. They will also provide input to the QEP Committee as to the progress of the QEP at each location and make recommendations for necessary changes to the plan to meet the needs of GMC students and ensure success of the QEP at all GMC campus locations.

The broad-based representation of the college's constituents on the QEP Committee and the direct report of the QEP Chair to the college's senior leadership will provide the necessary accountability as well as ensure that all QEP initiatives are implemented in a timely and effective manner and are reported appropriately.

Figure 6: QEP 5-year Budget

	Year 1 (2016-2017)	Year 2 (2017-2018)	Year 3 (2018-2019)	Year 4 (2019-2020)	Year 5 (2020-2021)	Total
1. Professional Development						
Conference Attendance	$33,560	$4,800	$4,800	$4,800	$4,800	$52,760
Guest Speakers/workshops	$3,210	$3,000	$3,000	$3,000	$3,000	$15,210
Books for faculty	$6,850	-	-	-	-	$6,850
Webinars	$4,800	-	-	-	-	$4,800
CT Expert Stipends	-	$7,000	$7,000	-	-	$14,000
2. Marketing						
SWAG for students, staff, and faculty	$15,100	$9,000	$9,000	$9,000	$9,000	$51,100
Marketing and promotional materials (printed)	$3,000	$2,000	$2,000	$2,000	$2,000	$11,000
QEP Events for students	$4,400	$4,400	$4,400	$4,400	$4,400	$22,000
3. Assessment						
TER	-	-	$8,000	$8,000	$8,000	$24,000
4. Meetings						
QEP Committee Meetings (supplies, travel, food)	$1,600	$1,600	$1,600	$1,600	$1,600	$8,000
QEP Subcommittee Summits (supplies, travel, food)	$1,200	-	$800	$800	-	$2,800
5. Other						
QEP Consultant	$3,750	-	$3,000	-	-	$6,750
Course Releases for QEP chair	$13,120	$13,120	$6,560	$6,560	$6,560	$45,920
Total	**$90,590**	**$44,920**	**$50,160**	**$40,160**	**$39,360**	**$265,190**

VIII. Assessment

GMC's QEP centers on the goal of "Providing an atmosphere where students will improve their ability to think critically." To achieve this goal six expected outcomes have been identified and chosen by the QEP Committee. In order to measure the successful implementation of the QEP's three main components; marketing, professional development, and course enhancement, GMC's comprehensive assessment plan is constructed using direct and indirect measures including exams and surveys developed by GMC Critical Thinking (CT) experts, a national standardized test, and a national survey. This assessment plan was developed as a dual-purpose plan to provide insight into the attainment of the expected outcomes and to collect meaningful data that will allow the QEP committee to identify areas of weakness that are in need of improvement. By identifying these areas of weakness, GMC is able to improve pedagogy, curriculum, and training leading to improved student learning and improved critical thinking abilities of all stakeholders.

Objective 1:

GMC Stakeholders will demonstrate knowledge of metacognition, critical thinking, and the five reasoning skills.

Two outcomes are associated with the first objective. To assess the attainment of these outcomes, GMC will deploy an in-house questionnaire and survey. The Stakeholder Survey (Appendix H) will be a direct and indirect assessment of GMC stakeholders' knowledge of metacognition, critical thinking, and the five reasoning skills. The Stakeholder Survey will be comprised of two sections: a questionnaire to directly assess knowledge, and a survey to determine the extent to which stakeholders have been exposed to marketing, CT instruction, and any other aspects of QEP marketing and implementation. The Stakeholder Survey will be developed by the QEP committee.

Table 19: Objective 1

Objective	GMC Stakeholders will demonstrate knowledge of metacognition, critical thinking, and the five reasoning skills.	
Outcome(s)	1. Stakeholders will be able to define Metacognition and Critical Thinking. 2. Stakeholders will be able to identify and describe the five reasoning skills.	
Direct/ Indirect	Direct	Indirect
Tool	Stakeholder Survey (Questionnaire)	Stakeholder Survey (Survey)
Frequency	Quarterly	
Implementation	Fall 2016	
Location/ Responsible Party	Student Ambassadors, IE	
Use of Results	MS, PDS, IS[2]	

Beginning fall 2016 the Stakeholder Survey will be a requirement for all students take PER 201. It will also be sent out to all faculty, staff, and administration on an annual basis, and given to students at annual spring term focus groups. The results from the Stakeholder Survey will allow the QEP committee to identify areas where improvements can be made to pedagogy, curriculum, faculty development, and marketing. The survey component will provide the QEP committee insight into where stakeholders receive exposure to marketing and information pertaining to the QEP. Annual improvement plans will be developed following the review of Stakeholder Survey results by the QEP committee.

[2] MS = Marketing Subcommittee; PDS = Professional Development Subcommittee; IS = Implementation Subcommittee

Objective 2:

Faculty will participate in professional development in metacognition, critical thinking, and the five reasoning skills.

This professional development objective has two outcomes for faculty: one outcome for metacognition and one outcome for critical thinking and the five reasoning skills. CT Experts will undergo training via conferences, readings, webinars, and workshops to gain the knowledge necessary to develop and create GMC Critical Thinking professional development courses and training sessions. All faculty members will be required to take the Moodle training course between spring 2017 and spring 2018, during which a direct assessment, the Professional Development Assessment (PDA), will be administered at the completion of the Moodle course to measure the faculty's understanding of metacognition and critical thinking.

Table 20: Objective 2

Objective	Faculty will participate in professional development in metacognition, critical thinking, and the five reasoning skills.	
Outcome	3. Faculty will be able to appraise their thinking skills and processes (metacognition) 4. Faculty will be able to apply critical thinking and the five reasoning skills.	
Direct/ Indirect	Direct	Indirect
Tool	Professional Development Assessment (PDA)	Survey of Professional Development (SPD)
Frequency	Ongoing	Annually
Implementation	Spring 2017	Spring 2017
Location/ Responsible Party	Professional Development Modules	IE
Use of Results	PDS	PDS[3]

In addition to the PDA, the Survey of Professional Development (SPD) will determine how well the course facilitates further understanding of critical thinking and the applicability of the content of the course to the classroom environment. The SPD will be distributed annually to faculty members who have taken part in the faculty development Moodle course. The results from the SPD will allow the QEP committee to identify where improvements need to be made to the professional development courses in regard to content, delivery, usefulness, and overall quality. Data from both the PDA and SPD will be reviewed by the QEP committee during their annual meeting. Recommendations will be submitted to, and reviewed by, the professional development subcommittee who will create annual improvement plans for the professional development course.

At the spring faculty workshop, faculty will participate in focus groups to collect qualitative data to determine the effectiveness of the QEP implementation. This feedback will provide insight

[3] PDS = Professional Development Subcommittee

into the perception of faculty who are not directly involved in implementation. This data will guide further decision-making with regard to improving the QEP. The final round of focus group sessions will discuss the future implications of the QEP, its impact on student learning, and ultimately its success.

Objective 3:

Students will employ metacognitive skills, critical thinking, and the five reasoning skills through the core curriculum.

The outcomes associated with the final objective are Student Learning Outcomes. They are assessed directly and indirectly in various courses throughout the core curriculum. The purpose of implementing critical thinking into courses is to introduce and expose students to critical thinking lessons and assignments throughout their core. Twelve 100-level courses were chosen by faculty to be enhanced with critical thinking curriculum. The implementation of the CT enhanced courses will occur in a series of phases during the QEP timeframe. In addition, GMC's FYE courses, PER 101 and PER 201, curricula were revised and enhanced with metacognitive and critical thinking components in support of the QEP. In PER 101 students will be directly assessed using the Metacognitive Awareness Inventory (Appendix G – Metacognitive Awareness Inventory) to gather baseline data on their metacognitive abilities as they enter GMC. In addition, baseline data will be collected using the PER Assessment of Critical Thinking (PACT) which will measure content knowledge of critical thinking and the five reasoning skills prior to exposure of the CT enhanced courses at GMC. Students will then be exposed to metacognition and introduced to critical thinking and the five reasoning skills.

Table 21: Objective 3

Objective	Students will employ metacognitive skills, critical thinking, and the five reasoning skills through the core curriculum				
Outcome	5. Students will be able to appraise their thinking skills and processes (metacognition). 6. Students will demonstrate their ability to think critically and apply the five reasoning skills.				
Direct/ Indirect	Direct	Direct	Direct	Direct	Indirect
Tool	MAI[4]	TER	PACT	AAC&U CT VALUE Rubric	CCSSE
Frequency	Quarterly	Annually: Fall Term	Quarterly	Quarterly	Biennially
Implementation	Fall 2017	Fall 2018	Fall 2017	Fall 2018	Spring 2017
Location/ Responsible Party	PER101(Pre) PER 201(Post)	PER 201	PER101(Pre) PER 201(Post)	CT Enhanced Courses	IE
Use of Results	IS, PDS	IS, PDS	IS, PDS, Faculty	IS, PDS, Faculty	IS, PDS[5]

[4] MAI = Metacognitive Awareness Inventory; TER = Test of Everyday Reasoning; PACT = PER Assessment of Critical Thinking; CCSSE = Community College Survey of Student Engagement

[5] IS = Implementation Subcommittee; PDS = Professional Development Subcommittee

In the twelve CT enhanced courses faculty will implement critical thinking assignments and lessons related to the subject area. Students' general critical thinking abilities will be directly assessed by scoring original student artifacts from each of the selected courses and scoring them using the AAC&U Critical Thinking VALUE Rubric. The validity and reliability of assessment instruments are at the heart of a sound assessment plan. With this in mind, faculty will be required to attend rubric norming sessions prior to, and during, the implementation of CT enhanced courses. Periodically, faculty will be pooled to rate student artifacts from other campuses in order to validate interrater reliability. These norming sessions will occur during the annual spring faculty workshops.

In PER 201, students will retake the MAI and the PACT to determine the effect of the CT Enhanced courses. The Test of Everyday Reasoning (TER) will measure how well students apply critical thinking and the five reasoning skills they have attained throughout their academic career at GMC. The TER also provides an opportunity to compare GMC students to a cohort of students from comparable institutions across the nation. To indirectly assess the critical thinking of GMC students, the Community College Survey of Student Engagement (CCSSE) will be offered every two years. Several standard questions are presented to assess students' attitudes of critical thinking across the institution. In addition to the standard questions, GMC also provides several custom questions regarding critical thinking across the institution, as outlined in Table 22.

The QEP committee will meet annually after the start of implementation to review data. Data will be presented in aggregate for each course. This will allow the QEP committee to review, discuss, and identify any areas that need improvement. If any changes need to be made to the lessons or assignments based on the results from the AAC&U critical thinking VALUE rubric and TER, recommendations will be forwarded to the respective division for review and development of an improvement plan to be implemented the following term. CCSSE, TER, and other assessment baseline data and associated benchmarks can be found below.

Table 22. Community College Survey of Student Engagement (CCSSE) questions pertaining the area of focus of the QEP including the survey question number.

Focus of QEP	Question Number	CCSSE Question
Metacognition	4a	In your experiences at this college during the current school year, about how often have you asked questions in class or contributed to class discussions
	4b	In your experiences at this college during the current school year, about how often have you made a class presentation
	4n	In your experiences at this college during the current school year, about how often have you discussed ideas from your readings or classes with instructors outside of class
	4r	In your experiences at this college during the current school year, about how often have you discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)
Critical Thinking	12e	How much has your experience at this college contributed to your knowledge, skills, and personal development in thinking critically and analytically?
Analysis	4d	In your experiences at this college during the current school year, about how often have you worked on a paper or project that required integrating ideas or information from various sources?
	5b	During the current school year, how much has your coursework at this college emphasized analyzing the basic elements of an idea, experience, or theory?
	Custom question 10	In your experience at this college during the current school year, about how often have you tried to better understand someone else's views by imagining how an issue looks from his or her perspective?
Inference	5c	During the current school year, how much has your coursework at this college emphasized synthesizing and organizing ideas, information, or experiences in new ways?
	Custom question 8	In your experience at this college during the current school year, about how often have you put together ideas or concepts from different courses when completing assignments or during class discussions?
Evaluation	5d	During the current school year, how much has your coursework at this college emphasized making judgments about the value or soundness of information, arguments, or methods?
	Custom question 9	In your experience at this college during the current school year, about how often have you examined the strengths and weaknesses of your own views on a topic or issue?
Induction	5e	During the current school year, how much has your coursework at this college emphasized applying theories or concepts to practical problems or in new situations?
	5f	During the current school year, how much has your coursework at this college emphasized using information you have read or heard to perform a new skill?
Deduction	Custom question 11	In your experience at this college during the current school year, about how often have you learned something that changed your viewpoint about an issue or concept?

Table 23: Baseline Data and Benchmarks

Assessment Tool	Baseline			Benchmarks
Metacognitive Awareness Inventory	Collected beginning Fall 2017			TBD
(CCSSE) (Metacognition)	Question	2015 GMC	2015 Cohort	Meet or exceed comparison cohort
	4a	3.14	2.92	
	4b	2.49	2.16	
	4n	1.97	1.8	
	4r	2.63	2.54	
Test of Everyday Reasoning (TER)	Overall	18.5		Overall Score ≥ 24
	Percentile	38th		GMC ≥ 50th Percentile
	Analysis	5.3		≥ 7
	Inference	8.2		≥ 11
	Evaluation	5		≥ 8
	Induction	9.2		≥ 11
	Deduction	9.3		≥ 13
AAC&U critical thinking VALUE Rubric	Collected beginning Winter 2018			Mean Score of 3.5 on each criterion
CCSSE (Critical Thinking and Reasoning Skills)	Question	2015 GMC	2015 Cohort	Exceed comparison cohort (red font)[6] and exceed previous GMC scores
	4d	3.17	2.83	
	5b	3.07	2.93	
	5c	2.98	2.80	
	5d	2.92	2.64	
	5e	2.93	2.74	
	5f	2.91	2.87	
	12e	3.17	2.98	
CCSSE Custom Questions (Reasoning Skills)	Question	2015 GMC		Increase "very often" and "often" responses by 20%[6]
	8	67%		
	9	66%		
	10	66%		
	11	54%		

[6] Data highlighted in red is where GMC students exceeded the comparison cohort.

Table 24: Assessment Timeline																											
Actions **P-plan** **D-develop** **X-execute** **A-as needed**			Year 1: 16-17					Year 2: 17-18					Year 3: 18-19					Year 4: 19-20					Year 5: 20-21					Responsible Unit/Person
	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	Fall 1	Fall	Winter	Spring	Summer	
Collect data from CCSSE Assessment						X										X										X		Director of Institutional Effectiveness
Collect data from Test of Everyday Reasoning (TER)														X					X					X				Director of Institutional Effectiveness
Collect data from Metacognition Awareness Inventory (MAI)								X	X	X	X		X	X	X	X		X	X	X	X		X	X	X	X		Director of Institutional Effectiveness
Collect data from critical thinking pretest and posttest (PACT)								X	X	X	X		X	X	X	X		X	X	X	X		X	X	X	X		Director of Institutional Effectiveness
Collect data from AAC&U Rubric in Humanities and Social and Behavioral Sciences/Justice Studies courses													X	X	X	X		X	X	X	X		X	X	X	X		Director of Institutional Effectiveness
Collect data from AAC&U Rubric in Mathematics/ Business and CIS and Natural Science courses																		X	X	X	X		X	X	X	X		Director of Institutional Effectiveness
Collect data from Moodle CT training course						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Director of Institutional Effectiveness
Collect data from faculty on CT expert training of faculty									X	A	A	A	X	A	A	A	A	A	A	A	A	A	A	A	A	A	A	Director of Institutional Effectiveness
PER data is reviewed /recommendations are made if needed											X					X					X					X		QEP committee
Humanities and Social and Behavioral Sciences/Justice Studies data is reviewed/ recommendations are made																X					X					X		QEP committee
Mathematics/Business and CIS and Natural Science data is reviewed/ recommendations are made																					X					X		QEP committee
Collect data from Student Ambassador Stakeholder Survey				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Director of Institutional Effectiveness
Conduct student focus groups											X					X					X					X		Marketing subcommittee
Faculty focus groups																X					X					X		QEP committee
Faculty closing-the-loop sessions																X					X					A		QEP committee

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X. Appendix

Appendix A: QEP Ideas from GMC-Warner Robins: 8/13/13

New QEP Ideas—Warner Robins Campus

Faculty focus question: how can we improve student learning?

-STEM (science, technology, engineering, and mathematics)—subjects not necessarily taught in isolation, but as an integrated curriculum. Students can be placed on this "track" or continue on this track if coming from an institution that has already incorporated STEM tracking. An increase in technology would be a must for the instructors, so further Moodle training would be necessary. Making the Online Campus's class shells could also help.

-Synthesis Creation—focusing on the highest level of Bloom's taxonomy where students are encouraged to create rather than regurgitate. Assignments will be project based and include real-world applications. Students will be required to understand the class material and use it to create something related to their everyday lives.

-Flipping the classroom—the majority of content is read prior to coming to class. Class time is used to analyze and use the content. This puts a greater responsibility on the student and increases motivation, but it requires more preparation for the teacher, so setting up online resources and providing training for instructors is a must. Utilizing Online Campus's class shells could help. (Could be paired with synthesis creation.)

-Writing across the curriculum—incorporates writing in every class—even math and P.E. Students will be required to discuss classroom content via writing. This will require students digest and analyze the classroom material and not "remember" it. All writing can be uploaded to turnitin.com through

Moodle. This may also help with assessment. This will help students use the e-library. (Could be paired with synthesis creation.)

-Create a strong Tutoring Center for every campus—tutors should be trained and certified through the C.I. program. This will benefit students because the tutors will be better prepared to help instructors. The Tutoring Centers can also have their own Moodle pages where resources can be shared between campuses and tutors have access to course syllabi. If ENG 097 and RDG 097 are deleted from the catalogue, this will be very important.

Appendix B- QEP Ideas from GMC-Augusta

QEP Topic	Submitted by
Oral Communication	Kirbah, Salwa
Teamwork Skills	Kirbah, Salwa
Collaborative Learning	Elvidge, Randy
Research Skills in FYE	Elvidge, Randy
Math Instruction	Trabue, Court
Reading to Expand Vocabulary	Platt, Daniel
Problem Based Learning	Platt, Daniel
Teaching 21st Century Minds - Pedagogy	Silva, Jeane
Global Perspectives	Hamilton, Kip
Critical Thinking continuation	Hamilton, Kip
Cross-Disciplinary Learning	Hendricks, Brian
Reasearch Skills	Hendricks, Brian
Collaborative Learning	Hendricks, Brian
Study Skills for the 21st Century Learner	Fishman, Cathy
How to Formulate Questions	O'Leary, Jennifer
Owning Your Answers - research based	O'Leary, Jennifer
Professionalism	Reeves, Debbie
Life Skills beyond FYE	First, Emily
Common Thread Core - X-Discipline	Poloney, Stephanie
Professional Development	Roth, Kara

Appendix C

World Café Activity Summary: 13SP Faculty Assembly

DIVISION	#1 Over the next 5 years, what specifically could our division do to improve access to education for current and potential students?	#2 Over the next 5 years, what specifically could our division do to enhance its academic reputation by improving student success and learning (learning as defined as knowledge, skills, behaviors or values)?	#3 Over the next 5 years, what specifically could our division do to encourage lifelong learning and out-reach to its surrounding communities?	#4 Over the next 5 years, what specifically could our division do to create a more student-centric campus to encourage students to remain on campus and connect to it?
MATH	-Increase access to course offerings -Decrease time to degree completion -Better align academic outcomes across PLOs, SLOs, etc. -LSS coach to work with students and classes -Look at course pre-req. to see if necessary and if alternative ways to satisfy -Career planning to help students select major early -Better placement -Review of students who fail LSS to see if they should repeat or drop a level	-Improve student learning -Broaden professional development -Encourage faculty collaboration across GMC's multiple campuses -Lecture capture -More PR about events that would enhance academic reputation faculty workshop topics more discipline specific	-Meet the demand in our communities for continuing education, including credit and not-for-credit classes -Develop programs and availabilities to support learning among our three primary demographics of cadets, traditional commuter students, and non-traditional commuter students -Encourage learning-based partnerships between GMC and local businesses and community organizations -Survey community businesses of what they want graduates to know -Have students observe in businesses -Local business people speak in class	-Increase on-campus resources for students and faculty. -Show value and support for campus diversity equity -Improve technology available in all classrooms - ELMO

Appendix D

QEP Problem Statements

ORAL COMMUNICATION:

Students at Georgia Military College may elect to take Public Speaking, but they are not required to study oral communication; therefore, those students not taking communication classes may never learn how to communicate orally. The college used to have oral communication as a graduation requirement and as a core competency that was taught in English 101, Composition I. English 101 professors were required to have their students give a presentation and measure it with a standardized rubric. These faculty expressed concern that they were not qualified to teach this topic and that it took time away from written communication. Therefore, the competency was moved to an institutional options course: GMC 154a, Character Above All. These professors did not receive training in teaching oral communication either and in a three hour course had less time to devote to this competency. Therefore, the college decided to remove oral communication as a graduation requirement and a core competency. However, the data collected during this time indicated that the average students' performance in oral communication suffered in "delivery" (3.04) more than in "organization" (3.65), "language" (3.38), and "supporting materials" (3.40). Providing the students with the skills to orally communicate is important whether the student is going into the workplace or transferring to a four-year institution. Not having orally competent students may negatively impact GMC's reputation.

CRITICAL THINKING

Before the fall of 2013, Georgia Military College did not have critical thinking as a core competency. However, it did provide professional development to faculty and staff members by sending faculty and staff members to attend the International Critical Thinking Community conference, having Dr. Richard Paul, a notable scholar in this field, hold a critical thinking workshop for all GMC faculty members, and by having GMC faculty and staff conduct professional development workshops on critical thinking at the GMC faculty assemblies. In the spring of 2013, GMC began the revision of its core competencies by reviewing information from the Association of American Colleges and Universities (AAC&U), business articles about skills wanted for employment, and other institutions in Georgia. GMC found critical thinking to be an important skill that its students needed to acquire. Additionally, critical thinking had already become an integral part of the First Year Experience program by introducing the topic in PER 101, College Success, and reinforcing it in PER 102, Critical Thinking and Character Development. The Humanities division had also embraced critical thinking by requiring it in the literature courses. Therefore, critical thinking was added as a core competency.

The college had also been indirectly assessing critical thinking through the Community College Student Survey of Engagement (CCSSE) in 2011 and 2013. Four questions addressed aspects of critical thinking. The first question addressed rote learning where students only memorize facts, ideas, or methods from their courses and readings and repeat them in the same form. GMC students performed the same as other students at similar colleges. Ideally, GMC would want to be lower than the comparison colleges in this area, since critical thinking asks students to apply their learning and not just repeat it. The second question showed that students at GMC analyze the basic elements of an idea, experience, or theory the

same as students at similar colleges. The third question showed that GMC students synthesize and organize ideas, information, or experiences in new ways the same as students at similar colleges. For the fourth question, GMC students performed the same as other college students in thinking critically and analytically in 2011, but in 2013, GMC students outperformed other college students in this area. Ideally, GMC would want its students to outperform other colleges in all of these last three areas.

Until this year, GMC has not utilized this information for improving critical thinking skills. GMC has recognized that direct assessment of this area is needed. Therefore, it has defined outcomes that it wants its students to achieve and it has selected a nationally created critical thinking rubric from the American Association of Colleges and Universities (AAC&U) that will be utilized in PER 101, PER 102, and the literature courses to rate critical thinking in essays that the students write. This information will help GMC improve student learning in this area. While the college has started to make strides to begin improvements in this area, it should focus more of its time and resources on improving GMC students' critical thinking skills to ensure that our students are prepared for thinking independently in order to succeed at four-year institutions and into the workforce.

WRITTEN COMMUNICATION

Students at Georgia Military College either meet our criteria in order to demonstrate their writing ability or they take the COMPASS placement exam to determine if they have the necessary writing skills to successfully complete college level courses. If a student earns a score between 60 and 99 on the Compass exam, the student is deemed ready for college level work. Unfortunately, even with this placement method, our institution has found through the use of the Written Communication VALUE Rubric in college-level composition courses that students are still graduating without properly developing their skills in the mechanics of writing. Moreover, according to the data collected through the Community College Student Survey of Engagement (CCSSE) in 2011 and 2013 respectively, students not only need more guidance in writing "clearly and effectively," but also more opportunity to revise their writing assignments in "producing two or more drafts of the paper or assignment." In both areas on the CCSSE, the comparison group outperformed GMC students. Providing the students with the skills to write effectively is important whether the student is going into the workplace or transferring to a four-year institution. Students who graduate without these skills may negatively impact GMC's reputation.

PROBLEM SOLVING

Students at Georgia Military College may be exposed to specific problem solving skills in specific courses, and while GMC has added problem solving as a core competency in the fall of 2013, there is not really an institutional wide focus on problem solving skills, either specific or general. Yet, one the most requested abilities of college graduates by employers are problem solving skills. The difficultly that students have in acquiring and applying these skills is often demonstrated by their struggles in mathematical word problems or in experiment construction in science classes. There are several problem solving systems or methods that could assist students while in school or in the workplace. For instance, Pólya's four step system that although formulated for mathematics can be used in any general

problem solving scenario. Exposing students to such system and their acquisition of problem solving skills could enhance Georgia Military College's reputation by producing graduates who can be distinguished from comparable graduates from other colleges, while at the same time providing our students with skills and abilities that enable them to excel in problem solving careers

INFORMATION LITERACY

With the abundance of information easily available to students, it is quite easy to become confused as to what information is credible and what is not. As our society moves more and more to internet based searches to acquire information and the daily use of "smart phones" and other portable devices, access to this information is getting easier. Colleges and universities must take adequate steps to ensure that the information students have access to and that is provided by the institution is credible. Georgia Military College provides access to academic journals, databases, and other sites that are credible and approved for academic research. However, simply because something exists does not mean that students are competent in its use. Georgia Military College chooses to focus on information literacy in its Quality Enhancement Plan so as to help students understand not only how to use these resources, but also what they are and WHY they are deemed credible as opposed to a general information search so often utilized by the population at large. This has also been identified as a problem in at least one of our degree programs as we assessed the program learning outcomes for the degree. In the history program, it has been found that students are still underperforming in the area of using credible sources in doing historical research. Not understanding the proper ways to evaluate the credibility of sources and how to use them properly in doing academic research is a skill that will not only harm students as they go forward to their follow-on institutions, but it will also impact their performance on the job and in their daily lives. Our students need this skill while they are here at Georgia Military College, but they also need it to be successful at their next institution of higher learning. Not being fully prepared in this area will reflect negatively on the quality of instruction provided by our institution.

TEAMWORK

The GMC catalog opens with "A Letter from the Dean" stating "we are a learner-centered institution and our goal is to help you to become a life-long independent learner". Although this is an ambitious goal, it is the vision of the leadership and faculty to educate learners that function independently as a solitary entity. As a learner-centered institution, instructors strive to develop the intellect by improving student knowledge, skills and behaviors. Notice how the last word, "behaviors," has replaced the historically defined quality, "abilities." This must mean that academic institutions and employers are looking more at how a person behaves than how a person performs.

In all courses offered at GMC, there is the expectation that the instructor will implement his/her own method of delivery, to include learner-centered instruction. However, there is no common performance measurement to determine what academic and behavioral qualities are improved upon through that method. If it is the ultimate goal of an institution to match what employers are seeking, then it is constantly outlined in articles released through the media. For instance, a quick Internet search of "what employers are looking for" will produce multiple ranked lists of potential employee attributes. On every list, the focus of an employer's search points to teamwork. The Association of American Colleges and Universities (AAC&U) defines teamwork as "behaviors under the control of individual team members (effort they put into team tasks, their manner of interacting with others on the team, and the quantity and quality of contributions they make to team discussions)".

Students at Georgia Military College are not required to study teamwork. In fact, the Community College Survey of Student Engagement (CCSSE) shows that GMC is not doing enough to foster teamwork in its courses. On question 4f, for instance, students were asked how often they worked with other students on projects during class. GMC did not differ from the comparison groups and did not make any real improvements in this area. Therefore, the extent of students work on projects during class has not increased and is not more frequent than comparable institutions. In addition, when asked how often students worked with classmates outside of class to prepare class assignments, GMC did find more students working outside of class together to prepare assignments than comparable schools. From 2011 to 2013, however, the survey numbers have slightly decreased. Finally, when students were asked how much their experience at this college contributed to working effectively with others, it was concluded that GMC does outperform medium and large colleges, but the survey numbers did not differ much from 2011 data. Providing the skills to work well and collaborate with others, efficient and effective use of technology, working productively and professionally, and developing thought analysis is important whether the student is going into the workplace or transferring to a four-year institution. For the reasons presented above, GMC should utilize teamwork to foster professional knowledge and improve skills and behavior.

College Learning *for the New Global Century*

A Report from
the National Leadership Council for
Liberal Education & America's Promise

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Association of American Colleges and Universities

Executive Highlights

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

College Learning for the New Global Century is a report about the aims and outcomes of a twenty-first-century college education. It is also a report about the promises we need to make—and keep—to all students who aspire to a college education, especially to those for whom college is a route, perhaps the only possible route, to a better future.

With college education more important than ever before, both to individual opportunity and to American prosperity, policy attention has turned to a new set of priorities: the expansion of access, the reduction of costs, and accountability for student success.

These issues are important, but something equally important has been left off the table.

Across all the discussion of access, affordability, and even accountability, there has been a near-total public and policy silence about what contemporary college graduates need to know and be able to do.

This report fills that void. It builds from the recognition, already widely shared, that in a demanding economic and international environment, Americans will need further learning beyond high school.

The National Leadership Council for Liberal Education and America's Promise believes that the policy commitment to expanded college access must be anchored in an equally strong commitment to educational excellence. Student success in college cannot be documented—as it usually is—only in terms of enrollment, persistence, and degree attainment. These widely used metrics, while important, miss entirely the question of whether students who have placed their hopes for the future in higher education are actually achieving the kind of learning they need for a complex and volatile world.

"Student success in college cannot be documented—as it usually is—only in terms of enrollment, persistence, and degree attainment."

In the twenty-first century, the world itself is setting very high expectations for knowledge and skill. This report—based on extensive input both from educators and employers—responds to these new global challenges. It describes the learning contemporary students need from college, and what it will take to help them achieve it.

Preparing Students for Twenty-First-Century Realities

In recent years, the ground has shifted for Americans in virtually every important sphere of life—economic, global, cross-cultural, environ-

"The policy commitment to expanded college access must be anchored in an equally strong commitment to educational excellence."

mental, civic. The world is being dramatically reshaped by scientific and technological innovations, global interdependence, cross-cultural encounters, and changes in the balance of economic and political power.

These waves of dislocating change will only intensify. The context in which today's students will make choices and compose lives is one of disruption rather than certainty, and of interdependence rather than insularity. This volatility also applies to careers. Studies show that Americans already change jobs ten times in the two decades after they turn eighteen, with such change even more frequent for younger workers.

Taking stock of these developments, educators and employers have begun to reach similar conclusions—an emerging consensus—about the kinds of learning Americans need from college. The recommendations in this report are informed by the views of employers, by new standards in a number of the professions, and by a multiyear dialogue with hundreds of colleges, community colleges, and universities about the aims and best practices for a twenty-first-century education.

The goal of this report is to move from off-camera analysis to public priorities and action.

What Matters in College?

American college students already know that they want a degree. The challenge is to help students become highly intentional about the forms of learning and accomplishment that the degree should represent.

The LEAP National Leadership Council calls on American society to give new priority to a set of educational outcomes that all students need from higher learning, outcomes that are closely calibrated with the challenges of a complex and volatile world.

Keyed to work, life, and citizenship, the essential learning outcomes recommended in this report are important for all students and should be fostered and developed across the entire educational experience, and in the context of students' major fields. They provide a new framework to guide students' cumulative progress—as well as curricular alignment—from school through college.

The LEAP National Leadership Council does not call for a "one-size-fits-all" curriculum. The recommended learning outcomes can and should be achieved through many different programs of study and in all collegiate institutions, including colleges, community colleges and technical institutes, and universities, both public and private.

THE ESSENTIAL LEARNING OUTCOMES

Beginning in school, and continuing at successively higher levels across their college studies, students should prepare for twenty-first-century challenges by gaining:

KNOWLEDGE OF HUMAN CULTURES AND THE PHYSICAL AND NATURAL WORLD

- Through study in the sciences and mathematics, social sciences, humanities, histories, languages, and the arts

Focused by engagement with big questions, both contemporary and enduring

INTELLECTUAL AND PRACTICAL SKILLS, INCLUDING

- Inquiry and analysis
- Critical and creative thinking
- Written and oral communication
- Quantitative literacy
- Information literacy
- Teamwork and problem solving

Practiced extensively, across the curriculum, in the context of progressively more challenging problems, projects, and standards for performance

PERSONAL AND SOCIAL RESPONSIBILITY, INCLUDING

- Civic knowledge and engagement—local and global
- Intercultural knowledge and competence
- Ethical reasoning and action
- Foundations and skills for lifelong learning

Anchored through active involvement with diverse communities and real-world challenges

INTEGRATIVE LEARNING, INCLUDING

- Synthesis and advanced accomplishment across general and specialized studies

Demonstrated through the application of knowledge, skills, and responsibilities to new settings and complex problems

"The essential learning outcomes provide a new framework to guide students' cumulative progress from school through college."

Liberal Education and American Capability

Reflecting the traditions of American higher education since the founding, the term "liberal education" headlines the kinds of learning needed for a free society and for the full development of human talent. Liberal education has always been this nation's signature educational tradition, and this report builds on its core values: expanding horizons, building understanding of the wider world, honing analytical and communication skills, and fostering responsibilities beyond self.

However, in a deliberate break with the academic categories developed in the twentieth century, the LEAP National Leadership Council disputes the idea that liberal education is achieved only through studies in arts and sciences disciplines. It also challenges the conventional view that liberal education is, by definition, "nonvocational."

"The Principles of Excellence offer both challenging standards and flexible guidance for an era of educational reform and renewal."

The council defines liberal education for the twenty-first century as a comprehensive set of aims and outcomes that are essential for all students because they are important to all fields of endeavor. Today, in an economy that is dependent on innovation and global savvy, these outcomes have become the keys to economic vitality and individual opportunity. They are the foundations for American success in all fields—from technology and the sciences to communications and the creative arts.

The LEAP National Leadership Council recommends, therefore, that the essential aims and outcomes be emphasized across every field of college study, whether the field is conventionally considered one of the arts and sciences disciplines or whether it is one of the professional and technical fields (business, engineering, education, health, the performing arts, etc.) in which the majority of college students currently major. General education plays a role, but it is not possible to squeeze all these important aims into the general education program alone. The majors must address them as well.

A New Framework for Excellence

The LEAP National Leadership Council recommends, in sum, an education that intentionally fosters, across multiple fields of study, wide-ranging knowledge of science, cultures, and society; high-level intellectual and practical skills; an active commitment to personal and social responsibility; and the demonstrated ability to apply learning to complex problems and challenges.

The council further calls on educators to help students become "intentional learners" who focus, across ascending levels of study and diverse academic programs, on achieving the essential learning outcomes. But to help students do this, educational communities will also have to become far more intentional themselves—both about the kinds of learning students need, and about effective educational practices that help students learn to integrate and apply their learning.

In a society as diverse as the United States, there can be no "one-size-fits-all" design for learning that serves all students and all areas of study. The diversity that characterizes American higher education remains a source of vitality and strength.

Yet all educational institutions and all fields of study also share in a common obligation to prepare their graduates as fully as possible for the real-world demands of work, citizenship, and life in a complex and fast-changing society. In this context, there is great value in a broadly defined educational framework that provides both a shared sense of the aims of education and strong emphasis on effective practices that help students achieve these aims.

To highlight these shared responsibilities, the council urges a new compact, between educators and American society, to adopt and achieve new Principles of Excellence (see p. 26).

Informed by a generation of innovation and by scholarly research on effective practices in teaching, learning, and curriculum, the Principles of Excellence offer both challenging standards and flexible guidance for an era of educational reform and renewal.

Taken together, the Principles of Excellence underscore the need to teach students how to integrate and apply their learning—across multiple levels of schooling and across disparate fields of study. The principles call for a far-reaching shift in the focus of schooling from accumulating course credits to building real-world capabilities.

A Time for Leadership and Action

The Principles of Excellence build from a generation of innovation that is already well under way. As higher education has reached out to serve an ever wider and more diverse set of students, there has been widespread experimentation to develop more effective educational practices and to determine "what works" with today's college students.

Some of these innovations are so well established that research is already emerging about their effectiveness. This report provides a guide to tested and effective educational practices (see appendix A).

To date, however, these active and engaged forms of learning have served only a fraction of students. New research suggests that the benefits are especially significant for students who start farther behind. But often, these students are not the ones actually participating in the high-impact practices.

With campus experimentation already well advanced—on every one of the Principles of Excellence—it is time to move from "pilot efforts" to more comprehensive commitments. The United States comprehensively transformed its designs for learning, at all levels, in the late nineteenth and early twentieth centuries. Now, as we enter the new global century, Americans need to mobilize again to advance a contemporary set of goals, guiding principles, and practices that will prepare all college students—not just the fortunate few—for twenty-first-century realities.

What will it take?

As a community, we should

- make the essential learning outcomes and the Principles of Excellence priorities on campus;
- form coalitions, across sectors, to advance all students' long-term interests;
- build principled and determined leadership, including
  - high-profile advocacy from presidents, trustees, school leaders, and employers
  - curricular leadership from knowledgeable scholars and teachers
  - policy leadership at multiple levels to support and reward a new framework for educational excellence;
- put employers in direct dialogue with students;
- reclaim the connections between liberal education and democratic freedom.

"American education calls for a far-reaching shift in the focus of schooling from accumulating course credits to building real-world capabilities."

While recognized leaders can make higher achievement a priority, faculty and teachers who work directly with students are the only

ones who can make it actually happen. At all levels—nationally, regionally, and locally—they will need to take the lead in developing guidelines, curricula, and assignments that connect rich content with students' progressive mastery of essential skills and capabilities. Equally important, those responsible for educating future teachers and future faculty must work to ensure that they are well prepared to help students achieve the intended learning.

Liberal Education and America's Promise

With this report, the LEAP National Leadership Council urges a comprehensive commitment, not just to prepare all students for college, but to provide the most powerful forms of learning for all who enroll in college.

Working together, with determination, creativity, and a larger sense of purpose, Americans can fulfill the promise of a liberating college education—for every student and for America's future.

Appendix F

Liberal Education and America's Promise (LEAP)

RESOURCES ON:

LIBERAL EDUCATION
GENERAL EDUCATION
CURRICULUM
FACULTY WORK
STUDENT SUCCESS
INSTITUTIONAL AND SYSTEMIC CHANGE
ASSESSMENT
DIVERSITY AND INCLUSIVE EXCELLENCE
CIVIC LEARNING
WOMEN
GLOBAL LEARNING
SCIENCE & HEALTH
STEM: PROJECT KALEIDOSCOPE

CONNECT WITH AAC&U:

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WHAT'S NEW

Liberal Education and America's Promise (LEAP) is a national advocacy, campus action, and research initiative that champions the importance of a twenty-first century liberal education—for individuals and for a nation dependent on economic creativity and democratic vitality.

LEAP responds to the changing demands of the twenty-first century—demands for more college-educated workers and more engaged and informed citizens. Today, and in the years to come, college graduates need higher levels of learning and knowledge as well as strong intellectual and practical skills to navigate this more demanding environment successfully and responsibly.

Launched in 2005, LEAP challenges the traditional practice of providing liberal education to some students and narrow training to others. Through LEAP, hundreds of campuses and several state systems are making far-reaching educational changes to help all their students—whatever their chosen major field of study—achieve a set of Essential Learning Outcomes fostered through a liberal education.

LEAP embraces a 21st-Century Definition of Liberal Education and promotes:

- Essential Learning Outcomes—as a guiding vision and national benchmarks for college learning and liberal education in the 21st century
- High-Impact Educational Practices—that help students achieve essential learning outcomes
- Authentic Assessments—probing whether students can apply their learning to complex problems and real-world challenges
- Inclusive Excellence—to ensure that every student gets the benefits of an

LEAP Links

Overview:
About LEAP
LEAP States Initiative
LEAP Campus Toolkit
Publications
LEAP Intro (ppt)

LEAP Vision:
Essential Learning Outcomes
Principles of Excellence
High-Impact Practices
Curricular Design Principles
Inclusive Excellence
Degree Qualifications Profile (DQP)

Public Advocacy:
Employer-Educator Compact
Completion and Quality News Watch
Liberal Education News Watch
National Leadership Council

Appendix G

Metacognitive Awareness Inventory (MAI)

Check True or False as appropriate. Use the Scoring Guide after completing the inventory.
Contact Pamela Runge, Student Success Specialist at 443-412-2429 to discuss strategies to increase your metacognitive awareness.

	True	False
1. I ask myself periodically if I am meeting my goals.		
2. I consider several alternatives to a problem before I answer.		
3. I try to use strategies that have worked in the past.		
4. I pace myself while learning in order to have enough time.		
5. I understand my intellectual strengths and weaknesses.		
6. I think about what I really need to learn before I begin a task		
7. I know how well I did once I finish a test.		
8. I set specific goals before I begin a task.		
9. I slow down when I encounter important information.		
10. I know what kind of information is most important to learn.		
11. I ask myself if I have considered all options when solving a problem.		
12. I am good at organizing information.		
13. I consciously focus my attention on important information.		
14. I have a specific purpose for each strategy I use.		
15. I learn best when I know something about the topic.		
16. I know what the teacher expects me to learn.		
17. I am good at remembering information.		
18. I use different learning strategies depending on the situation.		
19. I ask myself if there was an easier way to do things after I finish a task.		
20. I have control over how well I learn.		
21. I periodically review to help me understand important relationships.		
22. I ask myself questions about the material before I begin.		
23. I think of several ways to solve a problem and choose the best one.		
24. I summarize what I've learned after I finish.		
25. I ask others for help when I don't understand something.		
26. I can motivate myself to learn when I need to		
27. I am aware of what strategies I use when I study.		
28. I find myself analyzing the usefulness of strategies while I study.		
29. I use my intellectual strengths to compensate for my weaknesses.		
30. I focus on the meaning and significance of new information.		
31. I create my own examples to make information more meaningful.		

32. I am a good judge of how well I understand something.		
33. I find myself using helpful learning strategies automatically.		
34. I find myself pausing regularly to check my comprehension.		
	True	False
35. I know when each strategy I use will be most effective.		
36. I ask myself how well I accomplish my goals once I'm finished.		
37. I draw pictures or diagrams to help me understand while learning.		
38. I ask myself if I have considered all options after I solve a problem.		
39. I try to translate new information into my own words.		
40. I change strategies when I fail to understand.		
41. I use the organizational structure of the text to help me learn.		
42. I read instructions carefully before I begin a task.		
43. I ask myself if what I'm reading is related to what I already know.		
44. I reevaluate my assumptions when I get confused.		
45. I organize my time to best accomplish my goals.		
46. I learn more when I am interested in the topic.		
47. I try to break studying down into smaller steps.		
48. I focus on overall meaning rather than specifics.		
49. I ask myself questions about how well I am doing while I am learning something new.		
50. I ask myself if I learned as much as I could have once I finish a task.		
51. I stop and go back over new information that is not clear.		
52. I stop and reread when I get confused.		

Schraw, G. & Dennison, R.S. (1994). Assessing metacognitive awareness. ***Contemporary Educational Psychology, 19,*** **460-475.**

Metacognitive Awareness Inventory (MAI) Scoring Guide

Directions – For each True on the MAI give yourself 1 point on the following charts. For each False, give yourself 0 points in the Score column. Total the score of each category and place in box.

KNOWLEDGE ABOUT COGNITION

DECLARATIVE KNOWLEDGE
– The factual knowledge the learner needs before being able to process or use critical thinking related to the topic
– Knowing *about, what, or that*
– Knowledge of one's skills, intellectual resources, and abilities as a learner
– Students can obtain knowledge through presentations, demonstrations, discussions

PROCEDURAL KNOWLEDGE
– The application of knowledge for the purposes of completing a procedure or process
– Knowledge about *how* to implement learning procedures (e.g. strategies)
– Requires students know the process as well as when to apply process in various situations
– Students can obtain knowledge through discovery, cooperative learning, and problem solving

CONDITIONAL KNOWLEDGE
– The determination under what circumstances specific processes or skills should transfer
– Knowledge about *when* and *why* to use learning procedures
– Application of declarative and procedural knowledge with certain conditions presented
– Students can obtain knowledge through simulation

DECLARATIVE KNOWLEDGE	SCORE
5. I understand my intellectual strengths and weaknesses.	
10. I know what kind of information is most important to learn.	
12. I am good at organizing information.	
16. I know what the teacher expects me to learn.	
17. I am good at remembering information.	
20. I have control over how well I learn.	
32. I am a good judge of how well I understand something.	
46. I learn more when I am interested in the topic.	
TOTAL	8

PROCEDURAL KNOWLEDGE	SCORE
3. I try to use strategies that have worked in the past.	
14. I have a specific purpose for each strategy I use.	
27. I am aware of what strategies I use when I study.	
33. I find myself using helpful learning strategies automatically.	
TOTAL	4

CONDITIONAL KNOWLEDGE	SCORE
15. I learn best when I know something about the topic.	
18. I use different learning strategies depending on the situation.	
26. I can motivate myself to learn when I need to.	
29. I use my intellectual strengths to compensate for my weaknesses.	
35. I know when each strategy I use will be most effective.	
TOTAL	5

Schraw, G. & Dennison, R.S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology, 19,* 460-475.

REGULATION OF COGNITION

PLANNING **–Planning, goal setting, and allocating resources *prior* to learning** **INFORMATION MANAGEMENT STRATEGIES** **–Skills and strategy sequences used to process information more efficiently (e.g., organizing, elaborating, summarizing, selective focusing)** **COMPREHENSION MONITORING** **–Assessment of one's learning or strategy use** **DEBUGGING STRATEGIES** **–Strategies used to correct comprehension and performance errors** **EVALUATION** **–Analysis of performance and strategy effectiveness after a learning episode**	**PLANNING**	SCORE
	4. I pace myself while learning in order to have enough time.	
	6. I think about what I really need to learn before I begin a task.	
	8. I set specific goals before I begin a task.	
	22. I ask myself questions about the material before I begin.	
	23. I think of several ways to solve a problem and choose the best one.	
	42. I read instructions carefully before I begin a task.	
	45. I organize my time to best accomplish my goals.	
	TOTAL	7

INFORMATION MANAGEMENT STRATEGIES	SCORE	**COMPREHENSION MONITORING**	SCORE
9. I slow down when I encounter important information.		1. I ask myself periodically if I am meeting my goals.	
13. I consciously focus my attention on important information.		2. I consider several alternatives to a problem before I answer.	
30. I focus on the meaning and significance of new information.		11. I ask myself if I have considered all options when solving a problem.	
31. I create my own examples to make information more meaningful.		21. I periodically review to help me understand important relationships.	
37. I draw pictures or diagrams to help me understand while learning.		28. I find myself analyzing the usefulness of strategies while I study.	
39. I try to translate new information into my own words.		34. I find myself pausing regularly to check my comprehension.	
41. I use the organizational structure of the text to help me learn		49. I ask myself questions about how well I am doing while learning something new.	
43. I ask myself if what I'm reading is related to what I already know.			
47. I try to break studying down into smaller steps.			
48. I focus on overall meaning rather than specifics.			
TOTAL	10	TOTAL	7

DEBUGGING STRATEGIES	SCORE	**EVALUATION**	SCORE
25. I ask others for help when I don't understand something.		7. I know how well I did once I finish a test.	
40. I change strategies when I fail to understand.		18. I ask myself if there was an easier way to do things after I finish a task.	
44. I re-evaluate my assumptions when I get confused.		24. I summarize what I've learned after I finish.	
51. I stop and go back over new information that is not clear.		36. I ask myself how well I accomplish my goals once I'm finished.	
52. I stop and reread when I get confused.		38. I ask myself if I have considered all options after I solve a problem.	
		49. I ask myself if I learned as much as I could have once I finish a task.	
TOTAL	5	TOTAL	6

Appendix H

Stakeholder Survey (Questionnaire)

1. What enables individuals to draw conclusions from reasons and evidence?
    a. Analysis
    b. Inference
    c. Deduction
    d. Induction

2. Which statement best defines metacognition? Metacognition is defined as:
    a. Improving your study skills.
    b. Analyzing your own thinking.
    c. Working well with others.
    d. Believing in yourself.

3. Which statement below is an example of metacognition?
    a. As Stewart memorizes vocabulary terms, he pairs each term with a person he knows to help remember them.
    b. As Gail interacts with others on a group project, she encourages everyone to participate and does so herself.
    c. As Carl sits in class listening to his professor, he tries to ask as many questions as he has to master the topic.
    d. As Lisa reads an assigned short story, she monitors whether or not she understands and processes what she is reading.

4. What are the five reasoning skills associated with Critical Thinking for GMC's Q.E.P.?
    a. Inference, induction, analysis, evaluation, deduction
    b. Creation, evaluation, deduction, inference, induction
    c. Analysis, Collaboration, analysis, inference, evaluation
    d. Deduction, synthesis, analysis, inference, induction

5. Decision making in precisely defined contexts where rules, core beliefs, values, procedures, and terminology completely determine the outcome is an example of
    a. Deduction
    b. Synthesis
    c. Analysis
    d. Inference
    e. Induction

6. What enables people to identify assumptions, reasons and claims, and examine how they interact in the formation of arguments?
    a. Analysis
    b. Collaboration
    c. Analysis
    d. Inference
    e. Evaluation

7. Which of the five reasoning skills do you use when you draw inferences about what we think is probably true based on analogies, prior experience, statistical analyses, and patterns?
    a. Creation
    b. Evaluation
    c. Deduction
    d. Inference
    e. Induction

8. Which of the five reasoning skills do you use when you assess the credibility of sources of information and the claims they make?
    a. Inference
    b. Induction
    c. Analysis
    d. Evaluation
    e. Deduction

Stakeholder Survey

1. The “theme” of the Critical Thinking Quality Enhancement Plan is:
    a. “OWL at the Moon”
    b. “Bright IDEA”
    c. “Question Every Possibility”
    d. “C4: Clarify, Collect, Consider, Conclude”

2. How have you learned about Georgia Military College’s Q.E.P.? Please select all that apply.

    a. Computers in Computer Lab
    b. PER
    c. Student Ambassador
    d. GMC Website
    e. Posters and Flyers
    f. Faculty/Staff Events
    g. New Student Orientation
    h. QEP Giveaway Items
    i. Library Guide
    j. Other: (text box here for answers)

3. Have you collected any “swag” related to the QEP? If so which of the following have you received?
    a. Tech Pockets
    b. USB drives
    c. Pens
    d. Hand Fans
    e. T-shirts
    f. I haven’t received any “swag”

4. Which of the above was your favorite piece of “swag”?
    a. Dropdown box
    b. I did not like any of them

5. Which of the following courses have you taken at GMC? Please select all that apply.
    a. ART 194
    b. BIO 103
    c. BIO 123
    d. CHE 101
    e. CIS 120
    f. COM 201
    g. CRJ 100
    h. ENG 102
    i. HIS 122
    j. MAT 109
    k. MAT 112
    l. MUS 194
    m. PLS 101
    n. THE 194

6. Have you been taught critical thinking skills in your classes at GMC?
    a. No. None of my classes have provided instruction in critical thinking.
    b. Somewhat. One or two instructors might have mentioned the term.
    c. Yes. Almost all of my classes have provided some instruction in critical thinking.
    d. All of my courses contain instruction in critical thinking.
    e. What is critical thinking?

7. In which of the following courses did you receive critical thinking training?

    a. ART 194
    b. BIO 103
    c. BIO 123
    d. CHE 101
    e. CIS 120
    f. COM 201
    g. CRJ 100
    h. ENG 102
    i. HIS 122
    j. MAT 109
    k. MAT 112
    l. MUS 194
    m. PLS 101
    n. THE 194

8. In regards to your GMC coursework, what has been your overall level of exposure to critical thinking training?

a. Significant exposure
b. Moderate exposure
c. Minimal exposure
d. No exposure

9. I have a better understanding of what critical thinking is and the skills that are used for critical thinking because of my classes at GMC.
    a. True
    b. False

10. Which reasoning skill do you need more information on in order to be able to apply it to your life?
    a. Analysis
    b. Evaluation
    c. Inference
    d. Induction
    e. Deduction
    f. All of them

11. How well do you understand GMC's definition of Critical Thinking?
    a. I do not understand the definition of critical thinking
    b. I understand most of the definition, but I am still a bit confused on some of it.
    c. I understand the entire definition

12. My instructors are helpful in guiding me to understand the basic premises of critical thinking.
    a. True
    b. False

13. Consider any critical thinking activity/activities presented in class this quarter.
    a. I did NOT understand the academic benefit of the activity and did NOT enjoy the activity.
    b. I did NOT understand the academic benefit of the activity, but I did enjoy the activity.
    c. I understood the academic benefit, but did NOT enjoy participating in the activity.
    d. I understood the academic benefit of the activity and really enjoyed participating the activity.
    e. I have no opinion

14. Which of the following critical thinking skills do you remember being discussed and practiced in your coursework at GMC? Please select all that apply.
    a. Metacognition
    b. Deductive reasoning
    c. Inductive reasoning
    d. Analysis
    e. Inference
    f. Evaluation