RESEARCH ARTICLE

A Framework for Critical Thinking Skills Development Across Business Curriculum Using the 21st Century Bloom's Taxonomy

Alina M. Zapalska*, Srinivas Nowduri, Peter Imbriale, Ben Wroblewski, and Mike Glinski

Department of Management, U.S. Coast Guard Academy, New London, CT 06320, USA

Abstract

This research paper proposes a process of advancing critical thinking in an undergraduate management program at the United States Coast Guard Academy. The success of this critical thinking development is based on a 21st Century Bloom's taxonomy framework, collaborative assignment environment, and a sequentially designed curriculum throughout four years of an undergraduate program. The paper concludes with an integrated model of critical thinking, and samples of assignments and an assessment method for critical thinking advancement and progression.

Keywords

Critical thinking, strategy, business education, assignments

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Corresponding author:
Alina M. Zapalska, Department of Management, U.S. Coast Guard Academy, New London, CT 06320, USA
E-mail: zapalska@marshall.edu

Introduction

Business education has been one of the driving forces for the corporate sector, which in turn boosts national economies throughout the world. Successful business education not only boosts a nation's economy, but also helps influence national employment and decrease poverty rates. One of the most important goals of business education is to foster students' ability to think critically and consequently to make rational judgments and decisions. Kunsch *et al.* (2014) argues that solving difficult business problems requires well-advanced critical thinking skills. Behar-Horenstein and Niu (2011) stress that critical thinking pedagogy is critical as leaders in today's global economy are required to think critically to make effective decisions.

Despite the expressed support for critical thinking as a crucial element of teaching, modest efforts have been dedicated to meeting that goal (Braun, 2004). Studies on the development of critical thinking skills with specific curriculum materials and instructional methods are few and have been highly theoretical and distant from practical concerns and applications (Duron et al., 2006). Evidence of a successful development and implementation of critical thinking advancement process in business education is occasional (Lloyd & Bahr, 2010).

This research paper presents a critical thinking instructional framework to argue that management major students must actively practice critical thinking by progressing through a series of increasingly difficult thought processes. The proposed framework and process of critical thinking development utilizes the 21st Century Bloom's Taxonomy model (Bloom, 1971 and 1974). The model has been adopted and modified appropriately to guide students' work via six stages of critical thinking process: Stage 1: *Remembering*; Stage 2: *Understanding*; Stage 3: *Applying; Stage* 4: *Analyzing*; Stage 5: *Evaluating*; and Stage 6: *Creating* (Anderson & Krathwohl, 2001). The paper also argues that the delivery of Bloom's taxonomy-based thinking and analysis process in a business classroom will advance students' higher-order critical thinking.

The paper provides: (1) a framework for advancing critical thinking skills across the

management major in a four-year undergraduate program; (2) an instructional approach to advance critical thinking; and (3) examples of assignments built on the 21st Century Bloom's Taxonomy framework. This paper also discusses how to structure a step-based development of critical thinking skills and recommends focusing on (1) development of critical thinking skills; (2) real problems and issues; and (3) provision of clear unambiguous instructions. The paper also argues that the success of a critical thinking program depends on the effectiveness of development, progression, and assessment of critical thinking. This research paper contributes to the existing literature on critical thinking pedagogy by providing examples of written assignments that are designed at the U.S. Coast Guard Academy (USCGA) based on the 21st Century Bloom's taxonomy framework to advance critical thinking development.

Literature Review

In principle, the general purpose of education is to develop critical thinking skills that will be used in real-world problem solving. The educational literature presents a lengthy list of definitions of critical thinking that has been presented within formal or informal cognitive skills as well as problem-solving skills (Sternberg, 1985). According to Mayer, critical thinking involves the development and growth of thoughts, analysis, questioning, and reflecting on realities and experiences and applying them to problem solving (Mayer, 1986). Brookfield (2012) defines critical thinking as a survival ability which helps facilitate peoples' paths through their lives.

The seminal work of Benjamin Bloom established a framework for categorizing critical thinking educational goals and objectives into a hierarchical framework based on a level of critical thinking. The author developed the so called Bloom's Taxonomy model (Bloom et al., 1956) consisting of six levels of difficulty and complexity of intellectual or cognitive skills as presented in Table 1. In this hierarchical framework each stage of learning is a prerequisite for the next stage and, therefore, mastery of a given stage of learning requires mastery of the previous stage. According to Table 1, Bloom identified six levels of cognitive learning arranged from lower-order to higher-order of the learning domain, moving from the simplest to the most complex in an in-depth coverage of each category: knowledge, comprehension, application, analysis, synthesis, and evaluation. This process determines that students must master all steps in its recommended order to develop and master critical thinking skills.

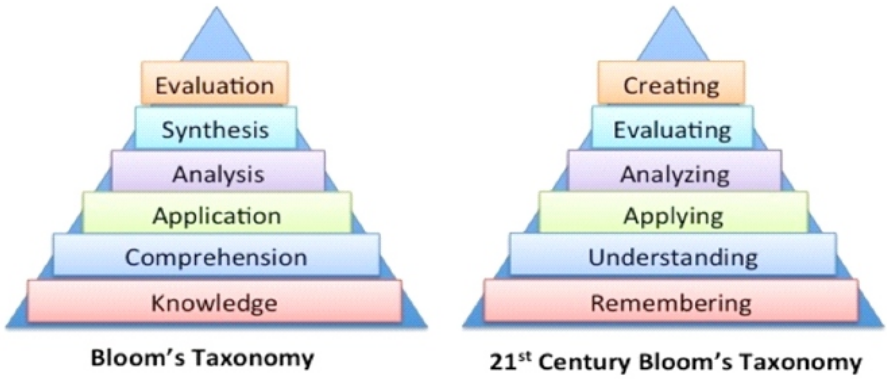
Table 1. The Cognitive Domain and the Development of Critical Thinking Skills

LEARNING DOMAINS	DESCRIPTION
1. Knowledge	The remembering of previously learned material; this involves the recall of a wide range of material, from specific facts to complete theories.
2. Comprehension	The ability to grasp the meaning of previously-learned material; this may be demonstrated by translating material from one form to another, interpreting material (explaining or summarizing), or by predicting consequences or effects.
3. Application	The ability to use learned material in new and concrete situations; this may include the application of rules, methods, concepts, principles, laws, and theories.
4. Analysis	The ability to break down material into its component parts so that its organizational structure may be understood; this may include the identification of the parts, analysis of the relationships between parts, and recognition of the organizational principles involved.
5. Synthesis	The ability to put parts together to form a new whole; this may involve the production of a unique communication (thesis or speech), a plan of operations (research proposal), or abstract relations (scheme for classifying information).
6. Evaluation	The ability to judge the value of material for a given purpose; The judgments are to be based on definite internal and/or external criteria.

Source: Bloom et al. *Taxonomy of Educational Objectives,* 1956.

Later, the research on critical thinking began to or progressed to argue that advancement of

critical thinking competencies should follow certain principles and progression processes. Eventually, several models of critical thinking provided explanation and validation of the stages of inquiry developed by Bloom that are necessary to develop critical reasoning skills (Sormunen, 1992; Braun, 2004). Accounts of how people become critical thinkers described those involved in passing through several identifiable and commonly experienced phases to develop increasingly advanced reasoning skills. Over the years, the Bloom taxonomy model has been altered by several authors in several ways. For example, Anderson and Krathwohl (2001) revised the Bloom's Taxonomy framework where *Knowledge* was replaced by *Remembering, Synthesis* by *Evaluating*, and *Evaluation* by *Creating*, as presented in Figure1.



Source: Anderson and Krathwohl (2001).

Figure 1. Bloom Taxonomy Model and 21st Century Bloom's Revised Taxonomy Framework

Over the years, many authors (Duran *et al*., 2006; Živkovic, 2016) implemented the 21st Century Bloom's taxonomy framework to develop techniques and classroom activities that advance critical thinking throughout six levels of cognitive progression. These scholars argue that students do not develop critical thinking skills solely from a lecture, assigned readings or by taking exams (Baker & Jones, 1987; Morgan & Schrieber, 1969). Critical thinking skills can be advanced when a detailed instructional support is provided during a course of study. Students must be guided through a six-step Bloom's Taxonomy framework. First, students must master the discipline's basic concepts, terms, and methodologies. Once they memorize and advance their understanding of them, higher levels of critical thinking skills will develop best in a setting where dialogue, interchange of ideas, problem solving, discussion, presentations, term papers, and debates are used alone and in combination. The next step is to create a classroom environment that goes beyond remembering, retrieving, recognizing, and recalling relevant knowledge. This environment should be based on questioning, interpreting, exemplifying, classifying, summarizing, inferring, comparing, explaining, applying, analyzing, synthesizing, and evaluating. Mastery of and control over all those elements will allow students to advance and progress their critical thinking skills to the highest level of cognitive thinking (Perkins, 1985; Morgan & Scieber, 1969).

Ennis (1989) contended that the student's active role is a fundamental prerequisite for the successful adoption and acceptance of a program on critical thinking. Other studies stressed the importance of asking questions so that students, by answering them, were able to foster application, analysis, synthesis, evaluation and creation as the elements of critical thinking. They also argued that the kinds of questions we ask would influence the kind of thinking students would be able to develop (Cooper, 2013). Fisher (2001) demonstrated examples of assignments in business education that were designed to help students to practice critical thinking. Coleman *et al.*, (2012) argued that the business curriculum with its quantitatively-oriented courses would focus on advancing cognitive skills via problem-solving.

Studies that document the development of critical thinking or demonstrate how to improve critical thinking skills with specific curriculum materials or instructional methods are mostly theoretical and limited (Duron *et al.*, 2006). There is also no consensus concerning advancement, implementation, and evaluation of techniques used in development of critical thinking skills in business education (Coleman *et al*., 2012). This paper expands beyond the current literature on critical thinking in three ways by providing: (1) a framework for advancing critical thinking skills across the management major in a four-year undergraduate program; (2) an instructional approach to advance critical thinking; and (3) examples of assignments

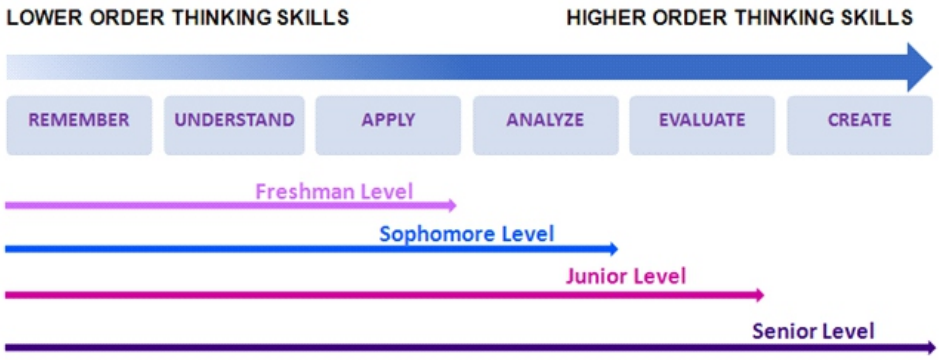
built on the 21st Century Bloom's Taxonomy framework.

Framework for advancing critical thinking skills across a management curriculum

The Management Department at the USCGA has adopted the 21st Century Bloom's Taxonomy model to advance critical thinking skills into the current curriculum. This approach was established to identify the elements of critical thinking (*remembering, understanding, applying, analyzing, evaluating, and creating*) from a first-year level to a senior level within the four years of undergraduate study at the USCGA.

Critical thinking objectives/performance at management curriculum

Critical thinking objectives as well as performance indicators were initially developed, planned, and linked to courses within the current Management major curriculum as shown in Figure 2.



Source: Department of Management, U.S. Coast Guard Academy

Figure 2. Critical Thinking Skills Process from First-year Level to Senior Level

The goal of the Management Department at the USCGA is to ensure that management majors develop critical thinking competency that extends learning beyond formal classroom settings. The curriculum is structured to provide practice with self-directed investigations as students move into specific research projects, assignments, and presentations. This goal can be achieved when students are exposed to variety of instructional approaches that are gradually and sequentially implemented across the entire curriculum. In the first-year year, students develop skills of *remembering, understanding*, and *applying*. In the sophomore year, students are required to go beyond those first three elements of Bloom's taxonomy. By the end of the sophomore year, they must master *analysis* so that during the junior year they can evaluate and then advance *creating* skills by the end of their senior year. Table 2 illustrates a critical thinking skills process from first-year level to senior level.

The process of critical thinking in the management curriculum

Table 2 shows that the process of critical thinking development requires time and sequential processes that students must be guided through during the four years of their undergraduate education. Critical thinking skills development in the Management Department at the USCGA is based on a sequential process where students must go through six stages proposed by the 21st Century Bloom's taxonomy model. Students must *remember, understand, apply, analyze, evaluate* and *create* as they become actively involved in learning through the instructor's use of questioning throughout all the six stages. This dialogue fosters critical thinking and motivates the instructor and learner to share and analyze experiences and knowledge. Allowing students to clarify their thoughts through the writing and oral presentational process further stimulates the students to grow and become critical thinkers.

The model of critical thinking in the management curriculum

The completion of any assignment, report or project corresponds to the six-stage model adopted from the 21st Century Bloom's Taxonomy model that is illustrated in Figure 1. The way the project sets out students' work is achieved via multiple stages of critical thinking outlined below in the following six stages: Stage 1: *Remembering*; Stage 2: *Understanding*; Stage 3: *Applying*; Stage 4: *Analyzing*; Stage 5: *Evaluating*; and Stage 6: *Creating*. A detailed analysis of the Six-Stage Critical Thinking process developed by the USCGA Management department is outlined in Table 3.

Table 2. Management Department Critical Thinking Development by Stages and Coursework

CRITICAL THINKING STAGE	Freshman (F)	Sophomore (Sh)	Junior (J)	Senior (S)	EXAMPLES OF COURSES
STAGE 1: ***REMEMBERING***	X	X	X	X	***Macroeconomics Principles (F)*** ***Organizational Behavior/ Leadership (Sh)*** ***Managerial Accounting (J)*** ***Security Principles for Information Assurance and Cyber Threats (S)***
STAGE 2: ***UNDERSTANDING***	X	X	X	X	***Macroeconomics Principles (F)*** ***Organizational Behavior/ Leadership (Sh)*** ***Managerial Accounting (J)*** ***Security Principles for Information Assurance and Cyber Threats (S)***
STAGE 3: ***APPLYING***	X	X	X	X	***Macroeconomics Principles (F)*** ***Organizational Behavior/ Leadership (Sh)*** ***Managerial Accounting (J)*** ***Security Principles for Information Assurance and Cyber Threats (S)***
STAGE 4: ***ANALYZING***		X	X	X	***Organizational Behavior/ Leadership (Sh)*** ***Managerial Accounting (J)*** ***Security Principles for Information Assurance and Cyber Threats (S)***
STAGE 5: ***EVALUATING***			X	X	***Managerial Accounting (J)*** ***Security Principles for Information Assurance and Cyber Threats (S)***
STAGE 6: **CREATING**				X	***Security Principles for Information Assurance and Cyber Threats (S)***

Source: Management Department, U.S. Coast Guard Academy

Table 3. The Six-Stage Critical Thinking Process and Description

Stage 1: Remembering - Can the learner recall or remember the information? Students must remember the concepts, theories, dates, events, places, facts, concepts, key ideas, graphs and diagrams. Before any analytical process begins, they are expected to recognize new concepts, models, graphs, and equations. Without memorization, the critical thinking process cannot proceed further. Students are provided with some directions by being asked to recall memorized information, facts, terms, formulas, and principles included in the assignment.
Stage 2: Understanding - Can the learner explain ideas or concepts? This is the most critical stage as students must have sufficient understanding of the concepts to be successful throughout the whole learning process. A clear understanding of the material is a major step which represents deep learning and the student's involvement in the critical thinking process. To gain understanding and complete the assignment, students are required to recall, define, and interpret principles outlined in specific theories of the course. To facilitate the understanding and the interpretation of concepts, students must understand required concepts, definitions, or equations; interpret facts; infer cause and consequence; and translate theory into practical concepts. In this way the interpretation process forms a link between the theories delivered in a textbook or in the classroom to life or the reality that they have experienced outside the classroom setting and are expected to develop within the report or project.
Stage 3: Applying– Can the learner use information in a new way? Students are expected to apply information in a new situation, solve problems using what they have memorized, and understand. Providing students with questions will help them to get through the process to identify the problem, and to choose a method or principles that allow to solve the problem using studied models, methods or applying specific principles. As an application of theory to real world problems is difficult for most students, the instructor must help students apply the theory and the data to a specific problem. Therefore, it is necessary to provide students with clear and unambiguous instructions that act as a checklist.
Stage 4: Analyzing – Can the learner distinguish between various parts? Students are expected to take apart a specific idea or body of knowledge. It is recommended to use questions that focus on breaking down the whole into parts, identifying the relationships that exist among these parts, and revealing the principles of theory. Students recognize, explain patterns and connections, comprehend parts and whole picture of concepts and theories to analyze material and detect relationship among different concepts and elements of the project. This analytical process is central to critical thinking as it helps students develop an awareness of context and assumptions under which a specific theory operates. Students are expected to express themselves and to think independently. Instructors can ask questions to elicit personal reactions, opinions, and thoughts and to show a sense of creative activity, using information that the students have learned.
Stage 5: Evaluating – Can the learner justify a stand or decision? Students are expected to use their critical judgment to evaluate ideas to which they have been exposed or work by asking questions that lead them to judge and show expertise. They will also make recommendations, assess values, make choices, and critique ideas. This stage provides students first-hand experience with evaluating the inherent difficulties that emerge when applying theory in a real-world environment. By encountering a variety of problems and working to resolve them, students come to the realization that theory and reality will never be perfectly superimposed. Students' work is expected to prove that making links between theory and real-world problems can be sufficient to produce meaningful results.
Stage 6: Creating – Can the learner create a new product or point of view? In this stage, students are ready to creatively apply their understanding of concepts and theories. "Creating" means to generate something new which can be accomplished by questioning assumptions and applying concepts in the imagined situation and finding solutions to expected learning tasks.

Source: Management Department, U.S. Coast Guard Academy

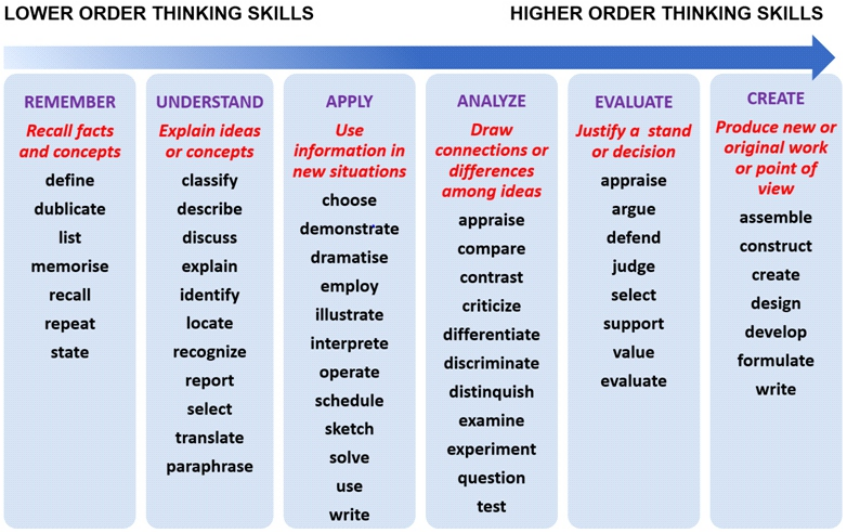
Instructional approach to advance critical thinking

There are several ways to keep students actively involved in the learning process while developing critical thinking. The various elements of learning, that include self-learning, collective learning, passive learning, and active learning, have their place as part of a series of mutually reinforcing activities for a critical thinking development. Lectures, games, simulations, class discussions, and debates can be designed to emphasize learning and to break down barriers between theoretical and empirical application, and between an instructor and students (Heinrich, *et al*., 2015). Active learning can be nurtured through independent research projects that offer opportunities to frame a structured problem, pose the appropriate questions, select the analytical methods, gather the requisite information, interpret, analyze,

evaluate results, and defend conclusions (Humphreys, 2013). Another way to teach students critical thinking is to employ written assignments. The written reports and assignments that are effective in teaching critical thinking abilities vary with both the coursework and the ways the individual instructor outlines and teaches critical thinking. All these tools, however, share certain basic characteristics such as a step-based development of critical thinking skills, a focus on real problems and issues, and clear and unambiguous instructions. The nature of these characteristics is outlined below.

The step-based development of critical thinking skills

Any critical thinking assignment must be designed on a step-based critical thinking process. To think critically, students must acquire increasingly complex content by actively and sequentially practicing the components of critical thinking skills. A conceptual framework of critical thinking can be adopted from the 21st Century Bloom's taxonomy of higher-order thinking skills (Bloom, 1974). It can serve as a starting point for the development of teaching approaches that foster critical thinking and reasoning. Figure 3 presents a series of stages that are used to develop and practice critical thinking skills. Each stage of the process is important to achieve effective instruction and learning. Our experiences show that the model can successfully facilitate critical and analytical thinking in the business and economics learning processes. A critical thinking process in the USCGA Department of Management implemented across coursework is illustrated in Figure 3 using the 21st Century Bloom's Taxonomy Model. The model guides students' work via six stages of critical thinking: Stage 1: *Remembering*; Stage 2: *Understanding*; Stage 3: *Applying*; Stage 4: *Analyzing*; Stage 5: *Evaluating*; and Stage 6: *Creating*.



Source: Department of Management, U.S. Coast Guard Academy

Figure 3. Learning Objectives and Outcomes

Stage one, *Remembering*, requires students to remember ideas, words, methods, terminology, and concepts so that they can recall them in the same form as they encountered them. At this stage students will be asked to recognize, list, describe, identify, name, locate and find the information and concepts that they expect to learn.

At the second stage students are required to understand statements and information provided. The skill of *Understanding* can be nurtured by observing, listening, reading, rewriting lecture notes, and complementing with notes obtained from supplemental readings so that the meaning of statements and ideas is grasped completely. Students will be expected to interpret, summarize, infer, paraphrase, classify, explain and compare the concepts they learned. They should begin with simple operations such as recognizing basic issues, identifying or recalling key concepts, learning to ask appropriate questions and summarizing what they learned. Next, students can build toward more complex and sophisticated skills, such as making assumptions and creating and critiquing arguments. Learning to think critically is developing, advancing, and practicing critical thinking skills repeatedly and at increasingly complex levels before it is fully mastered.

In the next four stages, students must mentally put things in different terms, translate and

recognize them, identify assumptions, ambiguities and problems, analyze and apply the concepts learned to the latest learned problems and situations, and then make inferences and extensions of thinking based on principles given. More specifically, the *Applying* stage requires implementing and using the concepts to execute specific tasks such as solving a problem, interpreting the concept, or using or demonstrating understanding of a concept. In stage four, *Analyzing*, students will practice organization, construction, comparison, outlining, finding, structuring and integrating specific knowledge or concepts into their assignments, projects, or term papers.

In the fifth stage, *Evaluating*, students must not only organize and outline concepts and theories, but their evaluation statements will be conveyed by critiquing, checking, experimenting, judging, testing, detecting, and monitoring. Students must make judgments about the material and articulate the reasons for evaluation. At that stage students must use higher-level reasoning (logical argument, scientific research, empirical evidence) rather than lower-level reasoning (peer pressure, conformation of one's own beliefs) to support their positions. In addition, they must assess whether an author provides sources of evidence and refines generalization with appropriate qualifications and the reliability of observation statements. They must also make judgments about the value of materials and methods and decide if they agree or disagree with the author's position.

In that last stage, *Creating*, a creative statement is made, and a logical empirical proposition is developed which must be sustainable. In this process, students rework and synthesize material into a coherent presentation that can be disseminated through written or oral work to provide a creative resolution. They are also expected to make, construct, produce, devise, or invent something new.

The main focus towards real world problems and issues

An important characteristic of effective advancement of critical thinking is that concepts and topics must relate to real problems and issues and draw upon students' experiences. The problem with many assignments rests with their detached and abstract nature. To develop and practice critical thinking skills, students must begin with the practical application of a concept before they move on to the abstract. A useful approach is to pose a problem that students can identify with through their own experiences, to ask them to work on real problems and issues and not with a purely theoretical model. Another way to help students apply classroom theory to practical experience that also emphasizes critical thinking is to assign projects to be done outside the class. Such exercise provides students with opportunities to think about and critically evaluate their own concrete experiences. These assignments could be simple projects of observation or interviews that draw on students' life experience and resources.

The vital role of clear and unambiguous instructions

It is important that the purpose of an assignment be clearly thought out if it is going to successfully foster the critical thinking process. Any potential for misinterpretation in the written instructions should be minimized. If the course or assignment objectives are not stated clearly, or if explanations or assignment directions are vague or ambiguous, students would be confused and frustrated. While working on coursework through projects and assignments, critical thinking can be advanced through reading, writing, listening, speaking, decision making, and problem solving and as illustrated in Figure 4. All six elements of advancing critical thinking, that include reading, writing, listening, speaking, decision making, and problem solving, are equally important in development of critical thinking skills in the Management Department at the USCGA.

In Appendixes A, B, C, and D, the authors present examples of critical thinking assignments or projects that were progressively used from first-year to senior level: first-year level: *Macroeconomics Principles* course; sophomore level: *Organizational Behavior and Leadership* course; junior level: *Managerial Accounting* course; and senior level: *Security Principles for Information Assurance and Cyber Threats* course. The purpose of all four assignments was to develop and enhance critical thinking skills while completing projects. To achieve this, all students were given projects to complete in which they were expected to collect and analyze information and data that was relevant to concepts, theories, and graphs that students were expected to learn in a specific course.

Source: Department of Management, U.S. Coast Guard Academy

Figure 4. Elements of Advancing Critical Thinking

Examples of selected projects are provided in Appendix A: First-year level: *A Country Report* in *Macroeconomics Principles* course; Appendix B: S*ophomore level: Power and Influence: a case study of Sir Ernst Shackleton in Organizational Behavior and Leadership* course; Appendix C: Junior level: *Outsourcing Decision* at a Real Company in *Managerial Accounting* course; and Appendix D: Senior level: *Security Principles for Information Assurance and Cyber Threats in Security Principles for Information Assurance and Cyber Threats* course.

Conclusions

Current teaching and learning strategies in undergraduate programs need to give sufficient attention to critical thinking. This need stems primarily from the persistent commitment to teaching methods that stress memorization. In traditional teaching there is often an implicit assumption that learning to think critically develops naturally as students learn increasingly complex levels of discipline content. Analytical frameworks that develop critical thinking must be taught explicitly and constructed consciously, beginning with simple operations and building toward complexity. For most students, this means memorizing and learning to recognize key concepts, terms, issues, and methodologies, and then working with them in the context of real problems and concerns and relating them to experiences and previous learning through application, analysis, evaluation, and creation.

This paper argues that creating a classroom environment that encourages discussion, questioning, probing, and contemplating will foster critical thinking skills. Such an environment can be developed by designing clear and effective written assignments and projects. This paper presents a strategy of critical thinking development within the Management major that can be adopted by any academic program as a model or framework for sequential advancement of critical thinking skills. Assignments and projects solved and mastered over four years allow students to discover for themselves the problems of applying theory into real world business or economics cases. In completing these projects students gradually learn to critically analyze problems and offer solutions to those problems.

An approach to critical thinking instruction that is appropriate for undergraduate students can be based on the conceptualization of critical thinking that incorporates the 21st Century Bloom's Taxonomy framework (1971). Six formal stages of critical thinking and reasoning must be sequentially used to foster independent and critical thought. Teaching students to think critically requires more than simply providing them with facts, theories, and techniques. Creating frameworks or perspectives for critical thinking takes time, patience, and the intentional design of classroom exercises and assignments that guide students to practice critical thinking sequentially throughout the specifically designed six stages of the 21st Century Bloom's taxonomy.

Teaching and learning critical thinking takes time, and it must be a continuing process. As development of critical thinkers who are competent in making effective decisions is crucial, instructors must develop specially designed assignments or projects that gradually over four years promote advancement of cognitive thinking. The authors strongly believe that there is need for more research in an area of critical thinking development and especially in assessment of students' progression in critical thinking advancement within Bloom's

Taxonomy.

Appendix

Appendix A: Freshman Level - *Principles of Macroeconomics Course*

Topic: *A Country Report*

STAGES OF COMPLETING PROJECT	QUESTIONS TO BE ANSWERED
Stage 1: REMEMBERING	What are the macroeconomics concepts that you plan to use while working on your country project? Please list them and define? Do you plan to use graphs? What are those graphs? How do they work in a context of your presentation? What do they illustrate?
Stage 2: UNDERSTANDING	The second step is to evaluate your understanding of these concepts and graphs. Are they all valid economic concepts, graphs, or instruments to be used to evaluate a given country's economic performance? How would you use those selected concepts and graphs to explain the current events affecting economic performance of your country? What is the main purpose of using those concepts or graphs?
Stage 3: APPLYING	The third step is to apply these graphs or concepts correctly. How would you use selected macroeconomics concepts, theories, and graphs to apply in your project? How would you show your understanding of those concepts in your project? Did you use the correct graphs and concepts to explain your points? What would result if you applied additional concepts or graphs?
Stage 4: ANALYZING (NOT REQUIRED BUT RECOMMENDED)	The last step in this project is to think critically about what the macroeconomic concepts you applied mean for the given country. Why do you think selected concepts, graphs, theories are the best to be used, applied and analyzed? What inferences can you make on your country in a context of current events? What conclusions can you draw about your country after your applied selected concepts, theories, and graphs? How would you categorize each concept, theory, or graph: irrelevart, relevant, good, or outstanding to be applied to complete your project?

Source: *Principles of Macroeconomics*, U.S. Coast Guard Academy

PURPOSE: This report is designed to (1) increase your understanding of economic performance of a country; (2) familiarize you with the various sources of data and the problems encountered in economic research, and (3) give you an opportunity to contrast the abstract and theoretical analysis in this course with real-world observations.

SCOPE: You will focus your attention on a single country during this phase of your research. Use the theoretical analysis developed in class to collect data and information needed to complete this project. Start working early and do not underestimate the time constraints imposed by this assignment as it cannot be completed adequately in the final week before it's due.

ASSIGNMENT: You are expected to collect information relevant to domestic economic indicators of the country assigned to you. Do not limit your collection to one year but include as many years as there are available for your country. Data must be collected on the appropriate items/categories and for a period of time sufficient to give an accurate economic representation of the country. The information you collect should include, but not be limited to: summary of the extent of country's resources, technology base, trading partners, export and import commodities, measure of the overall level and importance of domestic production, economic performance, international trade, tariffs and other trade restrictions, measures and extent of trade balances and flows, and significant political or cultural economic influences. Please notice you don't have to include all the above information but select information and collect the data that is relevant to your project and that will enable the best application of class

concepts and/or analysis of economic trends.

FORMAT: All information collected must be presented in a single spaced two-page report. Your finished report should be a concise and clear, and it must embody an economic representation of the country. Content, accuracy, relevance of information, and overall appearance are essential elements for the report's evaluation. Please remember to list all references and sources used in this project.

Appendix B: Sophomore Level - *Organizational Behavior and Leadership Course*

Topic: *Power and Influence: A Case Study of Sir Ernst Shackleton*

STAGES OF COMPLETING PROJECT	QUESTIONS TO BE ANSWERED
Stage 1: REMEMBERING	Recall our lecture on a topic of Power and Influence. What are the five bases/sources of power? What are the two basic categories of those powers? What is Influence and what are the types of influence tactics?List the bases of power and influence tactics.
Stage 2: UNDERSTANDING	Once you recalled and listed them, please define them briefly. Next answer the following questions: How do the theories of power and influence work together?Can we determine which powers one has by looking at the influencing tactics used? Determine which influence tactics can be used with which powers and explain your reasoning.
Stage 3: APPLYING	Apply the theories of power and influence to the Shackleton Case Study we covered and discussed in class. Where and why would Sir Ernst Shackleton gain his power from? Does he have personal powers? If so, which ones? Does he have Positional Powers? Is so, Which ones?How do you know? Briefly explain.
Stage 4: ANALYZING	Now please go back to the case study and locate examples of influence tactics used in the case study. Which power bases are being utilized for these tactics? What do the results of the influence tactics say about the types and levels of power people have in the case study Briefly explain.

Source: *Organizational Behavior and Leadership,* U.S. Coast Guard Academy

PURPOSE: The purpose of this assignment is to understand, apply, and analyze the concepts of organizational power and organizational influence. You will integrate the concepts presented in class into the Earnest Shackleton's case study to make assumptions and inferences based upon what you have learned in class.

SCOPE: You will focus on examples provided in the Earnest Shackleton's case study as well as the class material on power and influence we have covered in class.

ASSIGNMENT: First, read the Earnest Shackleton case study. Next, provide an analysis of Shackleton's power among his crew members during the voyage of the Endurance and their subsequent Antarctic survival story. Your paper should discuss the bases of power that Earnest Shackleton possessed as well as if he utilized each specific power. If so, how? Provide examples from the reading.

FORMAT: You are expected to deliver a 1 to 2-page paper that will adequately analyze how Earnest Shackleton developed and utilized power to ensure his crew's survival. Content, accuracy, professionalism, and clarity are critical elements for this assignment.

Appendix C: Junior Level - *Managerial Accounting Course*

Topic: *Outsourcing Decision at a Real Company*

STAGES OF COMPLETING PROJECT PRESENTATION	QUESTIONS TO BE ANSWERED
Stage 1: REMEMBERING	What types of special decisions do business managers make? What specific accounting items do managers review prior to making these decisions? What is contribution margin and what does it signify? What is the difference between fixed and variable costs? What are unavoidable fixed costs?
Stage 2: UNDERSTANDING	Identify a real company using a legitimate news source or annual report of a public company that has made an outsourcing decision in the last 2 years or is in the process of making an outsourcing decision. Determine what accounting and non - accounting data you would review as a business manager to make an outsourcing decision.
Stage 3: APPLYING	List the qualitative factors that could influence the company's decision whether to outsource this business operation or not. If those factors are not clearly qualitatively delineated, make a reasonable guess about what factors may influence management's decision.
Stage 4: ANALYZING	List the revenues and costs that might be impacted by the outsourcing decision. You may have to make reasonable guesses about these impacts. Use the correct financial data analyses concepts taught in this class and Financial Management to produce relevant comparable data.
Stage 5: EVALUATING	Decide if you will recommend outsourcing this part of the business. Document the changes to both quantitative and non - quantitative factors. Non-quantitative factors may include impact on employees, community and customers. Defend your decision using the principles discussed in class.

Source: *Managerial Accounting*, U.S. Coast Guard Academy

PURPOSE: This assignment will allow you to apply managerial and financial accounting concepts to a real-world situation. We will use the highly contentious topic of outsourcing from a management point of view.

SCOPE: Form a 3-4-person team and identify one (1) company that has made a recent decision or is in the process of making a decision regarding outsourcing. Use the concepts taught in this and financial accounting classes and apply them to a real company. You are expected to make reasonable assumptions for any data not available.

ASSIGNMENT: Your team will select a company from a notable news source that has made or will make a decision to outsource a part of its business operations. Review the company's annual report. Describe the company, the part of its operations that are going to or have been outsourced and the business environment including competition. List and analyze the qualitative and non-qualitative data available to determine impacts to the company's financial condition. You may make reasonable assumptions if that data is not available. Your team will be required to support your decision using research, analysis and the concepts learned in class.

FORMAT: Prepare a 5-10-minute presentation to the class. Each slide of your presentation should focus on the individual questions. Your team will also prepare a 1-2-page paper typed (12 point font, double-spaced with 1'' margins). Include references, including the URL for the article referenced. The paper will expand upon your research and detail your analysis approach.

Appendix D: *Senior Level – Security Principles for Information Assurance and Cyber Threats Course*

Topic: *Security Principles for Information Assurance and Cyber Threats*

STAGES OF COMPLETING PROJECT	QUESTIONS TO BE ANSWERED
STAGE 1: REMEMBERING	What is cyber-security all about across an organizational network, databases or file system? What are the different existing governing security principles and the associated cyber threats and crimes? Define and detail the practical idea behind the existing information assurance and risk management issues. What are the motivating and psychological aspects of hackers and their behavior?
STAGE 2: UNDERSTANDING	You will be able to understand: (1) the current corporate digitization needs and their security concerns along with different techniques and tactics in counter-attacking the hackers; (2) that it is impossible to achieve 100% information security for an organization or country; (3) a nation's corporate economy is invariably fall under the control of cyber security; and (4) the concepts and the associated graphical representations represent the growing security tends.
STAGE 3: APPLYING	You will learn diverse ways of applying the information assurance concepts and principals in real world problem solving. You will be able to identify and recognize various classification cyber threats and crimes with reference to a given case study.
STAGE 4: ANALYZING	In this cybersecurity case study, you are expected to analyze this case from four different perspectives that include: (1) circumstances in which the crime occurred to identify software vulnerabilities, (2) attac kers' motivation that will allow you to determine the type and the level of the software risk management techniques; (3) the time and relevance with Database, Network and File System; and (4) possible techniques used by the attacker.
STAGE 5: EVALUATING	The cyber security evaluations are both quantified and qualified. During this evaluation stage, you are expected to evaluate the results from two different schools of thought: the amount of damage to the file and its impact on the organization and counter/cascaded effects of this cyber incident on other software systems.
STAGE 6: CREATING	At this stage of your project, you will work on modifying the existing security systems update that will require additional security measures. You will be able to creating a new set of protocols for security with reference to database, networks, and operating systems.

Source: *Security Principles for Assurance and Cyber Threats*, U.S. Coast Guard Academy

PURPOSE: This course consists of three units: (1) Security Principles; (2) Information Assurance; and (3) Cyber Threats and Crimes, suggested by Department of Homeland Security. The project in this course is designed to (1) increase your understanding of general security principles for information security, assurance, and cyber threats; (2) familiarize you with the various digital sources of data/information which are vulnerable to hackers; (3) give you an opportunity to contrast both theoretical and practical aspects of corporate information assurance policies and procedures; and (4) provide information on categories of different cyber threats and crimes in a corporate arena.

SCOPE: This is a senior-level course within cyber security major that is composed of security principles, information assurance, cyber-threats and crimes. In this course, you will be expected to remember, understand, apply, analyze, and evaluate the cyber security principles and practices to create a theoretical fundamental base from knowledge units.

ASSIGNMENT: To complete your project, you are expected to read all the material given in class such as handouts and case studies. Do not limit your case studies to two or three, but select as many as possible case studies, using different countries. Please remember that the

data collected for a cyber-security case study is sufficient to say about the security breach of that country. The information you will be collecting should include but not be limited to a technology base, hacker specific, trading partners. The report should also measure overall level of importance and economic performance, and security restrictions.

FORMAT: All information presented and collected must be presented in a single spaced two-page report. Your report should be concise and clear, and it must embody the security breach of a company, place, and country. A detailed list all references, and sources should be cited at the end of the project/report.

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