THE ACCOUNTING EDUCATORS' JOURNAL
Volume XXXIV
2024
pp. 113 - 127

From Classroom to Boardroom: an in-depth look at critical thinking amongst accounting students

Dorothy A. Thompson
Florida Southwestern College

Timothy G. Bryan
Marshall University

Abstract

The 2020 Guiding Principles and Standards of the Association to Advance Collegiate Schools of Business accreditation Standard 4.3 requires business students to be equipped with critical and analytical thinking skills. Killian (2013) states that by engaging students in a problem-based case study in an introductory-level managerial accounting course, students can acquire critical thinking skills, rather than memorize. Results from this study suggest critical thinking skills increased when it came to detecting, explaining, and defining a problem. Just as significant, critical thinking skills increase when a student encounters a problem and can solve it and make a conclusion. The paper concludes with the students' perceptions of the case study and reflections on the methodology utilized. Emphasis on soft skills, like critical thinking, can be increased without sacrificing emphasis on technical issues. *Keywords*: critical thinking, analytical thinking, experiential learning, teaching practices, teaching, case study, managerial accounting, accounting education

Introduction

Executives from the business community have criticized colleges of business for producing graduates lacking in skills essential in today's business world. Some areas of deficiency cited are: (1) poor writing skills, (2) poor oral communication and presentation skills, and the number one complaint reported by 50 percent of employers is, (3) poor critical-reasoning skills (Belkin, 2017).

Graduates should be able to analyze, evaluate, and reason with the information provided to be able to draw a conclusion, and make an informed decision, and effectively solve problems (Heard et al., 2020). There is a fear that with limited class time, there will be less emphasis on the technical aspects of accounting if a desire to teach critical thinking skills is emphasized (Rebele & St. Pierre, 2019). This study utilizes a constructive approach to learning with a small coffee shop case study to engage managerial accounting students and enable them to analyze the alternatives, evaluate the potential result of that alternative, and make an informed decision, without sacrificing the technical aspects of the course. The assessment supports the mission of the Association to Advance Collegiate Schools of Business (AACSB) to promote critical and analytical thinking skills (AACSB(a) 2022). In addition, by working in small teams, students develop communication and team-building skills like prior studies that integrated case studies into their curriculum (Bierstaker, 2007; Irving, 2011; McGowan, 2012).

Importance of the Study

Many universities use the Collegiate Learning Assessment (CLA) examination to measure critical thinking and analytical reasoning, problem-solving, and writing skills of students. When the CLA examination has been administered to a sample of first-year students and later seniors, the results show little or no improvement in critical thinking (Belkin, 2017). With a lack of critical thinking skills, Reid and Anderson (2012) find little evidence of critical thinking being taught, or learned, even though it is deemed to be an essential part of higher education as well as a valuable life skill (Case, 2005; Giancarlo et al., 2004). This research will be an exploratory study to investigate the effect of teaching strategies during a semester-long course on undergraduate accounting students and the effect on the development of essential critical thinking skills needed in the workplace.

Theoretical Background

Unlike cognitive learning which looks to cognition, experiential learning theory (ELT) is rooted in the learning experience process. Kolb (1984) states that cognition or knowledge is a combination of grasping and transforming experience, and experiential learning. McCarthy (2010) states that experiential learning is active learning by doing and being involved in the learning process resulting in positive outcomes. McKnight et al. (2021) state it is the duty of accounting educators to develop students' skills required for them to succeed in the accounting profession. The authors discuss various experiential methods that are successful in student learning (McKnight et al., 2021). Bryan and McKnight (2021) note that practicing accountants (and business professionals in general) must focus on critical thinking skills through experiential learning and other skills.

Definitions of Critical Thinking

There are dozens of definitions of critical thinking. Critical thinking, also known as higher-order thinking, can be defined as (1) the capacity to avoid mistakes and make the right decisions; (2) the capacity to correct and regulate oneself; and (3) social responsibility (Penkauskienė et al., 2019). The Association of American Colleges and Universities defines critical thinking as "a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion" (Mccuen, 2019). With a focus on accounting students, the Harvard Business Review provides a concise definition of critical thinking which is "the ability to analyze and effectively break down an issue in order to make a decision or find a solution" (Coleman, 2022). Good critical thinkers can draw conclusions from a set of information with the ability to discriminate between relevant and irrelevant details to solve problems or make decisions. Critical thinking must involve curiosity, creativity, skepticism, analysis, and logic (Reding & Newman, 2017).

Critical thinking skills consist of the ability to identify and formulate the problem, provide an answer in the simplest form, apply any necessary formulas and procedures, analyze the results, make a conclusion, and then synthesize any ideas that result from the process. Yuliati et al. (2018), and Butler et al. (2019) simplify this type of learning into do, reflect, think, and apply. The AACSB Accounting Accreditation Standards define critical thinking as "the ability to identify issues and develop questions, apply appropriate analyses, interpret results, and communicate conclusions" (AACSB (b), 2022, page 17).

As an example, accountants used to be called upon primarily to record transactions. In today's business world, accountants' roles include a wider perspective such as incorporating profitable pricing strategies consistent with the overall marketing efforts of the firm or predicting results of planned business activities. By using authentic problems that require students to apply and practice critical thinking steps, their skills will be improved and fostered.

Literature Review

Managers think critically based on past experiences and situations, just as students recall more from what they do than what they hear (Kasowski, 2020; Hawtry, 2007). The effectiveness of managerial action, as a response to a situation, "is a solution selected after examining several alternatives chosen because the decider foresees that the course of action he selects will do more than the others to further his goals and will be accompanied by the fewest

possible objectionable consequences" (Jones, 1969). Unfortunately, there seems to be a lack of exposure to experiences that require critical thinking about business situations in what is being taught in our colleges and universities.

Businesses are always in flux, so business managers should be adept at change, collaboration, and communication (Atkins, 2023). According to the American Management Association (2023), great management is filled with people who can collaborate, think critically, communicate, and have skills in finance, project management, and leadership. Situations in business must be critically interpreted; problems formulated, analyzed, and solved; and formal knowledge applied (Haywood, 1987).

It is hardly surprising to discover that of the five characteristics cited as most important to success and advancement in entry-level jobs: communication, problem-solving, teamwork, initiative, and professionalism, business managers prefer those applicants who have the willingness to learn (Castrillon, 2021). Many business recruiters perceive liberal arts graduates as more adept at problem-solving and more creative in their analysis (Watkins, 1987). Critical thinking skills need to be fostered, practiced, and applied.

According to a Harvard Business Review 2016 survey, 60 percent of students and managers surveyed believe that critical thinking is the number one soft skill lacking in new graduates (Plummer, 2019). One of the primary means used to enhance critical thinking in classroom instruction is by integrating it into the subject, not teaching critical thinking skills separately (Caceres et al., 2020). It has been assumed that if teachers use appropriate instructional methods and curriculum materials, students will improve their critical thinking skills (Young, 1980). This view was formalized 70 years ago by Dressel and Mayhew (1954), who identified five critical thinking skills and conducted research to show how a college curriculum and teaching strategies could be developed to enhance critical thinking. To date, their studies represent the most comprehensive programs that have been undertaken to study college students' critical thinking.

Schlueter (2016) argues that the purpose of higher-level education is to teach critical thinking skills. With so much data and information available, and increasing every day, Schlueter contends that we must have a pedagogy that explicitly teaches these types of thinking skills.
There are many techniques that can be adopted to encourage the growth of critical thinking in the classroom. Below are eight specific classroom techniques to foster critical thinking.

1. Break classes into small groups to involve students actively in the questioning process and to allow them to reflect on what they are learning (Haywood, 1987).
2. Assign many short papers or problems (preferably in the form of arguments) to maximize opportunities for both expression and feedback (Haywood, 1987).
3. Keep the logic of the most basic concepts in the foreground, continually reweaving new concepts into the basic ones. Talk about the whole in relation to the parts and vice versa (Paul, 1992).
4. As often as possible use cooperative learning as a teaching tool. Have students articulate and explain what they have learned to others (Paul, 1992).
5. Try not to lecture more than 20 percent of the total class time (Paul, 1992).
6. Think aloud in front of the students. "It is instructive for students to hear their professors thinking, or better, puzzling their way slowly through problems in the subject" (Paul, 1992).
7. Regularly question students by probing various dimensions of their thinking: their purposes; their evidence, reasons, and data; their interpretations and conclusions; and their responses to alternative thinking from contrasting points of view (Paul, 1992).
8. Frequently call on students who are not contributing to the discussion or asking questions to encourage participation and active listening. When one student says something, call on other students to summarize in their own words what the first student said so that they actively listen to each other (Paul, 1992).

Hypotheses

The development of business students' critical thinking abilities (and therefore decision-making skills) can be improved with specific curriculum materials or instructional methods. Using experiential learning, like a case study, makes learning more meaningful to students (Stanley & Edwards, 2005). We predict that student results will reflect an increase in critical thinking skills in our hypothesis one.

H_1: An increase in critical thinking skills will be evidenced with a course case study.

The case study has multiple types of scenarios. All the students are enrolled in the course because they are majoring or minoring in a business discipline, but not all are accounting majors or minors. With hypothesis one assumed to be yes, we anticipate a difference in results based on the type of scenario being contemplated in our hypothesis two.

H_2: An increase in critical thinking skills will be evidenced based on the type of scenario presented in the course case study.

Before administering the case study in the course, it is important to acknowledge that there are problems with attempting to teach critical thinking skills. Chaffee (1992) concludes that there is a tendency to view education as the transfer of information from professor to student. A professor's primary responsibility is to cover content rather than encourage students to think about and critically evaluate what they are learning. Chaffee continues stating that this model is encouraged and supported by academic systems. It is the way most faculty were educated, and it provides clear criteria for student mastery that can be easily evaluated. According to Chaffee (1992), faculty are viewed as sources of knowledge and arbiters of correct answers, while students are seen as passive vessels into which knowledge is poured. However, the model does not assist students in the development of critical thinking skills needed in the world beyond coursework and college (Chaffee, 1992).

A major difficulty with infusing critical thinking into the classroom is resistance to the techniques. Students may object to assignments that require a great deal of writing or to work on cases in groups (Hirshberg, 1992). Each instructor should spell out as completely as possible his or her philosophy of education, how and why the class is structured in a certain way, why the students will be required to think their way through it, and why standard methods of memorization will not work (Paul, 1992).

Methodology

Utilizing entry-level managerial accounting students, a case study with twelve scenarios was implemented to test and enhance their critical thinking skills. The classes were taught using the same type of instruction with little disparity in the time of day the sections were taught. Before the case study was administered, students completed a four-question survey to determine their level of critical thinking. The four questions are listed on Table 4 below. Classes were separated into teams of three or four. Every week students were presented with a new chapter of the course. At some point during the week, the last twenty minutes of a class were used for management decision-making. The classes were face-to-face.

Teams were randomly made utilizing the following process. The students' names were entered in Excel. From there the =RAND() formula was entered, and all students received a random number. The numbers were then put in order and teams were made. The first four became Team one, the next four became Team two, and so on until all students were in teams. Students got into their teams and were each given a one-page scenario related to management, marketing, operations, or finance for the case study that relates to a coffee shop business. There were three alternatives with an explanation for each that the teams discussed and then came to an agreement on the best alternative for the company.

The case study utilized was The Coffeehouse Accounting Challenge (AICPA, 2023). This case reinforced skills sought by hiring managers such as communication, problem-solving, teamwork, initiative, and professionalism (Castrillon, 2021). Students were presented with a written scenario that addressed an issue with The Coffeehouse.

According to the AICPA, the scenarios included issues with suppliers, competition, training of employees, advertising, expansion of the business, service contracts, product mix sales decisions, and reinvesting in the business. A different topic was covered each week.

The concept of the case study is for the "managers" to evaluate the alternatives and determine the best alternative for the scenario. The case study does not relate week-for-week to the topics covered in the course; however, the case relates to the managerial accounting course as a whole because it asks for a decision based on scenarios. Students have to think beyond the dollars and cents and think about the mission of the company, what is best for their employees, and what is best for the community as a whole, which is taught with the triple bottom line of people, profit, and planet in chapter one of the course.

Students were given time to read the scenario on their own and determine what they believed to be the best alternative. They then consulted with the “management team” to determine if others had varying opinions, and why they had that opinion, and came to an agreement on what the team selected as the best alternative. Working within their groups of three or four, students discussed their opinions on the best alternative, experiencing teamwork and problem-solving. Teams submitted their choice by providing a piece of paper with A, B, or C along with the names of each teammate. A team was then called upon for each alternative and a representative communicated their choice and explanation of the logic behind their choice. The teaching notes provided an optimal solution to the case, so utilizing the teaching notes, the best alternative was then provided, and additional discussion ensued. Students took the initiative to express alternative opinions in a professional manner reflecting their natural curiosity and skills that will be used in future careers in business or accounting.

The results were collected and recorded each week. At the end of the twelve scenarios, students completed a survey to assess their level of critical thinking and allowed them to provide open-ended feedback on opportunities to improve the assessment. Paired t-tests were performed to determine statistical significance.

Sample

The sample size consists of 108 students in entry-level managerial accounting classes. As a course required for all business majors, the sample has diversity among majors and a relatively even distribution among male and female students, as can be seen in Table 1.

The individual students were divided into 31 teams as described above. The data was collected in the fall of 2022 and spring of 2023 semesters.

Results

Viewed as a natural enhancement to accounting education (Butler et al. 2019), we expected to see an increase in the percentage of students that chose the correct alternative, week by week, utilizing experiential learning, as the semester progressed, as posed by our hypothesis one. The fluctuating results are provided in Table 2 below.

The results indicate a positive result in the first three weeks of the exercise as the percentage of teams choosing the best alternative continued to increase. However, as can be seen in Table two, when teams encountered week 4 their ability to select the best alternative was met with confusion due to a lack of experience in this topic. Students were comfortable with weeks five and six but were once again challenged with weeks seven and eight as these weeks included the expansion of the business and renewing service contracts, matters that the students had not been exposed to in their education.

The twelve-week project covers topics related to suppliers, generating revenue, competition, employee training, advertising, expansion, service contracts, and reinvesting in the business. From a neuroscience measurement perspective, the actual ability to change students’ critical thinking in such a short time is minimal (Agrawal et al.,

2021). Knowing some students have experienced some of the scenarios presented in the case study, as employees themselves, we anticipated seeing an increase when focusing on the types of scenarios addressed, as opposed to week to week. The team's ability to select the correct alternative based on the scenario encountered is reflected in Table 3.

When encountering issues related to advertising in week five and loyalty programs in week three, approximately 90 percent of the teams chose the best alternative. Scenarios navigating supplier difficulties in weeks one and nine, what products to sell in week two, expanding the business in weeks six, seven, 11, and 12, and reinvesting in technology for the business in week 10 resulted in approximately 50 percent of the teams selecting the best alternative. Making decisions on what approaches to take to renew service contracts and training employees proved to be the most challenging scenarios. As undergraduates, students are not in the situation to be managers, nor are they expected to make these types of decisions in their current employment. Not having personal experience with these types of scenarios could be a mitigating factor for these poor results.

Student Outcomes and Perceptions of the Case

Feedback from students was collected in the form of a survey. Like Camp and Schnader (2010), part one of the survey asked students to rate individual skills on a five-point Likert scale. Part two provided open-ended questions allowing students to provide feedback on improving the project, and what they liked most and least. 106 students, or 98.2% of the participants, completed the survey. Results are presented in Table 4.

As is noted in the table, the difference in the means for all areas was statistically significant at the 99th percentile level. Based on the survey reflecting the experiences of the case study, these results suggest critical thinking skills increased the most when it came to detecting, explaining, and defining a problem. Just as significant, critical thinking skills increase when a student encounters a problem and can solve it and make a conclusion. Overall, student feedback was positive with many students reporting they enjoyed the project and found it interesting. Students liked the real-life coffee shop scenarios the most, with nothing being disliked by the majority. Although it is important to utilize class time to teach the course material, it is the opinion of the instructor that, sacrificing 20 minutes every week to discuss different business alternatives for the Coffeehouse to further students' critical thinking skills may be warranted.

In the post-survey for the case study, students also expressed very positive comments and enjoyed the project as well as being in teams. They were able to meet new people that they would not have met if allowed to pick groups themselves, and they enjoyed getting "outside the textbook". No chapters or topics typically taught in the class were sacrificed by utilizing the cases.

Conclusions

The results support hypothesis one which proposed an increase in critical thinking skills will be evidenced with a course case study. The teams selected the best alternative at the beginning of the twelve-week case study 38.7 percent of the time. By the end of the study, 51.6 percent selected the best alternative. Overall, teams selected the correct alternative 57.6 percent of the time, indicating an increase in critical thinking skills which was a significant increase in the difference of the means. The results also support hypothesis two which predicted an increase in critical thinking skills will be evidenced based on the type of scenario presented in the course case study. Scenarios that students were familiar with and had been exposed to in their own experiences such as employees at fast-food establishments or retail chains or consumers where they have been exposed to and experienced scenarios for advertising, and loyalty programs showed a higher level of teams selecting the best alternative. However, college students are not typically in management positions that renew maintenance contracts, decide on business expansions, select suppliers, etc. These results support the idea that critical thinking skills can be increased by utilizing a course case study with more positive results when utilizing scenarios students have been exposed to and are familiar with.

Limitations

Dressel and Mayhew (1954) found that while the use of different course materials did not affect critical thinking, significant differences were found among sections of the same course taught by different instructors. This finding suggests that instructors may be an important factor and could be a limiting factor to our findings as all courses evaluated were taught by the same instructor.

The sample size is small, which is necessitated by small class sizes. However, the sample provides feedback on students' ability to learn critical thinking skills. The smaller sample size also allowed an excellent forum for the study. The significant results using the case study or in the different case scenarios may be attributed to the small sample size. Another reason for the significant result could be the nature of the study, a case study. Cloete (2018) utilized an integrated assessment and measured students' pre- and post-intervention with the Watson-Glaser Critical Thinking Appraisal and found that critical thinking skills were enhanced in the students participating in her study. An additional limitation of this study is there is no control group, again due to the small sample size.

Direct causation of the case study making a difference in learning critical thinking is another limitation. As McMillan (1987) indicated, research in critical thinking suffers from some of the same problems that afflict similar research designs studying self-concept, intelligence, or creativity. It is very difficult to demonstrate a change in a broad generalized construct that is influenced by many factors over a long period of time by altering one relatively small factor (McMillan, 1987).

Regardless of one's focus – be it accounting, finance, marketing, management, or economics – there is an element common to all who seek to be professionals in the field of business. All business professionals share the need to make timely and effective decisions in a dynamic and uncertain environment. The nature of the decision-making process is what gives the action-oriented professional a special need for critical thinking skills.

Many students are led to believe that their main role is the acquisition of discipline-related content. While content is essential, higher-level learning within accounting requires more – critical thinking. Unfortunately, students in a well-intended but misguided attempt to learn the facts in the shortest possible time may neglect higher-order thinking skills. The unwritten and unspoken assumption that higher-order skills automatically grow as one learns content leads the person to fall into the trap of believing that the acquisition of facts constitutes knowledge. Simply being able to memorize and regurgitate information is not knowledge, because it cannot be applied or processed. Having instructors that incorporate experiential learning into their curriculum to facilitate critical thinking will encourage deeper learning and avoid this trap. Therefore, attention to critical thinking and incorporating experiential learning that students can relate into the curriculum is a must.

Future Research

It cannot be overlooked that some students could have several years of experience in a retail or restaurant setting. Future research could poll students on their work experience to determine if the results are significantly impacted by this familiarity with on-the-job scenarios. Since virtual and online learning has expanded, the research could be duplicated using an online setting.

References

AACSB (a). (2022, July 1). *AACSB Business Accreditation Standards*. Association to Advance Collegiate Schools of Business. Retrieved from https://www.aacsb.edu/educators/accreditation/business-accreditation/aacsb-business-accreditation-standards

AACSB (b) (2022, July 1). *AASCB 2018 Standards for Accounting Accreditation*. . Association to Advance Collegiate Schools of Business. Retrieved from https://www.aacsb.edu/educators/accreditation/accounting-accreditation/aacsb-accounting-accreditation-standards

Agrawal, Birt, J., Holub, M., & van Zyl, W. (2021). Professional scepticism and the accounting classroom. *Accounting Education (London, England), 30*(3), 213–233. https://doi.org/10.1080/09639284.2021.1913616

AICPA. (2023). Welcome to the coffeehouse: A team accounting challenge. American Institute of Certified Public Accountants. Retrieved from: https://www.startheregoplaces.com/teacher/classroom-resources/welcome-coffeehouse-team-accounting-challenge/

AMA. (2023). 6 Managerial Skills That will make you Indispensable. *American Management Association*. Retrieved from: https://www.amanet.org/resources/success-skills/management/

Atkins, I. (2023). Characteristics of a Good Leader: Tips for New Managers. *Business New Daily*. Retrieved from: https://www.businessnewsdaily.com/6456-new-manager-tips.html

Belkin, D. (2017, June 05). Exclusive Test Data: Many Colleges Fail to Improve Critical-Thinking Skills. Retrieved from https://www.wsj.com/articles/exclusive-test-data-many-colleges-fail-to-improve-critical-thinking-skills-1496686662

Bierstaker, J. (2007). Using student-centered writing assignments to introduce students to accounting education and facilitate interaction with practitioners. *Global Perspectives in Accounting Education. 4*, 61-68.

Butler, M., Church, K., & Spencer, A. (2019). Do, reflect, think, apply: Experiential education in accounting. *Journal of Accounting Education. 48*, 12-21.

Bryan, T. & McKnight, M. (2021). Implementing the Pathways Commission Recommended First Accounting Course: A Profile of Early Adopters. *International Journal of Accounting and Finance Review*, *6*(1), 41-62.

Caceres, M., Nussbaum, M., Ortiz, J. (2020). Integrating critical thinking into the classroom: A teacher's perspective. *Thinking Skills and Creativity, 37*, 1-18.

Camp, J. & Schnader, A. (2010). Using Debate to Enhance Critical Thinking in the Accounting Classroom: The Sarbanes-Oxley Act and U.S. Tax Policy. *Issues in Accounting Education, 25(4)*, 655–675. https://doi.org/10.2308/iace.2010.25.4.655

Case, R. (2005). Bringing critical thinking to the main stage. *Education Canada, 45*(2), 45-46.

Castrillon, C. (January 2021). Top 5 Things Hiring Managers Look For In a Job Interview. *Forbes.* Retrieved from: https://www.forbes.com/sites/carolinecastrillon/2021/01/24/top-5-things-hiring-managers-look-for-in-a-job-interview/?sh=78e5c051595a

Chaffee, J. (1992). Critical thinking skills: The cornerstone of developmental education. *Journal of Developmental Education, 15*(3), 2.

Cloete, M. (2018). The impact of an integrated assessment on the critical thinking skills of first-year university students. *Accounting Education* (London, England), *27(5)*, 479–494. https://doi.org/10.1080/09639284.2018.1501717

Coleman, J. (2022). Critical Thinking Is About Asking Better Questions. *Harvard Business Review.* Retrieved from: https://hbr.org/2022/04/critical-thinking-is-about-asking-better-questions

Dressel, P.L. and Mayhew, L.B. (1954). General education: Explorations in evaluation. Washington, D.C.: American Council on Education.

Giancarlo, C. A., Blohm, S. W., & Urdan, T. (2004). Assessing secondary students' disposition toward critical thinking: Development of the California Measure of Mental Motivation. *Educational and Psychological Measurement, 64*, 347–364.

Halpern, D. F. (1998). Teaching critical thinking for transfer across domains. *American Psychologist*, 53(4), 449-455.

Hawtry, K. (2007). Using experiential techniques. *Journal of Economic Education, Spring*, 143-152.

Haywood, K. M. (1987). Creative thinking: the critical management resource. *Cornell HRA*

Quarterly 28, 51, 55.
Heard J., Scoular, C., Duckworth, D., Ramalingam, D., & Teo, I. (2020). Critical thinking: Definition and structure. Australian Council for Educational Research. https://research.acer.edu.au/ar_misc/38
Hirshberg, D. (1992). Sources and information: Critical thinking skills instruction in the community college. *New Directions for Community Colleges, 1992*(77), 109-116.
Irving, J. (2011). Integrating research into an undergraduate accounting course. *Issues in Accounting Education, 26*(2). 287-303.
Jones, M.H. (1969). Executive Decision Making. Irwin. Retrieved from: https://books.google.com/books?id=14IwngEACAAJ
Kasowski, D. (November 2020). Seven Critical Thinking Tactics High-Performing Leaders Use to Make Informed Decisions. *Forbes*. Retrieved from: https://www.forbes.com/sites/forbescoachescouncil/2020/11/03/seven-critical-thinking-tactics-high-performing-leaders-to-make-informed-decisions/?sh=7f2965424f72
Killian, L. (2013). The budgetary interview: Intentional learning for students in governmental and non-profit accounting. *Journal of Accounting Education, 31(3)*, 350-362.
Kolb, D.A. (1984). *Experiential learning; experience as the source of learning and development.* Englewood Cliffs, NJ: Prentice Hall.
McCuen. (2019, February 06). Critical Thinking VALUE Rubric. Retrieved from https://www.aacu.org/value/rubrics/critical-thinking
McCarthy, M. (2010). Experiential Learning Theory: From Theory To Practice. *Journal of Business & Economics Research (JBER), 8*(5). https://doi.org/10.19030/jber.v8i5.725McGowan, S. (2012). Going beyond the numbers in teaching financial accounting: The newsletter as an assignment option. *Issues in Accounting Education, 27*(4), 1095-1117.
McKnight, M. A., Bueltel, B. L., Dill, A. T., Seitz, J. L., & Bryan, T. G. (2021). Incorporating Experiential Learning into the Accounting Curriculum: Best Practices and Lessons Learned from Recently Implemented Curriculum. *Global Journal of Accounting and Finance*, *5*(1), 75.
McMillan, J. H. (1987). Enhancing college students' critical thinking: A review of studies. *Research in higher education, 26*, 3-29.
Paul, B. B. (1992). *Diamonds, triangles, and squares: A developmental study of the congruence concept*. City University of New York.
Penkauskienė, D., Railienė, A., & Cruz, G. (2019). How is critical thinking valued by the labour market? Employer perspectives from different European countries. *Studies in Higher Education, 44*(5), 804-815. doi:10.1080/03075079.2019.1586323
Plummer, M. (2019, October 27). A Short Guide to Building Your Team's Critical Thinking Skills. Retrieved from https://hbr.org/2019/10/a-short-guide-to-building-your-teams-critical-thinking-skills
Rebele, J. E., & Pierre, E. K. S. (2019). A commentary on learning objectives for accounting education programs: The importance of soft skills and technical knowledge. *Journal of Accounting Education, 48*, 71-79.
Reid, J. R., & Anderson, P. R. (2012). Critical thinking in the business classroom. *Journal of Education for Business, 87*(1), 52-59.
Reding, K. & Newman, C. (2017, June 2). Improving Critical Thinking Through Data Analysis. *Strategic Finance*.
Schlueter, J. (2016, June 7). Higher ed's biggest gamble. *Inside Higher Ed*. Retrieved from https://www.insidehighered.com/views/2016/06/07/can-colleges-truly-teach-critical-thinking-skills-essay
Stanley, T., & Edwards, P. (2005). Interactive multimedia teaching of Accounting Information System (AIS) cycle: Student perceptions and views. *Journal of Accounting Education, 23,* 21-46.
Watkins, P. (1987). Parents events fill weekend. Illinois State University Life, Vol. 22, No. 1, Fall 1987
Young, R. E. (1980). Testing for critical thinking: Issues and resources. *New directions for teaching and learning, 1980*(3), 77-89.
Yuliati, L., Fauziah, R., & Hidayat, A. (2018). Student's critical thinking skills in authentic problem based learning. *Journal of Physics: Conference Series, 1013*, 012025. doi:10.1088/1742-6596/1013/1/012025

Table 1: Sample: Major and Gender Count

Major	Count	Male	Female
Non-Business	3	1	2
Accounting	4	3	1
Economics	2	2	0
Finance	13	6	7
Management	55	25	30
Marketing	31	13	18
Totals	108	50	58

Table 2: Critical Thinking: Teams Correct Alternative Each Week.

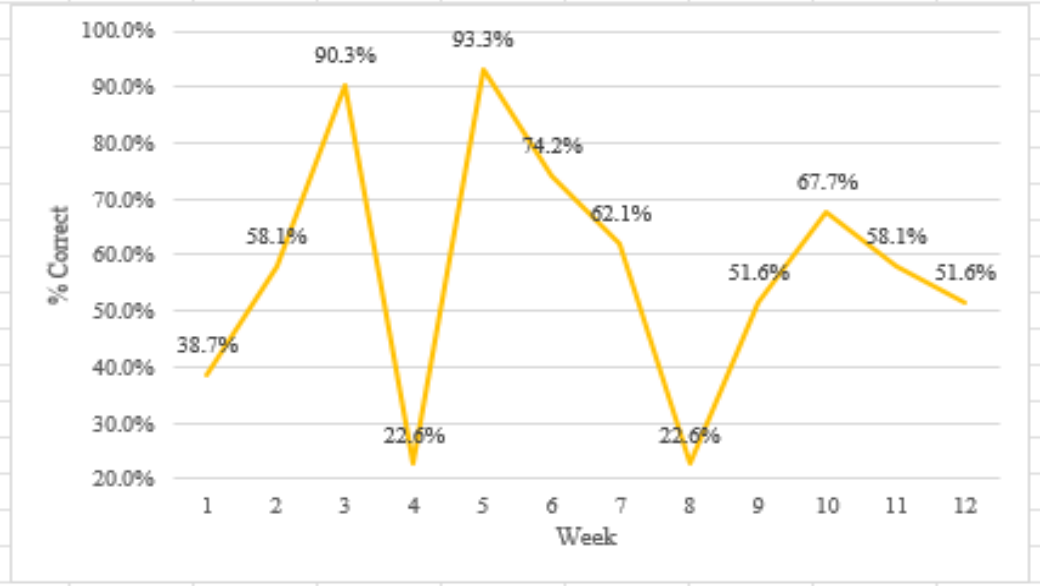

Table 3: Critical Thinking: Teams Correct Alternative Selection By Scenario.

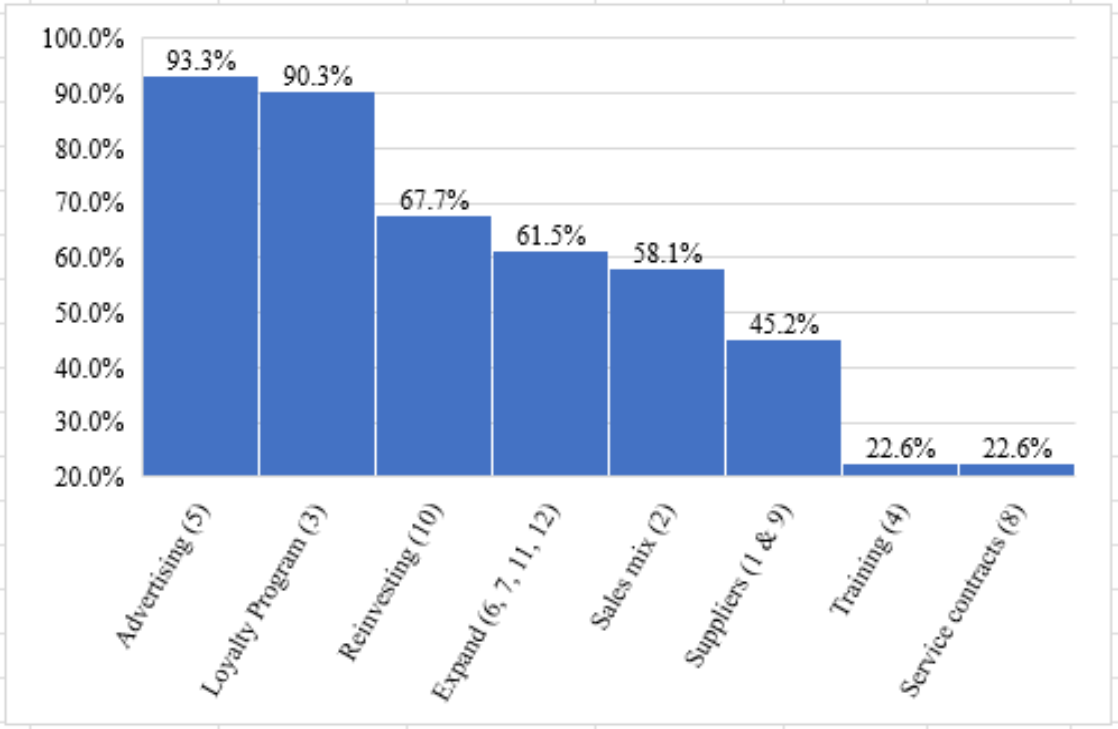

Table 4: Classroom Assessment Survey Results

Part 1	**Mean Pre-Case Study**	**Mean Post-Case Study**	**Difference**	
Question	**(Std. Dev.)**	**(Std. Dev.)**	**in Means**	**p-value**
1. I can detect a problem and explain and define it.	3.86 (0.817)	4.25 (0.817)	0.39	(0.00)
2. When I encounter a problem, I can solve it and make a conclusion.	3.87 (0.774)	4.26 (0.796)	0.39	(0.00)
3. After a problem is explained to me, I can analyze it by thinking through the alternatives.	4.05 (0.796)	4.35 (0.817)	0.30	(0.01)
4. When I encounter a problem, I can visualize it and put myself in the scenario.	3.86 (0.921)	4.24 (0.89)	0.38	(0.01)
Part 2 - Post-Case Study Questions				
5. Overall, the project made me think more critically when choosing the best alternative for the company.		4.43		
	Too easy	At the right level of difficulty	Too difficult	
6. The project was:	1	100	5	
	A good compliment	Not a good compliment		
7. The project was:	101	5		
n = 106				

Appendix

Student Opinion Survey (pre-case study)

The purpose of this survey is to determine how well you think critically. There is no right or wrong answer, and the survey is anonymous.

Instructions: Please circle your choice for each statement below.

1. I can detect a problem and explain and define it.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

2. When I encounter a problem, I can solve it, and make a conclusion.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

3. After a problem is explained to me, I can analyze it by thinking through the alternatives.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

4. When I encounter a problem, I can visualize it and put myself in the scenario.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

Student Opinion Survey (post-case study)

The purpose of this survey is to determine how well you think critically. There is no right or wrong answer, and the survey is anonymous.

Instructions: Please circle your choice for each statement below.

1. I can detect a problem and explain and define it.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

2. When I encounter a problem, I can solve it and make a conclusion.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

3. After a problem is explained to me, I can analyze it by thinking through the alternatives.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

4. When I encounter a problem, I can visualize it and put myself in the scenario.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

5. Overall, the project made me think more critically when choosing the best alternative for the company.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

The project was (circle one).

a. Too easy
b. At the right level of difficulty
c. Too difficult

The project was (circle one).

a. A good complement to the class.
b. Not a good complement to the class.

Open-ended questions:

1. What is your major and what do you hope to do for a job?
2. What did you like most about this case study project?
3. What did you like least about this case study project?
4. What recommendations would you give for improvement?