STRATEGY FOR DEVELOPMENT AND ASSESSMENT OF CRITICAL THINKING IN UNDERGRADUATE MANAGEMENT, ENTREPRENEURSHIP AND LEADERSHIP EDUCATION

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ABSTRACT

This paper illustrates a strategy for advancing and assessing critical thinking skills in an undergraduate business program. The 21st Century Bloom's taxonomy is implemented to support the continuous and progressive development of critical thinking skills across the curriculum. The success of this strategy for critical thinking development is based on the effectiveness of sequentially designed instruction with a continuous process of assessing critical thinking skills development throughout all four years of the undergraduate program. This strategy can be implemented with minimal effort within any undergraduate program that is responsible for educating future entrepreneurs.

Keywords: Bloom's Taxonomy, critical thinking, strategy, assessment, assignments

1. INTRODUCTION

Education, training and work experience are the foundations of human capital and are associated with the success of entrepreneurs. Education for entrepreneurs is considered important as it encourages innovation, fosters job creation and improves global competitiveness (Lackeus, 2015). Such education is designed to develop entrepreneurial competencies or skills that can be used during the process of starting and developing entrepreneurial growth-oriented ventures. Academic business programs offer a variety of coursework related to entrepreneurship so that individuals can take their innovative ideas and transform them into profitable activities. These courses are often developed as a response to increasingly globalized, uncertain and complex environments requiring individuals and organizations to be furnished with entrepreneurial competencies. In this context, entrepreneurship education aims to reduce the risks associated with entrepreneurial thinking and guide the enterprise successfully through its initial stage into maturity.

The skills or competencies required by entrepreneurs have been classified into three main areas: technical skills, business management and personal entrepreneurial skills (Robles and Zarraga-Rodriquez, 2015). Technical skills include writing, listening, oral presentation, organizing, coaching, being a team player and technical know-how. Business management skills include those areas involved in starting, developing and managing an enterprise. The personal entrepreneurial skills differentiate an entrepreneur from a manager. Skills included in this classification are inner control (discipline), risk-taking, being innovative, being change-oriented, being persistent and being a visionary leader, among others. According to McMullan and Long (1987), a respectable entrepreneurship education program should include teaching on leadership, negotiation, creative thinking, exposure to technology, invention and innovation, opportunity identification, venture capital, idea generation and protection, tolerance for ability, ability to tackle challenges at different entrepreneurial stages, and, most importantly, development of critical thinking skills.

Research on the entrepreneur began with the personality traits approach. Scholars tried to differentiate entrepreneurs from non-entrepreneurs by identifying their personality traits and necessary skills and competencies (Mitchelmore and Rowley, 2010). When identifying which competencies are considered important for entrepreneurs, several authors start from the fact that taking risks seems to be an inherent and very important part of the life and success of an entrepreneur (Estay, et al. 2013). However, taking risks also opens the door for failures and setbacks (Baron and Markman, 2003). Therefore, it is important that entrepreneurs possess the competencies that allow them to deal with these risks and possible consequences. Hence, one of the first competencies that was identified as a necessary competency to deal with risk are critical thinking skills (Valtonen, 2007).

Critical thinking has been measured as the central scholastic objective at all levels of education (Kunsch et al., 2014). Effective leaders and entrepreneurs of the 21st century are expected to be skilled in thinking critically to make effective strategic decisions (Behar-Horenstein and Niu, 2011). There is limited research on pedagogical instruments that focus on both the development and assessment of critical thinking competencies across four years of an undergraduate entrepreneurial curriculum (Lloyd and Bahr, 2010). To fill this research gap, a revised model of Bloom's Taxonomy, the 21st Century Bloom's Tax-

onomy model (1971, 1974), has been adopted in an undergraduate business program to guide students through six hierarchical stages of critical thinking progression.

The United States Coast Guard (USCG) is a federal organization that provides services to the people of the United States under the direction of the Department of Homeland Security. The U.S. Coast Guard Academy (USCGA) has been educating future Coast Guard leaders since 1876 and is the smallest of the United States federal military academies. Its mission is to educate, train and develop leaders of character who are ethically, intellectually and professionally ready to serve their country and humanity. During four years of academic, military and athletic programs, the Commandant of Cadets, Department of Athletics and the academic faculty work together with the Corps of Cadets to guide and monitor cadets' development and implementation of moral, ethical, leadership and other professional skills. This formal leadership and academic education are fused into nine academic disciplines: Civil Engineering, Electrical Engineering, Mechanical Engineering, Naval Architecture and Marine Engineering, Cyber Systems, Government, Management, Operations Research and Computer Analysis, Management and Marine and Environmental Science.

Critical thinking is an important skill that future USCG officers must develop in order to become effective leaders. At USCGA, cadets are expected to develop and practice critical thinking skills through practical applications of concepts concurrently with the appropriate theory taught in the academic setting. This has been successfully accomplished with the use of project assignments, research projects and capstone projects sequentially delivered over time completing six levels of Bloom's taxonomy. Such exercises provide cadets with opportunities to think critically and evaluate their own understanding and experiences. The projects are designed to lead them through six levels of Bloom's Taxonomy within the cognitive domain. In projects and assignments, cadets remember previous material learned in previous courses and make connections with new material. Cognitive learning is expected to occur at all six levels of Bloom's Taxonomy throughout their four years at the Academy.

The conditions for successful critical thinking advancement include: (1) step-based development of critical thinking skills; (2) integration of critical thinking development process throughout the four years of an undergraduate program; (3) provision of explicit instructions; (4) use of real problems and issues; and (5) assessment and feedback of critical thinking skills progress at each stage of development. This paper demonstrates the successful implementation of this framework into an undergraduate curriculum. A specially designed assessment instrument has been developed to ensure students successfully progress in critical thinking skills development through six stages of the 21st Century Bloom's Taxonomy. Each stage is a prerequisite to the next stage; the advancement of a given stage of learning requires progressive mastery before advancement. The paper argues that the success of critical thinking development depends on progressive instruction and assessment throughout the four years of undergraduate studies.

Specific examples of assignments are illustrated to demonstrate the consistency of critical thinking advancement and assessment across numerous courses. The paper presents the following instructional approaches to advancing critical thinking: A Country Report in Macroeconomics Principles (Freshman level), Leadership Framework in Organizational Behavior and Leadership course (Sophomore level), Company Case Study in Manage-

ment Information Systems course (Junior level) and Research Project with Analysis in Cost Accounting course (Senior level).

2. LITERATURE REVIEW

Research on critical thinking states that successful advancement of this most essential cognitive competence should be made using several distinguishable stages (Van Gelder, 2005; Willingham, 2007; Mason, 2008; Duron et al., 2006). Benjamin Bloom (Bloom et al., 1956) built a framework for developing critical thinking skills based on several distinguishable stages that the researcher carefully crafted. Over the years, Bloom's Taxonomy model became the most widely accepted instrument for classifying educational goals and objectives (Bloom, 1971, 1974). In his hierarchical framework, Bloom proposed six stages of critical thinking skills development, with each stage of learning being a precondition for the next stage. Those proposed stages are arranged from lower-order to higher-order levels of learning, including *Knowledge, Comprehension, Application, Analysis, Synthesis* and *Evaluation*. This specifically determined progressive process enables students to advance their critical thinking skills in a logical and sequential course from the simplest to the most complex form of critical thinking skills. Later, Bloom's Taxonomy model was modified into the 21st Century Bloom's Taxonomy (Anderson and Krathwohl, 2001). As illustrated in Figure 1, in this revised framework, *Knowledge* was replaced by *Remembering*, *Synthesis* by *Evaluating* and, finally, *Evaluation* by *Creating*.

Figure 1 Bloom's Original Taxonomy Model and Bloom's Revised Taxonomy Model
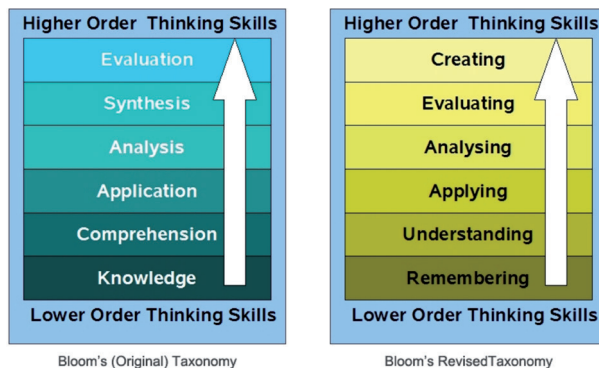
The 21st Century Bloom's Taxonomy framework has been acclaimed as one of the most common processes for advancing critical thinking competency. Over the years, a variety of assessment instruments for critical thinking skills have been proposed for monitoring the progression of critical thinking (Ennis, 2008). The most commonly used assessment instrument for effective critical thinking development is the *Watson-Glaser Critical Thinking Appraisal* instrument. Other instruments, which include the *California Critical Thinking Skills Test* and the *California Critical Thinking Disposition Inventory*, were developed to provide indirect measures of critical thinking abilities (Facione, et al 2000 and et al, 2001). Assessment of critical thinking skills with the use of rubrics with specially designed

assessment techniques was offered by Huba and Freed (2000). Despite the fact that the several assessment instruments were developed over the years, there is still limited progress in developing and simultaneously assessing critical thinking skills progression using course- and program-based assessment instruments for an undergraduate college education (Coleman et al., 2012).

This paper contributes to the existing literature on the development and assessment of critical thinking instruments by proposing a simple instrument that emphasizes the stages of the 21st Century Bloom's Taxonomy model. The authors in the paper share their own experiences on implementing a cohesive instrument woven through the entire curriculum to ensure that students, as well as instructors, are aware of students' progression or deficiencies as the students progress through critical thinking advancement. Throughout the curriculum, several courses have been selected for advancing, monitoring and assessing students' in the development of critical thinking. The success of the proposed instrument is based on trust and collaboration between students and instructors when students progress with their learning. The other elements of the proposed instrument are discussed throughout the paper.

3. FRAMEWORK FOR DEVELOPING AND ASSESSING CRITICAL THINKING SKILLS

The Management Department at the USCGA has developed the framework for the development and assessment of critical thinking skills. This framework has been progressively advanced to ensure that all management majors successfully progress through the 21st Century Bloom's Taxonomy model to acquire the necessary critical thinking skills. The conditions for successful critical thinking advancement include: (1) step-based development of critical thinking skills; (2) integration of CT development process throughout the four years of an undergraduate program; (3) provision of explicit instructions; (4) use of real problems and issues; and (5) assessment of critical thinking skills progress at each stage of development.

1) Step-based Development of Critical Thinking Skills

The model used at USCGA guides cadets' 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*. In stage one, cadets are required to *Remember* concepts, terminology, and methods so that they can recall them in the same structure as they were exposed to them. The second stage requires cadets to understand statements and information provided. Cadets foster the skill of *Understanding* by applying and practicing concepts, terminology, methods, statements and ideas they have just grasped. Some of these tasks include noting, detecting, listening, reading, rewriting lecture notes, and complements with notes obtained from supplemental readings. In the next two stages, *Applying* and *Analyzing*; cadets will be expected to organize what they have memorized and understood and present in new terms, translate and recognize them, identify assumptions, and ambiguities and problems. To practice *Applying* and *Analyzing*, cadets will have to put the concepts learned to the unfamiliar problems and situations and then make inferences and extensions of thinking based on principles given.

In the fifth stage, *Evaluating,* cadets must organize and evaluate statements and information that are conveyed by contrasting, comparing and, finally, evaluating. Cadets have to propose findings and make judgments about the material and articulate the reasons for evaluation. At that stage, cadets must use higher-level reasoning such as logical argument, scientific research and empirical evidence rather than peer pressure or one's believes. At this stage, cadets should be able to state their positions about the value of materials and methods and their agreement or disagreement with the author's position. In that last stage, *Creating,* a creative statement is made and a logical empirical proposition is established, which must be justifiable. In this process, cadets rework and synthesize material into a coherent presentation that can be disseminated through written or oral work to provide a creative determination or resolution. The critical thinking process used at the USCGA is illustrated in Table 1. Each stage of the process is important to achieve effective instruction and learning and serves as a starting point for the development of learning approaches that foster the development of critical thinking in undergraduate education.

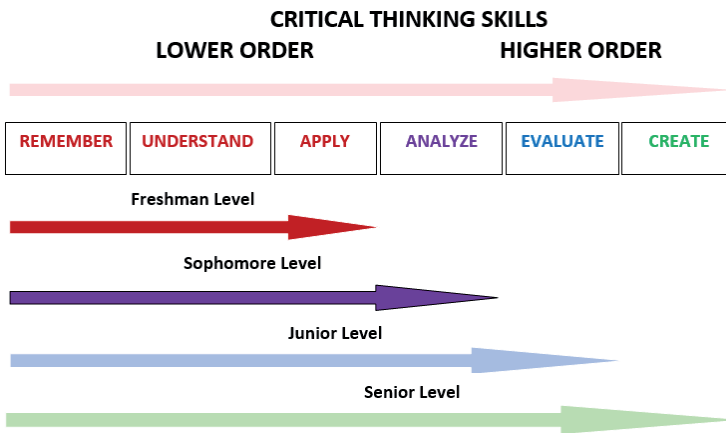**Table 1 Learning Objectives and Outcomes for Critical Thinking Development**

Stages of CT	Learning Objectives	Tasks
Stage 1 *Remembering*	**Recall facts and concepts:** Cadets recall or remember the information, facts, terms and principles to include them in the assignments.	define, duplicate, list, memorize, recall, repeat, state
Stage 2 *Understanding*	**Explain ideas or concepts:** Cadets gain understanding of the concepts and translate theory into practical concepts.	classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase
Stage 3 *Applying*	**Use information in new situations:** Cadets apply information in a new situation or solve problems using what they have memorized and understood. Assignment instructions provide directions and questions to help cadets identify the elements of the problem, choose a method or principle that allows them to solve the problem.	choose, demonstrate, employ, illustrate, interpret, operate, schedule, solve, use
Stage 4 *Analyzing*	**Draw connections or differences among ideas:** Cadets develop an awareness of context and assumptions under which models or theories operate. To analyze, cadets investigate and examine specific ideas or information and use questions to identify the relationships that exist.	compare, contrast, criticize, differentiate, distinguish, examine, experiment, question, test
Stage 5 *Evaluating*	**Justify a stand or decision:** Cadets critically judge and evaluate ideas, make references and choices, and provide a critique to prove that making relations between theory and the real world can produce adequate results.	appraise, argue, defend, judge, select, support, value, evaluate
Stage 6 *Creating*	**Produce new or original work or point of view:** Cadets create a new product or point of view and apply concepts and models to generate new designs or ideas for their projects.	assemble, construct, create, design, develop, formulate, write

Source: Department of Management, USCGA (adopted and modified from Bloom's Taxonomy by P. Armstrong, Vanderbilt Center for Teaching, Vanderbilt University)

2) Integrated Process throughout the Four Years of the Program

Figure 2 illustrates how Management coursework broadly integrates the six stages of progressive advancement of critical thinking starting from a freshman level and ending at a senior level within four years of undergraduate study. The proposed model facilitates critical thinking development among undergraduate students in the Management courses through a progressive process to ensure students are monitored at all four years of their undergraduate program.

Figure 2 Critical Thinking Skills Process from Freshman Level to Senior Level

CRITICAL THINKING SKILLS

LOWER ORDER   HIGHER ORDER

| REMEMBER | UNDERSTAND | APPLY | ANALYZE | EVALUATE | CREATE |

Freshman Level

Sophomore Level

Junior Level

Senior Level

Source: Department of Management, 2019

Figure 3 illustrates specific courses where development and assessment of critical thinking takes place across all curriculum. For example, during the freshman-year Principles of Macroeconomics course, cadets are expected to develop skills of *Remembering, Understanding* and *Applying*. During the sophomore year, cadets are required to master *Analyzing*, while in Junior year they must master *Evaluating. Creating* skill must be advanced by the end of their senior year.

Figure 3 Management Major – General Plan of Study and Critical Thinking Development

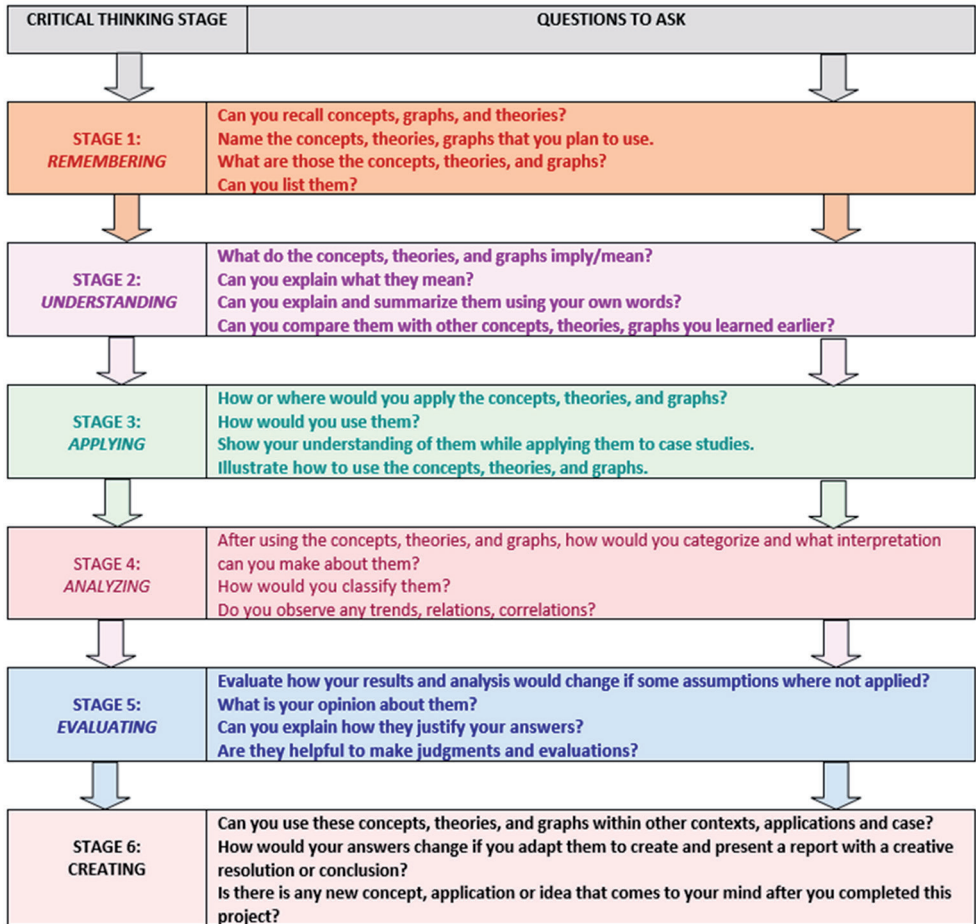| Fall Semester	Spring Semester	PROGRESSION
4/c Year – Freshman Year		**STAGE 1-3**
College Composition	History of the USCG	
American Government	Cultural Perspectives	**REMEMBER**
Calculus I	Computer Problem Solving	
Principles of Fitness/Wellness I	Probability & Statistics	**UNDERSTAND**
Swimming I	Personal Defense I	
Chemistry I	Principles Fitness/Wellness II	**APPLY**
Fundamentals of Navigation	Physics I	
	Principles of Macroeconomics	
3/c Year – Sophomore Year		**STAGE 4**
Lifetime Sports I	Introduction to Cyber Technology	
Lifetime Sports II	Morals and Ethics	
Lab Science	Law	
Ships & Maritime Systems	Professional Rescuer	**ANALYZE**
Applications in Navigation Lab	Atmospheric & Maritime Science	
Introduction to Business	Financial Accounting	
Organizational Behavior & Leadership	Legal Environment of Business	
Microeconomic Principles		
2/c Year – Junior Year		**STAGE 5**
Maritime Watch Officer	Personal Defense II	
Management Information Systems	Lifetime Sports III	
Managerial Accounting	Marketing	
Research Methods	Financial Management	
Human Resource Management	Operations & Project Management	**EVALUATE**
	Leadership/Organizational Development/Change	
	Major Area Elective	
1/c Year – Senior Year		**STAGE 6**
Selected Topic 100 Ton Master	Global Studies	
Selected Topic 100 Ton Lab	Public Management Consulting	
Strategic Management	Major Area Elective	
PMC Prep	Major Area Elective	**CREATE**
Cost Accounting	Free Elective	
Free Elective	Physical Education	
Physical Education		

This approach guarantees cadets are exposed to a variety of instructional approaches to develop critical thinking skills. These various techniques are gradually and sequentially employed across the entire curriculum. In this sequential process, cadets are guided to gradually and sequentially advance critical thinking skills that are required at each particular stage. Critical thinking development is the process of taking the knowledge gained to apply, analyze, evaluate it and, finally, create something new through the six stages of the 21st Century Bloom's Taxonomy model. This progressive flow not only fosters critical thinking but also motivates cadets to share and analyze their knowledge. Critical thinking is further promoted by allowing cadets to clarify their reasons through their writing and oral presentations or problem-solving and designing something new.

3) Provide Explicit Instructions

Many pedagogical techniques can be used to foster the development of critical thinking skills. Critical thinking skills at the USCGA have been advanced through reading, writing, listening, speaking, decision making and problem-solving; all those elements are important in the development of critical thinking skills among cadets. One of the most successful techniques is the use of specifically designed and structured assignments or term papers. It is vital that the purpose of each assignment be clearly presented to the students. If the assignment explanations or directions are unclear and ambiguous, students will be confused and disorganized with their thought processes. Consistency in the constructing and instructing of research projects, term papers and capstone projects is based on a framework presented in Figure 4.

These projects allow students to develop and progress through the six stages: Stage 1: *Remembering*; Stage 2: *Understanding*; Stage 3: *Applying*; Stage 4: *Analyzing*; Stage 5: *Evaluating*; and Stage 6: *Creating*. Examples of specific questions that instructors expect students to answer at each level of Bloom's Taxonomy while progressing through the projects or assignments are described under "Questions to Ask" as illustrated in Figure 3. Later, this paper demonstrates how this framework can be built into assignments for successful implementation.

Figure 4 Framework for Critical Thinking Development for Assignments and Research Projects

CRITICAL THINKING STAGE	QUESTIONS TO ASK
STAGE 1: REMEMBERING	Can you recall concepts, graphs, and theories? Name the concepts, theories, graphs that you plan to use. What are those the concepts, theories, and graphs? Can you list them?
STAGE 2: UNDERSTANDING	What do the concepts, theories, and graphs imply/mean? Can you explain what they mean? Can you explain and summarize them using your own words? Can you compare them with other concepts, theories, graphs you learned earlier?
STAGE 3: APPLYING	How or where would you apply the concepts, theories, and graphs? How would you use them? Show your understanding of them while applying them to case studies. Illustrate how to use the concepts, theories, and graphs.
STAGE 4: ANALYZING	After using the concepts, theories, and graphs, how would you categorize and what interpretation can you make about them? How would you classify them? Do you observe any trends, relations, correlations?
STAGE 5: EVALUATING	Evaluate how your results and analysis would change if some assumptions where not applied? What is your opinion about them? Can you explain how they justify your answers? Are they helpful to make judgments and evaluations?
STAGE 6: CREATING	Can you use these concepts, theories, and graphs within other contexts, applications and case? How would your answers change if you adapt them to create and present a report with a creative resolution or conclusion? Is there is any new concept, application or idea that comes to your mind after you completed this project?

4) Focus on Real Problems and Issues

There are several ways to keep cadets actively involved in the learning process while developing critical thinking (Heinrich et al. 2015; Rajendran, 2010; Aizikovitsh and Amit, 2011; Braun, 2004). The various elements of learning include self-learning, collaborative learning, passive learning and active learning; all have their place as part of a series of mutually reinforcing activities for critical thinking development. Lectures, games, simulations, class discussions, problem-solving and debates have been designed and used by the USCGA faculty to emphasize specific critical thinking skills and to break down barriers between theoretical models and empirical applications. Critical thinking can also be nurtured through independent research projects that offer opportunities to frame specific problems, pose the appropriate questions, select the analytical methods, gather the requisite information, interpret, analyze, evaluate results and defend conclusions to a spe-

cific audience. Another way to teach cadets critical thinking is to employ written assignments. The nature of written reports and assignments that is effective in teaching critical thinking abilities varies by discipline, course and method by which individual instructors teach critical thinking skills.

An important characteristic of effective learning with critical thinking is that concepts and topics must relate to actual problems and be based on students' experiences. The problem with many assignments is that they are detached from reality and abstract. To develop and practice critical thinking skills, students must begin with the practical application of a concept before they move on to the abstract. For example, asking students to discuss the differences and similarities between theoretical models would result in a detached explanation of concepts or models studied. A better approach would be to pose a problem that students can identify through their own experiences and practical approaches through work on real problems and issues which eliminate work based on theoretical models. Assigning research projects that can be done outside the classroom, provides opportunities to think about and critically evaluate experiences. These assignments should be brief and simple projects of observation or interviews that draw on learner's life experiences and resources.

5) Assessment of Critical Thinking Skills

The assessment tool for critical thinking advancement was developed to measure the achievement of each critical thinking performance indicator in several courses from a freshman year to a senior year. Cadet performance has been assessed in each designated course using the established performance indicators that were presented in Figure 3. In addition to discipline-specific content, individual course content is designed to measure one or more selected competencies that are appropriate for the specific course.

An assessment process of outcomes for Bloom's Taxonomy is presented in Figure 5. The process is a closed loop indicating that once goals and objectives are stated that teaching and learning must follow. The next step is an assessment of outcomes which indicates that every goal and objective is assessed, and this uninterrupted process of assessment continues through six stages of the 21st Century Bloom's Taxonomy.

Figure 5 Assessment of Outcomes for Bloom's Taxonomy

ASSESSMENT OF OUTCOMES FOR THE 21ST CENTURY BLOOM'S TAXONOMY

GOALS OBJECTIVES → TEACHING & LEARNING → ASSESSMENT OF OUTCOMES

COMPARE OUTCOMES WITH GOALS AND OBJECTIVES
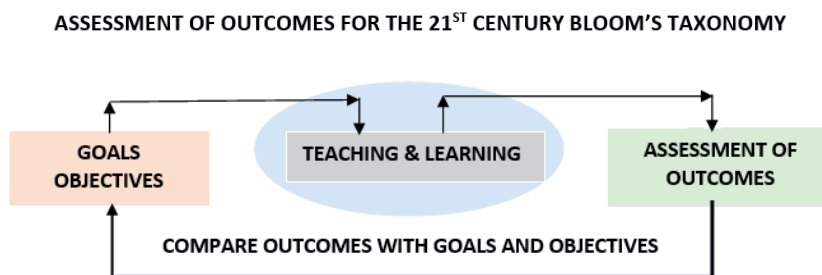
Source: Department of Management, USCGA

All management majors are systematically assessed in the areas of *Remembering, Understanding, Applying, Analyzing, Evaluating* and *Creating.* Critical thinking assessment is more than testing cadets to provide grades, it is a process that provides feedback about student learning and critical thinking advancement and mastery. Alignment of course activities and testing strategies with learning outcomes is critical to delivering an effective course design and an assessment process. The elements and continuousness of the assessment process are illustrated in Table 2.

Table 2 Assessment Instrument for Development of Critical Thinking Skills

Bloom's Taxonomy Level (revised)	OBJECTIVES	CRITICAL THINKING SKILLS CHARACTERISTICS	Learner's Self-evaluation			Teacher's Evaluation		
			Developing Competent Exemplary (Circle one for each stage)					
Level 1 Remembering	Can the student recall or remember the information?	Define Duplicate List State Repeat Memorize Recall	D	C	E	D	C	E
Level 2 Understanding	Can the student explain ideas or concepts?	Classify Describe Discuss Explain Indentify Locate Recognize Report Select Translate Paraphrase	D	C	E	D	C	E
Level 3 Applying	Can the student use information in a new way?	Choose Demonstrate Write Employ Illustrate Solve Operate Schedule Sketch Dramatise Interprete Use	D	C	E	D	C	E
Level 4 Analyzing	Can the student distinguish between different parts?	Appraise Compare Contrast Criticize Differentiate Test Discriminate Distinguish Examin Experiment Question	D	C	E	D	C	E
Level 5 Evaluating	Can the student justify a stand or decision?	Appraise Argue Defend Judge Select Support Value Evaluate	D	C	E	D	C	E
Level 6 Creating	Can the student create a new product or point of view?	Assemble Construct Create Design Develop Write Formulate	D	C	E	D	C	E

Source: Department of Management, USCGA (adopted and modified from Bloom's Taxonomy by P. Armstrong, Vanderbilt Center for Teaching, Vanderbilt University)

This assessment process allows collecting evidence about student learning. It involves observing, recording, scoring and interpreting the information the teacher assesses on cadets' advancement of critical thinking skills. This system of assessment not only provides feedback to cadets about their learning and critical thinking skills mastery, but it also provides feedback to teachers about their instruction and evidence about cadets learning

and progressing through Bloom's taxonomy. The purpose of this instrument is to provide cadets with instantaneous feedback which helps to foster critical thinking abilities. Cadets must be informed recurrently where they are standing with their critical thinking advancement as it allows them to work on areas that are deficient.

The assessment of critical thinking skills at the USCGA consists of two primary elements: student's self-assessment and teacher's assessment of student's progress. A simple rubric has been developed and used to contrast a student's assessment score with a faculty member's score of student's critical thinking advancement. Cadets provide self-assessment as well as are assessed by a faculty member on the designated levels of Bloom's taxonomy. It is critical to have cadets conducting self-evaluation of their critical thinking skills advancement as well as obtaining a feedback from a faculty member about their critical thinking development. The USCGA faculty members are responsible for facilitating this assessment process and monitoring the student's progression within their own courses.

Table 2 illustrates that the assessment process consists of two stages. The first part is a self-assessment process where each cadet is required to evaluate by herself/himself completion of each level of the critical thinking process of the 21st Century Bloom' Taxonomy after completing a project. For example, cadets at a freshman level would be required to assess their work only on the first three levels of the 21st Century Bloom's Taxonomy that include: *Remembering, Understanding* and *Applying*. Cadets at a senior level are expected to evaluate their projects at all levels of the 21st Bloom's Taxonomy: *Remembering, Understanding, Applying, Analyzing, Evaluating* and *Creating.* After cadets complete their self-evaluation, they turn in their projects to their instructors for further assessment. Both self-evaluation and faculty evaluation of critical thinking development are compared and presented to each cadet. This assessment process must be followed by feedback that faculty members must deliver to their cadets. A meeting with a faculty member or a simple e-mail with comments where a student was deficient in developing critical thinking skills would allow cadets to reflect on their learning and understand their deficiencies.

4. EXAMPLES OF ASSIGNMENTS FOR CRITICAL THINKING SKILLS DEVELOPMENT

The authors present examples of critical thinking assignments or projects that were progressively used from the first-year to the senior level. 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. Examples of selected projects are provided below and include the first-year level: *A Country Report* in *Macroeconomics Principles* course; Sophomore level: *Leadership Framework* in *Organizational Behavior and Leadership* course; Junior level: *Company Case* in *Management Information Systems;* and Senior level: *Research Project with Analysis* in *Cost Accounting* course.

EXAMPLE 1: FRESHMAN LEVEL

PRINCIPLES OF MACROECONOMICS: A COUNTRY REPORT PROJECT

STAGES OF COMPLETING PROJECT PRESENTATION	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 and define them. Do you plan to use graphs? What are those graphs? How do they work in the 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 the 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?
OPTIONAL STEP **Stage 4:** ANALYZING	An optional step in this project is to think critically about what the macroeconomic concepts you applied mean for the given country. This step is not required for the completion of this project. Why do you think selected concepts, graphs and theories are the best to be used, applied and analyzed? What inferences can you make about your country in the 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: irrelevant, relevant, good or outstanding, to be applied in order to complete your project?

PURPOSE: This assignment is designed to (1) increase your understanding of the 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 will complete a two-page written report and deliver a 10-minute (maximum) oral presentation that answers the questions above for a country of your choosing. You are expected to collect information relevant to domestic economic indicators of your country. 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 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, the 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.

Source: Principles of Macroeconomics, USCGA

EXAMPLE 2: SOPHMORE LEVEL

ORGANIZATIONAL BEHAVIOR AND LEADERSHIP: LEADERSHIP FRAMEWORK

The Leadership Framework assignment presented to sophomore cadets in the Organizational Behavior and Leadership course at USCGA is illustrated below. This project is assigned at the end of the course and is due shortly before the final examination. The questions posed to cadets are meant to elicit critical thinking at each of the five listed stages of critical thinking. The fifth stage is given as an opportunity for cadets to begin understanding and anticipating the subsequent critical thinking skills that will be expected of them during their junior year.

Organizational Behavior and Leadership Framework Assignment

STAGES OF COMPLETING PROJECT PRESENTATION	QUESTIONS TO BE ANSWERED
Stage 1: REMEMBERING	It is critical that you understand the theory and models from the class. State the purpose of values in the context of leadership. Define the values that form the foundation of your leadership framework.
Stage 2: UNDERSTANDING	Building on your remembering, describe the values that inform your leadership. Classify your values in terms of the Coast Guard's leadership continuum. Paraphrase the tenants of your leadership framework as they pertain to your specific leadership experience and intentions. How do you best translate your framework from abstract ideas to a concise visual or oral format?
Stage 3: APPLYING	For the next level of critical thinking, show that you can correctly apply the theories. Demonstrate how your decision-making is influenced by your values. How would you use the principles you have identified to make sense of complex decisions?
Stage 4: ANALYZING	Examine how your values interact. Are any of them conditional? Do any of them conflict? Test how applicable your leadership framework will be as a cadre, division officer or ENS.
OPTIONAL STEP Stage 5: EVALUATING	For an additional challenge, think critically about the differences between frameworks. Decide priorities between potentially conflicting aspects of your framework (e.g., how would you balance "safety" and "devotion to duty?"). Defend your framework against criticism during our case studies. Support your judgment with your leadership framework. Judge the cohesiveness and internal consistency of the leadership frameworks of your peers.

Purpose: 1) Increase self-awareness and self-regulation in decision-making. 2) Improve your ability to communicate abstract concepts concisely to align values and establish priorities and expectations. 3) Provide an opportunity to apply theories and models from class to your personal leadership based on experiences and in-class case studies.

Scope: You will focus on your own leadership experiences, identity and values to complete this project. Using the ideas and models from OB&L as a lens through which to reflect on your leadership, develop a leadership framework that encapsulates these abstract ideas into a model easily understood by diverse audiences.

Assignment: You will write a two-page paper describing, design a visual representing, and deliver an untimed presentation explaining your leadership framework to an audience of your peers. As you continue to reflect on your identity as a cadet, a future officer and as an emerging leader, it is imperative to construct your own leadership framework. Formative experiences, environmental factors and significant emotional events build your identity and leadership. In generating your own leadership framework, it is important to use models,

frameworks and theories from the text/classroom lecture, personal reflection, insight from classroom discussion and any additional documentation to describe your framework. Through case studies, you will apply your framework to leadership scenarios during the remainder of the course.

Source: Organizational Behavior and Leadership, USCGA

EXAMPLE 3: JUNIOR LEVEL

MANAGEMENT INFORMATION SYSTEMS: COMPANY CASE STUDY

The Company Case Study assignment presented to junior cadets in the Management Information Systems course at USCGA is illustrated below. This project is assigned at the end of the course and is due shortly before the final examination. The questions posed to cadets are meant to elicit critical thinking at each of the five listed stages of critical thinking. The fifth stage is given as an opportunity for cadets to begin understanding and anticipating the subsequent critical thinking skills that will be expected of them during their senior year.

Management Information Systems Company Case Study Assignment

STAGES OF COMPLETING PROJECT PRESENTATION	QUESTIONS TO BE ANSWERED
Stage 1: REMEMBERING	Reference credible information sources. What types of companies have relevant information systems to study and write a report on? What strategy and business objectives does the company use when investing in information systems?
Stage 2: UNDERSTANDING	Identify the company's strategic objectives, key business process and how it uses information technology and information systems. What are the most important strategic objectives? How have those objectives changed within the past 5 years? What are the most current business processes in place?
Stage 3: APPLYING	What IT and IS does the organization currently use? How does the organization leverage IT and information systems to its advantage?
Stage 4: ANALYZING	How does the organization's use of IT differentiate itself from competitors or similar organizations? If the organization is or has been unsuccessful due to failed IT, how did or will they recover?
Stage 5: EVALUATING	What three challenges may the organization face in the next 5 years? Explain each of those challenges.

Purpose: Apply what students learned in this course to analyze an organization's use of information technology and/or information systems.

Scope: Select a company of choice. It is highly encouraged to select a public company since access to financial documents, quarterly reports and cyber violations are included in public documents. All company selection will be approved by the instructor.

Assignment: Write a 7 to 10-page paper applying the information learned in Management Information Systems along with findings of your research to analyze an organization of choice. From the analysis included in the research paper create a 15 o 20-minute presentation summarizing the company and the core business strategies, processes and threats.

Source: Organizational Behavior and Leadership, USCGA

EXAMPLE 4: SENIOR LEVEL

COST ACCOUNTING: RESEARCH PROJECT WITH ANALYSIS

STAGES OF COMPLETING PROJECT PRESENTATION	QUESTIONS TO BE ANSWERED
Stage 1: REMEMBERING	What is relevant data and how do you find legitimate sources? What types of industries lend themselves to analysis? How do you pose a research question? What are the elements of a good research question? What types of analysis are available to compute data? What is the purpose of regression analysis?
Stage 2: UNDERSTANDING	How do you identify relevant data? What industry did you select and why did you select them? Use your tools to promote the public interest, change society, change or inform public opinion. What is the difference between qualitative and quantitative data? What does p-value mean? What does the Confidence Interval mean?
Stage 3: APPLYING	How would you apply the cost accounting tool to your topic? How would you conduct a regression or multiple regression on the data gathered? What other qualitative data is available for analysis? What tools could you apply to that data and how would you do so?
Stage 4: ANALYZING	What were the results of your analysis and what do they mean? How do you determine if your independent variable affects the data? How were the qualitative factors influenced? Was this the right independent variable to use?
Stage 5: EVALUATING	Determine your arguments and how they apply to your topic. Did you answer the research question? Why or why not? What factors did you consider? Did you learn something new? Is your analysis supported by research? Can you replicate the conclusions of your study? Can you find other examples of your analysis?
Stage 6: CREATING	Can you research have impacts on other industries outside of the one you choose? How would you implement your solution?

PURPOSE: This final project offers students an opportunity to research a cost or managerial accounting topic of interest to them. They must pose a research question, find relevant data and present their conclusions. These topics can include but are not limited to employment, energy or funds management.

SCOPE: I encourage each of you to select a topic you find particularly interesting, such as actions by a certain company or organization, a government program or policy, or an economic or another business factor that has influenced organizational or societal actions.

ASSIGNMENT: Papers must be written according to the APA Style guide. Ideas and concepts that are not your original thought must be properly cited to the source material. Papers must be prepared using Word and must be checked for spelling and grammar. Papers must be well constructed, include a bibliography and defined introduction and conclusion sections. The length of your paper should not exceed five pages and data tables/appendices can be included as additional pages.

Source: Cost Accounting, USCGA

5. CONCLUSIONS

Entrepreneurship, as a dynamic process of vision, change and creation, has been regarded as the driving force for economic growth in countries around the world. The main goal of entrepreneurial education is to develop entrepreneurial competencies. Entrepreneurial competencies are distinct capabilities that include knowledge, skills and attitudes that affect the willingness and ability to perform the entrepreneurial job during new value creation. Much discussion around entrepreneurial education focuses on distinguishing between a traditional and an entrepreneurial way of developing these skills. Little attention has been paid to how to develop a comprehensive program throughout four years of an undergraduate program that would foster the development of entrepreneurial skills and competencies. This paper was written to meet this gap and share the experience of developing critical thinking competencies throughout an entire undergraduate program.

An approach to critical thinking instruction that is appropriate for undergraduate students is based upon the conceptualization of critical thinking that incorporates the 21st Century Bloom's Taxonomy. Six formal stages of critical thinking must be sequentially used to foster independent and critical thoughts. Successful critical thinking advancement requires a stepped development of critical thinking skills with a focus on real problems and issues, clear and unambiguous instructions and continuous self and teacher assessment process of advancing critical thinking skills throughout all six stages of the 21st Century Bloom's Taxonomy. Creating frameworks for critical thinking takes time, patience and the intentional design of classroom exercises and assignments that force cadets to practice critical thinking sequentially throughout the specifically designed six stages of Bloom's Taxonomy.

This paper presents a strategy of critical thinking development for an undergraduate business and entrepreneurship educational program. Creating a classroom environment that encourages discussion, questioning, probing and pondering will foster critical thinking. Such an environment can be developed by designing clear and effective written assignments and projects. Assignments and projects in which cadets work across over four years allow them to discover for themselves the problems of applying theory in real-world business or economics examples. In completing these projects, cadets gradually learn to critically analyze problems and offer solutions to those problems. Teaching is not a matter of providing cadets with case studies, facts, theories, case studies or experiential practices. The ability of teaching to convey concepts effectively to cadets and develop their critical thinking skills and cognizance depends on teachers' capacity to understand cadets' perspectives and placement, to recognize the experiences of cadets and their level of cognitive development and to connect with cadets' prior knowledge.

Critical thinking can be taught through processes that can be broken down into several steps. Each step needs to be explained and practiced explicitly so that cadets have an opportunity for undertaking this practice as part of a formative assessment. The academic faculty must take the roles of facilitators in supporting cadets' development and a clear understanding of the critical thinking process. Cadets need time to practice and receive feedback on their development and progress and must be guided through a six-step critical thinking model. Once cadets have memorized and demonstrated an advanced understanding of the basics, higher levels of critical thinking skills will develop where dia-

logue in a form of interchange of ideas, problem-solving, discussion, presentations, term papers and debates is used progressively. Creating a classroom environment that goes beyond remembering, retrieving, recognizing and recalling relevant knowledge encourages questioning, interpreting, exemplifying, classifying, summarizing, inferring, comparing, explaining, applying, analyzing, synthesizing and evaluating and will allow cadets to advance their critical thinking skills to the highest level of cognitive thinking: creating.

Entrepreneurship education that focuses on the development of critical thinking competencies and skills is made of experiences that provide students with the ability and vision of how to access and transform opportunities. Successful entrepreneurship requires strong critical thinking and the ability to eventually create new ideas. Entrepreneurship education with a focus on critical thinking is about increasing student's ability to participate and respond to societal changes, tackling and solving societal problems. Entrepreneurial talent must be developed and entrepreneurship education should be available to all students regardless of major or year of education. Entrepreneurial educational programs that are comprehensive and reach students across all years of undergraduate programs promote the development of entrepreneurial skills. This paper has contributed to the entrepreneurship education by demonstrating how academic programs can build a comprehensive undergraduate strategy for development and assessment of critical thinking competencies in undergraduate management, entrepreneurship and leadership education.

STRATEGIJA ZA RAZVOJ I PROCJENU KRITIČKOG MIŠLJENJA U PREDDIPLOMSKOM UPRAVLJANJU, PODUZETNIŠTVU I OBRAZOVANJU RUKOVODSTVA

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Sažetak

Ovaj rad ilustrira strategiju za unapređivanje i procjenu sposobnosti kritičkog razmišljanja u preddiplomskom poslovnom programu. Bloomova taksonomija 21. stoljeća provodi se kao potpora stalnom i progresivnom razvoju vještina kritičkog mišljenja kroz nastavni plan i program. Uspjeh ove strategije za razvoj kritičkog mišljenja temelji se na učinkovitosti sekvencijalno osmišljene nastave uz kontinuirani proces procjene razvoja sposobnosti kritičkog mišljenja tijekom sve četiri godine preddiplomskog programa. Ova se strategija može provesti uz minimalan napor u okviru bilo kojeg preddiplomskog programa koji je odgovoran za obrazovanje budućih poduzetnika.

Ključne riječi: *Bloomova taksonomija, kritičko razmišljanje, strategija, procjena, zadaci*

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