

I. Focus of Plan

This quality enhancement plan focuses on improving students' critical thinking skills. This topic was selected with broad-based input from the college community and is an acknowledgement of the increasingly complex challenges facing students as they pursue their academic and professional goals. Through scholarly research and lengthy discussion, the college has developed a working definition of critical thinking and identified specific student-learning outcomes that demonstrate critical thinking. The college considers critical thinking an essential educational outcome and will seek to improve this outcome through three interdependent initiatives that address learning enhancement at the individual, course, and curricular levels.

The **Professional Development Initiative** will provide all faculty and staff with training opportunities and resources that enhance their abilities to improve students' critical thinking skills. Implementing this initiative involves five objectives:

1. Offer appropriate training to all faculty and staff involved with critical thinking-enhanced pilot courses;
2. Use professional development activities to encourage interdisciplinary collaboration and refine the facilitation and assessment of critical thinking across the curriculum;
3. Develop and maintain critical thinking resources for faculty and staff;
4. Plan and conduct campus wide activities each semester that reinforce the college's commitment to enhancing students' critical thinking skills; and
5. Collaborate with business and industry, public schools, universities, and other community colleges to enhance and assess students' critical thinking skills.

In addition to supporting the professional development needs of the Student Success and General Education efforts, this initiative will enable faculty and staff from all areas to improve how they incorporate critical thinking activities into their instruction and service. It will also encourage communication within the college community, as well as cooperation with local stakeholders.

The **Student Success Initiative** will emphasize to students the application of critical thinking skills for Student Success. Implementing this initiative involves three objectives:

1. Encourage students to think critically about their strategies for college and professional success;
2. Enable students to maximize their learning potential using critical reading, effective communication, and information literacy skills; and
3. Introduce students to applied critical thinking in a variety of learning contexts.

This initiative will familiarize students with CFCC's conception of critical thinking and help them develop the fundamental skills needed to succeed as critical thinkers in the community college setting. Actions for achieving these objectives include expanding the college's offerings of Student Success courses, emphasizing the importance of critical thinking in new student orientations, and promoting campus-wide activities that enhance students' critical thinking skills.

The **General Education Initiative** will facilitate, assess, and enhance critical thinking as a general education core competency. Implementing this initiative involves three objectives:

1. Identify, apply, and evaluate strategies that enhance students' critical thinking skills in general education courses;
2. Improve how critical thinking skills are assessed as learning outcomes of general education courses; and
3. Use interdepartmental communication and cooperation to enhance students' critical thinking skills in general education courses.

This initiative addresses the general education courses that serve the diverse needs of students in college transfer, vocational, and technical programs. Since this plan emphasizes critical thinking as

one of the college's essential educational outcomes, it makes sense to start with the college's essential curricula. Implementation of this initiative will involve assessing critical thinking student-learning outcomes, analyzing instructional strategies that promote critical thinking, and piloting enhancement efforts in selected general education courses.

These three initiatives balance the ambitious pursuit of an educational ideal with a realistic focus on improving student learning. The expected collective outcomes of these initiatives are:

- **Measurable improvement of students' critical thinking skills at the course, program, and curricular levels**
- **Enhanced instructional practices that promote critical thinking and life-long learning**
- **Improved strategies for assessing student learning outcomes**
- **More effective professional development opportunities for faculty and support staff**

These outcomes are the ultimate ends for each implementation action detailed in this plan and clear criteria for evaluating the degree to which this plan is successful.

1.1 Background, Rationale, and Expected Outcomes

Critical thinking is an obvious and prudent topic for quality enhancement at Cape Fear Community College (CFCC). We recognize that our students will significantly benefit from developing the skills and dispositions characteristic of critical thinkers. Students who continue their studies at senior institutions will benefit from having honed the higher order thinking skills required in advanced and graduate level course work, while students entering the world of work will benefit from the cognitive sophistication and flexibility an increasingly complex economy rewards. As Pithers and Soden (2000) observe, ". . . all the abilities and dispositions encompassed by the term 'critical thinking' are likely to facilitate the comparatively fast rate of assimilation required in academic study and in many occupations" (p.246). Helping students develop such capacity to adapt to new challenges and opportunities is a priority at this institution, and this priority can best be addressed by improving the way we facilitate critical thinking.

CFCC has, in fact, recognized the importance of fostering critical thinking skills for some time; "critical thinking" appears throughout CFCC's catalog and handbook in program and course descriptions. It is in the descriptions of degree programs in Accounting and Mechanical Engineering Technology, as well as embedded in the "Problem Solving" general education core competency. Critical thinking also appears in a dozen course descriptions (from the *2006-2007 Cape Fear Community College Catalog and Student Handbook*). However, what has not been sufficiently addressed at CFCC before is:

- 1) The need to reach a common understanding of what is meant by "critical thinking";
- 2) Where and how critical thinking is currently encouraged in our curriculum;
- 3) How to improve the facilitation of students' critical thinking in specific instructional areas; and
- 4) How to improve the assessment of students' critical thinking skills and dispositions.

It is imperative that we fully address each of these issues if we are to be truly committed to improving student learning at CFCC. The need to examine our institutional conception of and commitment to instruction that encourages critical thinking is the rationale for this Quality Enhancement Plan. Furthermore, critical thinking has been identified as a worthy topic for focused enhancement by a broad cross-section of CFCC faculty, administration, and staff.

1.1.1 Background Narrative

In the fall of 2004, CFCC's Office of Institutional Development (now Institutional Effectiveness) organized a series of focus group meetings as part of the college's broader planning process to generate ideas for possible QEP topics. Seventeen meetings were held in all, with substantial representation from all areas of instruction and service. One hundred fourteen full time faculty (52%) and 121 full time staff (60%) attended these meetings. Seven CFCC curriculum advisory committee members and five University of North Carolina Wilmington representatives also participated in these sessions. Several ideas emerged from these discussions, including the need to improve students' reading, writing, and self-expression skills; the need to enhance students' basic math skills; a desire to create a more comprehensive first year orientation program for student success; a desire to do more across-the-curriculum sharing and assessing; a need to improve students' research and study habits; and a need to improve students' critical thinking skills. These ideas were discussed in a SACS Leadership Team meeting held December 14th, 2004. The team agreed on the importance of many of these ideas, most notably expanding the first year Student Success course; improving students' critical thinking, reading and writing skills; and improving developmental instruction.

After more discussion and consideration, critical thinking was highlighted as a possible topic since so many different departments had mentioned it as a student learning area that needed significant improvement. It was recognized from the start that critical thinking was a topic that not only reached across the college's diverse instructional areas, but also spoke to many of the other ideas generated in the focus groups, like reading, writing, research skills, and student success. There was optimism shared among many that by helping students improve their critical thinking skills, the related skills of reading, writing, and problem solving would see improvement as well.

An email proposing critical thinking as the QEP topic was submitted to the entire faculty and staff of CFCC. Nearly 80 percent of those who responded to this email supported critical thinking as a good choice for the QEP topic. Many of these responses included positive comments like:

- "Without critical thinking, our students would not be able to analyze the situations they encounter and act appropriately."
- "Critical thinking skills are key to everything that a student will do here at the college as well as on the job once he or she graduates."
- "I think this would be a worthwhile topic that would benefit students, as well as instructors."
- "I heartily support any initiative that promotes critical thinking. . . . critical thinking is a life skill absolutely necessary for success."
- "I believe pursuing critical thinking as CFCC's Quality Enhancement Plan (QEP) topic is both appropriate and necessary to increasingly effective teaching and learning at the College."

With broad support confirmed, critical thinking as the QEP topic was submitted for approval to College Council, a semimonthly meeting of CFCC's leadership that includes the college's president, vice presidents, deans, and directors. College Council approved critical thinking as the topic for Quality Enhancement at its April 13th, 2005 meeting.

Following the approval of the topic, a team of faculty and support staff was formed to steer the development of CFCC's QEP. This team represented CFCC's diverse instructional and service areas, with faculty from fields as varied as marine technology, communications, radiography, and history, as well as support staff from areas such as student development, institutional effectiveness, and the Learning Resource Center (LRC) (see **Attachment IV** for complete QEP

Team roster). The QEP Team conducted the research and facilitated the broad-based involvement needed to develop this plan.

1.1.2 CCSSE Results as Rationale

The need to improve the understanding and facilitation of critical thinking at Cape Fear Community College was further confirmed two months later. In July 2005, CFCC received its initial results from the Community College Survey of Student Engagement (CCSSE) administered that previous spring. Although the survey findings overall reflected positively on instruction and student engagement at CFCC, one particular question spoke directly to the need to improve our students' critical thinking skills. This question asked students how much their experience at CFCC contributed to their "knowledge, skills, and personal development" in the area of "Thinking critically and analytically." Students' responses to this question when compared to responses from similar "Consortium" colleges revealed a significant gap. Whereas 26% of Consortium students provided a "Very Much" response to the above question, only 21% of CFCC students did so. This represented a statistically significant difference and further confirmed the importance and relevance of this topic. CCSSE was also recognized as a potential assessment instrument for evaluating the success of this plan.

1.1.3 A Review of Critical Thinking Initiatives at Other Colleges

In addition to the immediate institutional support this topic received, the wisdom of pursuing critical thinking as a topic for quality enhancement was affirmed by a review of pertinent literature and similar initiatives at other schools. These included Washington State University's *Critical Thinking Project*, *The Year of Critical Thinking* at Prince George's Community College, Surry Community College's *Learning Initiative*, and the *Critical Thinking Across the Curriculum Project* at Longview Community College. These initiatives provided a framework for understanding the potential benefits and challenges of making an institutional effort to improve students' critical thinking skills.

Washington State's *Critical Thinking Project* (Kelly-Riley et al, 2001) sought to address three major challenges: "fostering critical thinking skills in undergraduates"; "making valid, reliable, and fine-grained assessments of students' progress in achieving these higher order intellectual skills"; and "providing faculty with the tools necessary to refocus their own teaching to encourage these abilities in students" (p.6). After an initial analysis, Washington State concluded that its faculty were not "eliciting systematically the kinds of higher order thinking skills" described in its outcomes statements (p.10). The focus of this initiative became the creation of an institutional critical thinking rubric that would encourage the faculty to "focus consciously and collectively" on helping students reach "desired levels of achievement" in improving their critical thinking skills (p.10). Faculty adopted the rubric for specific uses in their courses while the general version of the rubric was applied to selected student work for campus-wide assessment. The result of this initiative was an effective "diagnostic tool for faculty in evaluating their own practices and testing the outcomes of different approaches objectively" (p.10). The success of Washington State's initiative also led to the critical thinking rubric being adopted by Brenau University for its own cross-curricular project.

Prince George's Community College (2004) based its initiative on the premise that "Whether our students transfer to four-year colleges or return to the workplace, to succeed in their goals our students need to be good thinkers, to think critically" (p.3). This initiative's goals were to help learners "improve their thinking about their course work; use sound thinking on tests, assignments, and projects in their courses; have the strategic, analytical, problem solving, and decision-making skills they need when they transfer to another college; have the strategic,

analytical, problem solving, and decision making skills they need when they transition to work” (p.3). Prince George’s developed a comprehensive, multidisciplinary handbook for its faculty based on a definition of critical thinking as the “sound thinking needed by practitioners in an academic discipline: accurate, relevant, reasonable, rigorous—whether it be analyzing, synthesizing, generalizing, applying concepts, interpreting, evaluating supporting arguments and hypotheses, solving problems, or making decisions” (p.3).

Surry Community College’s *Learning Initiative* (2005) focused on “Creating a Learning-centered College by Improving Student Engagement through Critical Thinking, Assessing Learning Outcomes, and Reforming Organizational Culture” (“Project Description”). This initiative’s critical thinking emphasis “encourages students to actively engage in tasks of intellectual complexity and to take responsibility for their learning” (“Project Description” para. 2). Surry adopted an “Institutional Portfolio model” to assess “college-wide learning outcomes” across the curriculum (“Project Description” para. 2). This assessment model, coupled with a substantial professional development plan, was designed to “trigger authentic change” and improve students’ critical thinking skills (“Project Description” para. 3).

The *Critical Thinking Across the Curriculum Project* at Longview Community College (1996) was an effort undertaken by a handful of instructors to provide “faculty members in every discipline with the most complete resources for integrating Critical Thinking into their classes” (“Our Purpose”). This effort worked on the assumption “that there is a core group of skills and principles which are relevant to any academic discipline” (“Our Purpose”) and produced an exhaustive web-based collection of critical thinking instructional resources for both general and discipline-specific applications.

Critical thinking has been identified as an important learning outcome at many other institutions. The 21st Century Skills Project brought together 15 diverse community colleges from across the U.S. and Canada to determine the most important learning outcomes to be addressed for the new century. This group identified eight core skills: communication skills; computation skills; community skills; critical thinking and problem solving skills; information management skills; interpersonal skills; personal skills; and technology skills. This group justified its choices with four key assumptions:

1. These skills are important for every adult to function successfully in society today.
2. Community colleges are well equipped and well positioned to prepare students with these skills.
3. These skills are equally valid for all students, whether they transfer to a four-year college or university or pursue a career path after leaving the community college.
4. These skills may be attained anywhere; many students will enter the community college having already achieved some or all of these skills, and community colleges must work to document and credential such prior learning. (Wilson et al, 2000, p.15-16)

Institutions participating in the 21st Century Skills Project also described how these core skills were incorporated into their curricula. Of these, Waukesha County Technical College designated critical thinking as one of its “Critical Life Skills” that are “essential for the occupational and personal success” of all students (Schoenberger, 2000, p.41), while Cascadia Community College described “Think Critically, Creatively, and Reflectively” as one of its “Overarching Learning Outcomes” (Baker, 2000, p.32-33).

These and other examples of initiatives to improve students' critical thinking skills provide this plan with a solid grounding in curriculum development, best practices, and assessment strategies. They also demonstrate that the scope of available critical thinking resources spans every discipline and educational endeavor; all the critical thinking initiatives described above were interdisciplinary efforts. This was further indication of the potential for a critical thinking initiative ultimately to reach across the diverse departments and areas of instruction comprising the college.

1.1.4 How the Topic Relates to the College's Mission and Vision

The topic of critical thinking speaks to the overarching mission of the college, namely to prepare learners for lifelong success through education and training. CFCC's Vision Statement includes "Building a future-oriented world-class workforce and a community of lifelong learners . . ." The immediate connections between the Vision Statement and improving students' critical thinking skills are found in "future-oriented," "world-class," and "lifelong learners." These descriptions suggest an ability to adapt and compete in ever-changing conditions. As countless news reports and articles have signaled in the last few years, the new global economy is fluid and unpredictable; this is the economic reality our students must confront. Therefore, in addition to equipping learners with traditional skills and knowledge bases, colleges, particularly community colleges, must also now facilitate critical cognitive developments in learners that foster the ability and inclination to embrace new circumstances and learning contexts. As Battersby (1999) notes:

Because of the constantly changing nature of knowledge and work specific skills, all people need generic abilities that enable them to continue to learn and engage the world thoughtfully after they leave school. Preparing students for this state of "life long learning" means teaching more than the immediate knowledge included in most programs and disciplinary courses. It means focusing on such abilities as research and learning strategies, critical thinking and communication—recognizing that these abilities will be required to be effective both in the activity for which one is being specifically educated and for many others. (p.3)

Preparing students for the immediate and long-term success Battersby describes is central to CFCC's mission and can be fostered by improving students' critical thinking skills.

The idea of using a critical thinking emphasis to better prepare learners for today's unique economic challenges has been voiced by many, including Elder (2000) who asserts that "successful workers of the future must possess intellectual tools which will render them mentally flexible and intellectually disciplined . . ." (The Emergent Requirements of Work section, para.3). Ackerman, Gross, and Perner (2003) similarly contend that "preparing for careers in today's uncertain markets" requires "critical thinking about the future of businesses" (p.46). McKendree et al. (2002) likewise emphasize "being able to think critically is essential to be able to respond appropriately to rapid and complex changes in modern society. This is perhaps particularly true of the employment 'flexibility' dictated by recent economic trends" (p.58). Many of our students have already been affected by such trends, finding themselves displaced from the traditional manufacturing jobs that long characterized this region. These students inevitably look to their community colleges for assistance in acquiring more marketable skills. The ability to think critically is essential to both the acquisition and implementation of such skills.

Finally, CFCC recognizes the liberating potential in encouraging students' critical thinking skills. Beyond achieving academic or professional success, students will realize their greatest potential by fully engaging in critical examinations of their lives and communities that will encourage "intellectual growth and autonomy" (Kelder, 1992, p.17). Such examinations will lead to new paths of possibility and reveal to students new ways of conceptualizing their world. Furthermore, failure to encourage students' development of these skills would be both an educational and civic

injustice. As Nussbaum (1997) warns, “It would be catastrophic to become a nation of technically competent people who have lost the ability to think critically, to examine themselves, and to respect the humanity and diversity of others” (p.300). For all these reasons, CFCC states as its first strategic goal: **Deliver quality programs and effective instruction that result in students achieving identified learning outcomes, with an emphasis on critical thinking as outlined in CFCC’s Quality Enhancement Plan (approved by CFCC Board of Trustees November 16, 2005).**

1.1.5 Summary of Rationale

In summary, there are obvious reasons for making critical thinking the focus of CFCC’s Quality Enhancement Plan:

- The need to define and assess a concept taken for granted throughout the college’s handbook, course descriptions, and syllabi
- Broad support from faculty and staff
- Performance shortfalls revealed by CCSSE data
- Relation to the college’s mission and vision
- The academic and professional challenges that await our students

CFCC considers these reasons sufficient rationale to commit meaningful human, fiscal, and material resources toward improving the facilitation of our students’ critical thinking skills and dispositions.

1.1.6 Expected Outcomes

There are four expected outcomes of this plan. These outcomes provide a focused direction for implementation and standards by which the success of this plan can be evaluated:

- **First Outcome: Measurable improvement of students’ critical thinking skills at the course, program, and curricular levels**
Gradual and sustained improvement in students’ critical thinking skills will be measured through direct and indirect assessments each year of implementation.
- **Second Outcome: Enhanced instructional practices that promote critical thinking and life-long learning**
Instructional practices that promote critical thinking and life-long learning will be used by more faculty and support staff more effectively each year of implementation.
- **Third Outcome: Improved strategies for assessing students’ critical thinking learning outcomes**
Strategies for assessing students’ critical thinking learning outcomes will be refined and become more effective each year of implementation.
- **Fourth Outcome: More effective professional development opportunities for faculty and support staff**
The quality of and participation in professional development opportunities that enhance faculty and support staff’s abilities to improve students’ critical thinking skills will increase each year of implementation.

Each of these outcomes supports the improvement of students’ critical thinking skills and achieving them requires making critical thinking a central focus of instruction and instructional support services. Students who engage in the deep and meaningful learning associated with critical thinking will be better equipped to excel in subsequent academic and professional contexts. As a result, CFCC will provide employers and senior institutions with workers and learners who are prepared to succeed in an increasingly complex world.

1.2 Key Concepts, Definitions, and Best Practices

The QEP Team's exploration of how best to improve students' critical thinking skills led to a valuable discussion of what student learning means at CFCC. As the mission of the QEP is to enhance student learning in a meaningful way, articulating what the college most values about the student learning process was a natural first step. This discussion allowed the diverse teaching and service experiences represented on the QEP Team to develop the following statement on student learning:

Student learning is the priority of Cape Fear Community College. Student learning is the process by which learners enhance their skills, dispositions, and human potential. Student learning involves building new knowledge, skills, and habits on foundations of prior learning. A mutual commitment between instructor and learner based on hard work, inquiry, and integrity is necessary for student learning.

This statement on student learning provides a conceptual framework for enhancement by emphasizing that learning involves more than mere accumulation of knowledge; learning must also involve the affective elements of cognitive development, the "skills" and "habits" that drive the application of knowledge. Such affective elements are developed and reinforced as learners progress through the college's curricula. This statement also asserts that learning is a shared responsibility of students and instructors that takes real effort and a genuine desire to enhance one's "human potential." Likewise, this Quality Enhancement Plan asserts that improving student learning in the area of critical thinking is the most effective means of enhancing students' human potential as professionals, citizens, and lifelong learners.

In order to improve the facilitation and enhancement of our students' critical thinking skills, a common definition of critical thinking that could satisfy and apply to the college's diverse instructional areas had to be developed. As earlier noted, even though "critical thinking" appears throughout the college's catalog, course descriptions, and syllabi, the college had no agreed upon description of what critical thinking *is* until now. Not surprisingly, establishing such a description was an ambitious endeavor. This can be attributed to two factors: first, faculty and staff's perceptions of critical thinking tend naturally to be determined by experiences in their own courses and service areas; second, there is little agreement on defining critical thinking within the substantial scholarly research on the topic. Both the debate within the scholarly literature and the different perceptions held by faculty and staff result from divergent ideas of *where* and *when* critical thinking can happen, and, consequently, *how* it can be facilitated as an educational objective.

Kurfiss (1988) identifies three distinct perspectives for understanding critical thinking as an outcome of higher education: the "argument skills" perspective, the "cognitive processes" perspective, and the "intellectual development" perspective (p.iii). The argument skills perspective focuses on improving students' informal logic skills, particularly the identification of fallacies and inductive and deductive reasoning (Kurfiss, 1988, p.iii). This perspective provides the model for emphasizing instruction specific to such skills in one or a few introductory courses. This perspective is often expanded to include activities beyond argument analysis, such as problem solving, decision-making, and everyday reasoning (Norris & Ennis, 1989; Smith, 2001). In this conception, critical thinking is applied not only to the ideas of others (in the form of arguments), but also to any situations requiring purposeful, deliberate thinking.

The "cognitive processes" perspective encourages learners to develop a "mental model" (p.iv) in response to complicated situations that lack easily defined answers. In developing this model, learners must use "declarative knowledge," the "facts and concepts" of a particular field;

“procedural knowledge,” the standards of reasoning within a field; and “metacognition,” the ability to monitor one’s reasoning, particularly the effectiveness of a “line of inquiry” (Kurfiss, 1988, p.iv). A similar distinction is drawn by Krathwohl’s (2002) revision of Bloom’s Taxonomy (p.214). The cognitive processes perspective emphasizes recognizing that every field or discipline has unique standards by which information is evaluated and conclusions are reached. As Paul and Elder (2005) assert, “to learn a body of content, say, an academic discipline, is equivalent to learning to think within the discipline” (p.10). This closely relates to the Prince George’s Community College (2004) description of critical thinking as the “sound thinking needed by practitioners in an academic discipline” (p.3). The cognitive processes perspective supports instructional strategies that “explicitly teach discipline-specific procedural knowledge” (Kurfiss, 1988, p.iv).

The “intellectual development” perspective is concerned with learners’ “beliefs about the nature of knowledge and truth” (Kurfiss, 1988, p.iv). This concern is a response to students’ tendency, especially at the college level, to assume “all opinions are equally valid” when confronted with “pluralism, complexity, and uncertainty” (Kurfiss, 1988, p.iv). The intellectual development perspective encourages learners to “confront the indeterminacy of knowledge at the level just beyond their present understanding” in order to develop a “mature epistemology of commitment” based on the fair evaluation of opinions and beliefs (Kurfiss, 1988, p.iv). This perspective also emphasizes conveying to learners the importance of caring whether their own beliefs and opinions are grounded in sound reasoning (Kurfiss, 1988, p.iv).

1.2.1 Definition of Critical Thinking

Preliminary research found considerable variety in how experts in the area defined critical thinking, though many differences seem more the result of descriptive preference than fundamental divergence. Norris and Ennis (1989) define critical thinking simply as “reasonable and reflective thinking that is focused upon deciding what to believe or do” (p.3). Similarly, Kurfiss (1988) defines critical thinking as “an investigation whose purpose is to explore a situation, phenomenon, question, or problem to arrive at a hypothesis or conclusion about it that integrates all available information and that can therefore be convincingly justified” (p.2). Both these definitions stress the *product* of critical thinking, namely good decisions or positions.

Rather than product, some definitions of critical thinking emphasize the process. For example, Maiorana (1991) contends that “Critical thinking is the questioning or inquiry we engage in when seeking to understand, evaluate, or resolve” (para.2). Van Gelder (2005) describes the critical thinking process as a “highly contrived activity” similar to mastering a sport or foreign language that “involves skillfully exercising various lower-level cognitive capacities in integrated wholes” (p.42).

Wolcott (1999) defines critical thinking in terms of four essential abilities critical thinkers at the college level should have:

- Ability to recognize the uncertainties in a problem that might prevent a single “correct” solution
- Ability to frame a problem adequately (organizing and analyzing information, understanding alternative viewpoints, and recognizing and controlling for initial biases)
- Ability to reach, articulate, and defend a solution as most reasonable
- Ability to recognize the limitations of a solution and to consider possible reevaluations as new information becomes available (p.4)

Wolcott's definition extends the process emphasis by describing the learning outcomes that could be demonstrated within the critical thinking process as well as in the product of effective critical thinking.

Other definitions of critical thinking are more focused on the disposition of one who thinks critically. For example, Ikuenobe (2002) asserts, "critical thinking and learning involves the effort, willingness, and attitude to be always open to new evidence, requiring that we ought to change our belief with new evidence. . . . Such effort or willingness involves adopting a rigorous and critical attitude which requires that we be tentative about the reasonableness of our beliefs and that we be open to other plausible evidence or counter evidence which others are aware of" (pp. 372-373). Chaffee (2006) offers a similar, though more concise definition in the glossary of his *Thinking Critically* textbook: "[critical thinking is] the act or habit of carefully exploring the thinking process, in order to make more intelligent decisions" (p.535). Likewise, Paul and Elder's (2005) definition focuses on the quality of reasoning by describing critical thinking as "the process of analyzing and assessing thinking with a view to improving it" (p.7). This definition points to the type of purposeful reflection described by Facione and others in the "Delphi Report" (1990): "We understand critical thinking to be purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (p.2).

In developing a working definition of critical thinking to provide a solid basis for this plan, the similarities, strengths, and weaknesses of these and other perspectives were considered. The QEP Team wanted to adopt the best elements of each perspective for a definition that would be accessible and useful for all CFCC students, faculty, and support staff. To that end, the QEP Team created the following statement:

Cape Fear Community College defines critical thinking as the deliberate process of questioning, evaluating, and responding to problems, scenarios, and arguments in order to reach sound solutions, decisions, and positions.

This definition emphasizes that, as Bailin et al (1999) observe, critical thinking is thinking that is "directed toward some end or purpose, such as answering a question, making a decision, solving a problem, devising a plan, or carrying out a project" (p.286). That is, critical thinking enables learners to respond intelligently to situations such as those described above. This definition conveys several important principles that inform CFCC's efforts to improve the facilitation of students' critical thinking skills.

First among these is the principle that students must *deliberately* engage in critical thinking. Providing students with a set of skills is pointless unless they are willing to use those skills. Any plan to foster critical thinking must acknowledge the importance of a student's "attitude or disposition to recognize when a [critical thinking] skill is needed and the willingness to exert the mental effort needed to apply it" (Halpern, 1999, p.72). As Facione (1990) asserts, effective instruction for improving critical thinking skills must help learners develop the "confidence, inclination, and good judgment" to use these skills (p.4). Thus, critical thinkers must have a desire and disposition to think critically in a variety of situations.

The second principle is that critical thinking is best thought of as a process of *questioning*, *evaluating*, and *responding* that can be applied across a broad range of academic, professional, and personal contexts. In determining how best to describe these contexts, the QEP Team considered the diverse learning situations CFCC students encounter. Students must confront and solve *problems* in areas ranging from mathematics to electronic engineering to marine technology;

they may encounter *scenarios* in the health sciences, business, and public service; and they will be exposed to *arguments* in literature, the humanities, and social sciences. In all cases, students engage in processes of reasoning, the quality of which helps determine the subsequent success and depth of student learning.

Questioning is the first and most fundamental step in the critical thinking process. Before students can actively think their way through problems, scenarios, or arguments, they must first ask pertinent questions that clarify the nature of the issue at hand. Learners must develop the skills and knowledge to recognize what questions are most pertinent in a given situation. As Browne and Freeman (2000) suggest, the value of pertinent questions “stems from their importance as stepping stones toward the evaluation of reasoning. To begin, critical thinking requires comprehension. To evaluate reasoning, one must first discover it” (p.302). Consistently seeking to ask the best questions in a given situation is a disposition learners must develop, a disposition best described as a *spirit of inquiry*.

Such purposeful inquiry leads critical thinkers through the process of informed reasoning using the higher order thinking skills of analysis, synthesis, and evaluation. This process can involve sorting and ranking information, developing comparisons, identifying assumptions, drawing inferences, considering alternatives, and predicting consequences. Like the questioning process, learners must acquire knowledge of these and related strategies, develop skill at applying such strategies, and embrace the disposition or habit of mind to do so. Finally, critical thinkers thoroughly and fairly apply the process of evaluation to information in order to arrive at appropriate responses.

CFCC’s definition of critical thinking counts the *soundness* of responses as the appropriate standard by which thinking is evaluated; what makes a solution, decision, or position sound is determined by the quality of the reasoning used to reach it. This is why it is important for critical thinkers to not only articulate clear responses, but also explain their reasoning processes, defend their conclusions, and fairly evaluate the quality of their own reasoning. As Bailin et al. (1999) observe, “If the thinking is sloppy, superficial, careless, rash or naïve, most advocates of critical thinking would not agree it is critical thinking” (“Conceptualizing” p.287). This notion conforms to Paul and Elder’s (2005) previously discussed position that critical thinking is ultimately “assessing thinking with a view to improving it” (p.7), as well as Norris and Ennis’ (1989) claim that “good thinking does not lead to just *any* conclusions, but in general to the *best* conclusions [emphases original]” (p.3).

1.2.2 Student Learning Outcomes

CFCC’s definition of critical thinking provides the basis for describing the student learning outcomes (SLOs) addressed by this plan. These outcomes, in turn, provide specific targets for instructional enhancement and the assessment of student learning, as well as a commonality of purpose that will encourage cross-curricular communication and collaboration. This quality enhancement plan addresses the following student learning outcomes:

Students demonstrate critical thinking when they	1. Ask pertinent questions that clarify and focus a problem, scenario, or argument
	2. Evaluate the quantity, quality, and usefulness of information
	3. Articulate a sound solution, decision, or position based on appropriate standards of reasoning
	4. Monitor and reflect upon the quality and fairness of their reasoning

These learning outcomes describe how students ideally will apply critical thinking skills to the various academic, professional, and personal contexts they encounter.

SLO (1): Ask pertinent questions that clarify and focus a problem, scenario, or argument

Pithers and Soden (2000) confirm that critical thinking “involves being able to identify questions worth pursuing” and “being able to pursue one’s questions through self-directed search and interrogation of knowledge” (p.238). Paul and Elder (2005) identify “Questions, Problems, and Issues” as their second standard of critical thinking competency (p.22). Outcomes derived from this standard include “divide complex questions into sub-questions,” “formulate foundational and significant questions within any particular discipline or subject,” “distinguish conceptual questions from factual questions,” and “distinguish significant questions from trivial ones, relevant from irrelevant ones” (p.23). Norris and Ennis (1989) also describe “Asking and answering questions of clarification and challenge” (p.183) as an important marker of critical thinking.

SLO (2): Evaluate the quantity, quality, and usefulness of information

Information in this case refers to all data pertinent to the problem, scenario, or argument at hand. The evaluation of information results from effective inquiry, analysis, and synthesis. Paul and Elder’s (2005) third critical thinking competency standard describes important steps in this process, including “distinguish relevant from irrelevant information when reasoning through a problem,” “objectively analyze and assess information in coming to conclusions,” and “demonstrate understanding of the types of information used within particular subjects and disciplines” (p.24). Norris and Ennis (1989) describe five aspects of evaluation relating to this outcome: “Judging the credibility of a source,” “Making and judging observations,” “Making and judging deductions,” “Making and judging inductions,” and “Making and judging value judgments” (pp.184-185). Nickerson (2004) also lists “Sensitivity to missing information” as a component of good reasoning (p.415).

SLO (3): Articulate a sound solution, decision, or position based on appropriate standards of reasoning

This outcome conforms to Wolcott’s (1999) third critical thinking skill for college students: “Ability to reach, articulate, and defend a solution as most reasonable” (p.4). Columbus State Community College similarly identifies “Draw Conclusions” as one of its major critical thinking outcomes (Peterson et al, 1994). Specific “student behaviors” relating to this outcome include “be able to examine problems, issues, and science articles and develop a defensible conclusion,” “make a decision about a particular topic or issue,” “take and defend a particular value position,” and “utilize information from a variety of sources to formulate a course of action” (Peterson et al, 1994). This outcome also relates to those described by Paul and Elder (2005), including “draw conclusions only to the extent that those conclusions are supported by facts and sound reasoning” (p.24) and “reach independent, well-reasoned conclusions” (p.39). Standards of reasoning are often determined by the “point of view of [a] discipline” and “its assumptions, implications, and practical consequences” (Paul & Elder, 2005, p.15).

SLO (4): Monitor and reflect upon the quality and fairness of their reasoning

This outcome is primarily concerned with the reflective or “metacognitive” component of critical thinking. As Norris and Ennis (1989) explain, “critical thinkers must be reflective in that they examine the reasonableness of their own and others’ thought” (p.4). Paul and Elder (2005) stress that learners “monitor their thinking and amend their own mistakes” (p.39) and “identify consistencies and contradictions in their thinking” (p.36). Pithers and Soden (2000) likewise emphasize that learners must “develop their metacognitive knowledge and skills” (p.243) which

Garcia and Pintrich (1992) describe as “strategies involving monitoring, regulating, and planning” (p.4). Nickerson (2004) frames the importance of this outcome by describing the “disposition of reflectiveness” (p.430) as the willingness to “[test] the tenability of an initial conclusion by seeking information that might tell against it” (p.431). Finally, the habits of mind demonstrated in this outcome are essential to the successful demonstration of all the other critical thinking outcomes described above.

These generalized learning outcomes will form the basis for program and course level student learning outcomes (SLOs) in critical thinking, as well as CFCC’s critical thinking rubric.

1.2.3 Key Concepts, Best Practices, and Guiding Principles

Several key concepts provide the theoretical foundation for this plan. These concepts are the result of thorough research into the scholarly literature on critical thinking as an educational objective. Conducting this research involved examining a variety of perspectives from disciplines as diverse as developmental psychology, business management, and natural sciences. These perspectives were then considered with the college’s mission, vision, and culture in mind in order to identify what concepts would best serve this enhancement effort. The concepts identified below shape the initial research design of this plan and will be amended as needed as assessment data become available.

Critical Thinking Has Both Specific and General Elements

This plan distinguishes between two types of critical thinking skills. The first type involves *general* critical thinking skills. These skills are the broad processes that Smith (2001) calls the “concepts, heuristics,” and “techniques” (p.361) that are commonly applied to academic, professional, and everyday reasoning. Such skills include predicting outcomes, weighing options, and diagnosing problems. A general conception of critical thinking also encompasses the dispositions that go along with good reasoning in a wide range of contexts. Bailin (2002) describes these as “habits of mind, such as open-mindedness, fair-mindedness, and a commitment to making judgments on the basis of reasoned assessment” (p.369). In this plan, *general critical thinking skills* refers then to the most common skills and dispositions associated with reaching sound solutions, decisions, and positions in a variety of situations.

The second type involves *context-specific* critical thinking skills that derive unique processes and standards of reasoning from a particular discipline or profession. These processes and standards may be similar to those in closely related fields, but typically demand a specific knowledge base grounded in the core concepts and theories of a discipline or profession. Typically, the higher the level of one’s study within a discipline or advancement in a profession, the more one’s context-specific critical thinking skills develop. Such skills are applied within a field’s agreed upon standards of reasoning; likewise, the soundness of any solution, decision, or position will be evaluated by those same standards.

The distinction between the specific and general elements of critical thinking is the subject of considerable debate (Smith, 2002; Moore, 2004; Nickerson, 2004) centering on whether thinking can be improved in both “domain-independent” and “domain-specific” contexts (Nickerson, 2004, p.426). This plan seeks to enhance both general and specific critical thinking skills, working within Nickerson’s (2004) assumption that “both domain-specific knowledge and domain-independent capabilities are likely to be involved in truly competent” (p.426) demonstrations of critical thinking. Another key assumption is that any program of study has the potential to address both types of skills. This is especially important in terms of the potential for the transferability and reinforcement of critical thinking skills. This plan assumes that students can transfer their general

critical thinking skills, at least partially, from one academic context to the next, as well as to non-academic, everyday contexts. Perkins and Salomon (1989) report such transference as being either spontaneous (“low road”) or intentionally facilitated (“high road”) (as cited in Nickerson, 2004, p.433). This transference then allows students to reinforce and build upon their general critical thinking skills, as well as dispositions, in novel situations. The potential for transference of context-specific critical thinking skills is significantly less, due to the specialized standards of reasoning discussed above. This does not imply, however, that these skills are not legitimate educational objectives. Developing students’ skills to think critically using the standards and concepts of a particular discipline is, on the contrary, the highest ideal of meaningful, deeply engaged learning.

This plan seeks to improve students’ critical thinking skills through the gradual development of increasingly sophisticated levels of reasoning. Students will ideally develop more effective general and specific critical thinking skills as they progress through the college’s curricula so that upon completion of an academic program, they will possess and demonstrate more advanced critical thinking skills than those with which they began. Enhancing this cumulative outcome is the rationale for this plan’s emphasis on examining how students’ progression through the curricula positively affects their critical thinking skills.

Best Practices and Guiding Principles

A review of scholarly literature on best practices for enhancing and assessing learners’ critical thinking skills provides several principles to which this plan adheres. First among these is that students must develop a sense of the value of thinking critically. Providing students with any level of critical thinking skills is futile unless students also develop the inclination to apply these skills independently in subsequent academic, professional, and personal contexts. This notion relates to the previous discussion of critical thinking as comprised of both skills and dispositions.

One way to emphasize the importance of critical thinking to students is to connect the application of critical thinking skills in an academic context to a non-academic context. As is widely acknowledged, students are more likely to embrace and internalize skills and knowledge they sense will immediately benefit their non-academic lives. Another way to convey the value of thinking critically is for instructors to model the application of critical thinking within their disciplines. This simply means demonstrating for students the inner workings of a critical thinker (the instructor) reasoning through a difficult problem, scenario, or argument using the appropriate general and specific critical thinking skills. This approach moves the role of the instructor from transmitter of knowledge to a mentoring model, a role that encourages students to learn through application and take more responsibility for their educational experience. An additional benefit of a mentoring model approach is that standards of reasoning can be openly discussed, analyzed, and evaluated. Brandt, Farmer, and Buckmaster (1993) describe a version of this approach, cognitive apprenticeship, as “an instructional method for teaching an acceptable way of understanding and doing tasks, solving problems, and dealing with problematic situations” (p.69). Doing this, according to Kelder (1992), requires that instructors “illustrate for students how ‘discipline-specific’ problems are represented, and reasons, knowledge statements and propositions are made and assessed within this disciplinary framework” (p.8). Additionally, Middendorf and Pace (2004) emphasize the need for instructors to “demonstrate to students the steps that come naturally to the expert” (p.6) when negotiating course content and the standards of reasoning specific to a discipline.

Making standards of reasoning and the reasoning process itself more accessible to learners directly relates to the importance of making the intended objectives of teaching for critical

thinking explicit. Students need some basic understanding of what critical thinking is if they are ever to develop and improve their skill in applying critical thinking. As Van Gelder (2005) argues, instructors must help students “develop theoretical understanding as a complement to the crucial hands-on know-how” (p.44). The application and practice of critical thinking must be underpinned by a meaningful theory of critical thinking. This is why developing and discussing a common definition of critical thinking is important to any plan that attempts to improve students’ critical thinking skills across the curriculum. Students and instructors will have a common language from which to begin a meaningful dialogue on the theoretical elements of critical thinking.

Theory must complement application, however. Students will benefit most from actively engaging with “ill-formed” problems, scenarios, and arguments that call for thinking that goes beyond recalling memorized information. Wolcott (1999) defines “unstructured problems” as those “having no single correct solution” (p.4), while Lynch, Carter-Wells, and Chambers (2000) describe “problems that are fraught with significant and enduring uncertainties” (p.1). Brandt, Farmer, and Buckmaster (1993) also discuss the importance of preparing learners to engage with “ill-defined, complex, and risky situations” (p.69). As learners approach the types of problems described above, they must often consider multiple viewpoints or solutions, identify and apply appropriate steps in the reasoning process, and reflect on the quality of that process. As Browne and Freeman (2000) argue, the “sponge model of learning is terminally disrupted when the learner encounters multiple experts, each of whom answers the same question in a unique and seemingly reasonable fashion” (p.305). Such activities address the very skills students will need to compete and succeed in today’s knowledge economy.

In *What Matters in College?: Four Critical Years Revisited*, Astin (1993) describes the following strategies his extensive study found “are likely to enhance critical thinking: a strong emphasis on writing, a content focus on science and history, an interdisciplinary emphasis, and active engagement by the student in discussion, debate, class presentations, and talking over vocational and career plans” (p.227). Garcia and Pintrich (1992) also explore the relationship between composition and critical thinking, particularly the “planning, regulating, and monitoring” requirements both activities share (p.14). Kurfiss’s (1988) review of best practices to encourage critical thinking identifies eight principles:

1. Critical thinking is a learnable skill; the instructor and peers are resources in developing critical thinking skills.
2. Problems, questions, or issues are the point of entry into the subject and a source of motivation for sustained inquiry.
3. Successful courses balance challenges to think critically with support tailored to students’ developmental needs.
4. Courses are assignment centered rather than text and lecture centered. Goals, methods, and evaluation emphasize using content rather than simply acquiring it.
5. Students are required to formulate and justify their ideas in writing or other appropriate modes.
6. Students collaborate to learn and to search their thinking, for example, in pair problem solving and small group work.
7. Several courses, particularly those that teach problem-solving skills, nurture students’ metacognitive abilities.
8. The developmental needs of students are acknowledged and used as information in the design of the course. Teachers in these courses make standards explicit and then help students learn how to achieve them. (pp.88-89)

Kurfiss's eight principles simply reiterate the ideas discussed earlier and confirm that there are agreed upon best practices for improving students' critical thinking skills and that these practices involve encouraging active learning, purposeful inquiry, and self-monitoring.

1.2.4 Summary

CFCC began its efforts to enhance student learning by defining critical thinking as the deliberate process of questioning, evaluating, and responding to problems, scenarios, and arguments in order to reach sound solutions, decisions, and positions. This definition was developed through broad-based input from the college community and substantial scholarly research. The benefit of having a common definition of critical thinking is that it provides faculty, staff, and students with a common language to discuss what has become the primary educational objective of this college. Additionally, this definition provides a basis for the student learning outcomes addressed in this plan. Students demonstrate critical thinking when they:

- Ask pertinent questions that clarify and focus a problem, scenario, or argument
- Evaluate the quantity, quality, and usefulness of information
- Articulate a sound solution, decision, or position based on appropriate standards of reasoning
- Monitor and reflect upon the quality and fairness of their reasoning

This shared understanding of critical thinking and its indicative learning outcomes will facilitate exchanges of ideas amongst instructors, provide consistent reinforcement for students, and support this enhancement effort across the curriculum. The best practices reviewed in this section provide a practical understanding for the most effective means of enhancing students' critical thinking skills.