WHAT EFFECT DO STUDENT LEARNING PREFERENCES (VARK) HAVE ON AN ACTIVE-LEARNING PROJECT IN AN INTERMEDIATE ACCOUNTING I COURSE?

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ABSTRACT

An active-learning case was examined. A significant difference resulted between mean scores (p = .01) on Exam II (before Case) and Final Exam (after Case). The Case was evaluated to determine benefits for students with different learning preferences. The Case appears to be beneficial for students with various learning preferences.

Keywords: Active-Learning Exercise, Intermediate Accounting, Learning Preferences

INTRODUCTION

Over a period of time, it has been recommended that the university accounting curriculum be changed to prepare the students with the necessary skills to be successful in their professional careers. Albrecht and Sack (2000) indicated that there is a need to change the delivery method of accounting education. To assist students in obtaining the needed skills, the instructor’s role must shift from being the presenter of facts to facilitator of active learning according to Jackson and Durkee (2008). Further, Wessels (2010) suggested that the instructor’s fundamental task is to encourage students to utilize learning activities that will most likely result in their accomplishing the desired learning outcomes for the course. An active-learning financial statement analysis case project (Case) for Intermediate Accounting I was utilized in this research study.
Shanahan and Meyer (2001) recommended that research be conducted to facilitate a better understanding of what, why, and how students learn in order to assist instructors in teaching. One way to change the delivery method and to better understand the student’s learning process is to consider the student’s learning styles or preferences when teaching. Baltazar et. al. (2001) stated that course designs should include instructional methods that reflect student learning preferences because of the individual learning-style differences of the students. Also, Hawk and Shah (2007) emphasized that the use of learning-style instruments to assist in the selection of student instructional activities should enhance the effectiveness and quality of the students’ learning. Various student learning styles were considered in the development of the Case used in this study. In our study the students’ learning preferences were determined using the VARK learning preference inventory instrument [Fleming and Mills (1992)]. The students’ learning preferences were analyzed to ascertain the benefit of the students’ preparation, presentation, and peer evaluation in our active-learning Case.

Albrecht and Sack (2000) stated that accounting educators need to help students develop their ability-to-learn skills. More recently, Gammie and Kirkham (2008) suggested that the ability to “learn to learn” is a key competency in order for accountants to adapt to the rapidly changing business environment. The active-learning Case utilized in this research study should give the students an opportunity to develop or expand their ability to “learn to learn.” Further, Albrecht and Sack suggested that accounting information from different industries should be included in an undergraduate accounting curriculum. In our Intermediate Accounting I case project, each team presented information from a different industry.

PricewaterhouseCoopers in Educating for the Public Trust (2003) concluded that among other curriculum changes there should be an emphasis on a higher level of interpersonal and communication skills. Further, the International Federation of Accountants (IFAC) in its International Education Standard 3 (IES3), Professional Skills and General Education (2008) emphasized that interpersonal and communications are necessary skills for accountants entering the profession. Our active-learning Case required the students to write, make oral presentations, work in a team, and utilize critical thinking skills in making decisions.

The Broad Business Perspective Competencies category of the AICPA Core Competency Framework for Entry into the Accounting Profession (Framework) (1999) included strategic/critical thinking as a necessary component for professional success. In addition, the Canadian Institute of Chartered Accountants (CICA) in its CA Skills and Competencies (2010) report suggested that students should learn to examine and interpret information and ideas critically. Further, Albrecht and Sack (2000) recommended that accounting education delivery methods be modified to allow students to develop critical skills. Classroom delivery methods (e.g., an active-learning case) should be developed to achieve these goals.

Albrecht and Sack (2000) emphasized the importance of “teaching students how to find answers and how to learn.” The ability to locate, obtain, and organize information is one of the skill sets that the Accounting Education Change Commission (AECC) believed that students should possess. Also, the need for entry-level accounting professionals to be able to organize and evaluate information was suggested in the Framework [Functional Competencies category under Decision Modeling] (1999). Further, the CICA in its CA Skills and Competencies (2010)
indicated that accounting graduates should be able to gather or develop information and ideas. Our Case required the students to locate, organize, and evaluate financial information.

Further, Albrecht and Sack (2000) recommended that an undergraduate accounting curriculum should include, among other topics, analysis of accounting information and use of accounting information in making decisions. The CICA in its CA Skills and Competencies (2010) indicated that accounting graduates should be able to analyze the information gathered and form an opinion on the impact of the information on a situation. Our Case required the students to analyze financial/nonfinancial accounting information obtained as a basis for decision making purposes (e.g., the selection of the company in which to invest).

Also, the IFAC in IES3 (2008) indicated the need for students to learn to work with others, to negotiate acceptable solutions, to listen effectively, and to solve any conflicts that may occur. In addition, Albrecht and Sack (2000) suggested group activities to teach both leadership and how to work together. Further, both the Kavanagh and Drennan (2008) and the Kennedy and Sorensen (2006) studies suggested that employers expect accounting graduates to be able to successfully work on a team. Our active-learning Case involved group work.

This study contributes to the accounting literature by presenting and analyzing a case that exposed Intermediate Accounting I students to financial and nonfinancial information found in publicly traded company annual reports and/or SEC 10-K reports. This Case involved the analysis of two companies within one industry for each team (e.g., auto manufacturing, trucking, supermarkets, or department stores). In addition, the effect of student-learning preferences on the active-learning Case outcomes was investigated.

THEORY

Johnstone and Biggs (1998) recommended supplementing existing textbook material with real world activities (e.g., realistic case analysis). In preparing the outside-of-class Case assignment, the students were required to write the financial statement analysis Case reports in their own words. Also, the Case supplemented the textbook material with financial and nonfinancial information from actual corporate annual financial reports and SEC 10-K reports. Further, the Case permitted the students to encounter many Framework elements and IFAC (IES3) skills encompassing the analysis and evaluation of financial accounting topics. For example, it was necessary for the students to identify what components needed to be measured in the calculation of financial statement ratios.

The ability of the students to write is important in an accounting career. Communications is an element of the Framework Personal Competencies category. Also, the IFAC (IES3) recommended interpersonal and communications skills. Accounting professionals who are starting their careers should be able to organize and effectively communicate information so that it can be readily understood by the receiving parties. Stocks et al. (1992) suggested that writing-to-learn is as important as learning-to-write. Scofield and Combes (1993) implied that writing assignments permit the students to individualize the learning process, thus developing their own unique versions of the concept. Zinsser (1988) suggested that writing helps students determine what they do know and do not know. Our active learning Case gave the students an opportunity
One technique to evaluate students’ learning is to use pre- and post-study measurements. According to Angelo and Cross (1993), the purpose of utilizing pre- and post-assessment techniques is to determine whether students have benefited from class discussions and assignments. The pre-test allows the instructor to establish a benchmark of what the students know on the subject matter being investigated before the study technique (Case) is utilized. In our study, Exam II, which was administered after discussing the homework problems on financial statement ratio analysis topics (but before the Case was assigned), was designated as the pre-test. After Exam II there was no other class discussion or homework involving financial ratios or other questions included in the Case. The Final Exam, which was given after the students completed the Case, was considered to be the post-test.

In summary, the literature suggests that student active-learning exercises can enrich the learning process and that writing projects can be utilized as a learning tool. The following hypothesis was used to test the benefit of the active-learning technique encompassed in the Case:

\[ H_1: \text{The distribution of exam scores on the financial statement analysis questions in Exam II (before the active-learning exercise) and in the Final Exam (after the active-learning exercise) are the same.} \]

A short learning preference inventory instrument (VARK), which was developed by Fleming and Mills (1992) to determine sensory modality preferences when processing information [i.e., instructional preference(s)], was used in this research. VARK is an acronym for Visual, Aural, Read/Write, and Kinesthetic sensory modalities that are utilized for learning information. According to Fleming and Mills, the “Visual Preference” modal includes depiction in the form of charts, graphs, flowcharts, symbolic arrows, circles, hierarchies, and other methods that can be used to represent what could be presented in words. The “Aural Preference” modal involves learning from lectures, tutorial and talking to other students. Students with the “Read/Write Preference” modal learn when the information is displayed as words. The “Kinesthetic Preference” modal involves learning through experience, examples, practice or simulation. It should be noted that students can have more than one learning preference.

**RESEARCH METHODS**

An Intermediate Accounting I class taught by one of the researchers was used in the research experiment. The researcher required the students to complete the VARK inventory instrument (VARK) the first day of class. The project involved financial statement analysis for the two most recent years of annual reports and/or SEC 10-K reports for two companies within the same industry (e.g., Home Depot and Lowe’s) for each team. Each team analyzed a different industry (e.g., hotels, shoe manufacturing, or airlines). The student teams were allowed to select the industry from pairs of companies provided by the instructor. The students selected their own teams consisting of 3-5 students. Other than the selection of the industry by the team, the entire Case project was prepared outside of class.
The students were required to prepare a team written report, which included three parts. First, the team was required to calculate liquidity ratios, solvency ratios, and profitability ratios for the two most recent years. Then, the students used the financial statement ratio analysis results as the basis for answering a set of questions. For example, “Which company has the more favorable inventory turnover?” Finally, for the most recent year, the team was required to answer another set of questions related to each company’s annual and SEC 10-K reports. For example, “What are each company’s basic and diluted earnings per share?”

In addition, to assure that each student has writing experience in the preparation of this Case, each student was required to write a one-page report. This individual report required the students to give their opinions (with support based on their team report) as to the firm they would select for investment purposes. Also, each team was required to present their analysis in an oral presentation (15 to 20 minutes) to their classmates. For the oral presentation, the students were expected to dress as if they were presenting to clients. The other classmates were expected to act in the role of the client and were encouraged to ask questions of the presenting team.

The students were told that the team as a whole will be evaluated and also each student individually will be evaluated as a separate presenter. The non-presenting class members were required to complete an evaluation form. Each classmate and the instructor had equal evaluation weight in determining the student scores for the presentations. When the written reports were returned, each student also received his or her score for the Case. The total score for the Case was 70 points (Team Report, 40; Individual Report, 15; Individual Presentation, 10; and Team Presentation, 5).

Approximately a week following the discussion of the homework problems on the financial statement analysis topics, Exam II was administered. Exam II was given before the students started their active-learning exercise (i.e., financial statement analysis case project). In our study Exam II was designated as the pre-test. After Exam II there was no other class discussion or homework involving financial ratios or other questions included in the Case. About a week after the students made their presentations and completed their team and individual reports, a Final Exam was administered. The Final Exam had questions related to the financial statement analysis topics that were different than those that were given on Exam II but were similar in the level of complexity. The Final Exam was considered as the post-test in our study. The results of Exam II and the Final Exam were used to measure the effect of this active-learning exercise technique.

The pre-test/post-test analysis can also be used to evaluate if the financial statement analysis Case was more beneficial or helpful for students with different learning preferences. The Case may not be as equally helpful for all learning style preferences. As previously mentioned, Baltazar et. al. (2001) recommended that course designs should include instructional methods that reflect student learning preferences. As a result, student learning preferences will be compared to the students’ change in test scores.

According to Fleming and Mills (1992) the “Kinesthetic Preference” modal involves learning through experience, examples, practice or simulation. Since our Case involved hands on experience in calculating and analyzing actual company information, it was expected that the students with the “Kinesthetic Preference” should improve their exam scores. “Read/Write
Preference” students learn more efficiently when the information is displayed as words. The Case required the students to read the companies’ annual reports and/or SEC 10-K reports to calculate the ratios and to answer the Case questions. In addition, the students were required to write a team report and an individual report. As a result, the Case should be beneficial to the students with the “Read/Write Preference” learning style.

The “Aural Preference” modal involves learning from lectures, tutorial and talking to other students. Since the Case was a team project, the students should have discussed their findings with each other before preparation of the written team report. Further, the students were required to orally present their report, which should permit some learning by the audience during the class presentations. Therefore, it was expected that the Case should be somewhat beneficial to students with the “Aural Preference” learning style. The “Visual Preference” modal involves depiction in the form of charts, graphs, flowcharts, symbolic arrows, circles, and hierarchies. The Case did not emphasize examination of a company’s annual report for charts, graphs, etc. Therefore, it was expected that this Case may not result in much improvement by the students who have the “Visual Preference” learning style. As previously discussed, students can have more than one learning preference.

RESULTS

The majority of the students’ exam scores (Exam II/Final Exam) related to the financial statement analysis topics increased or stayed the same after the Case was completed. The median score increased from 50% on Exam II to 87.5% on the Final Exam. Also, the mean score increased from 35.53% on Exam II to 76.32% on the Final Exam. The students’ Exam II and Final Exam scores were matched by names. The Wilcoxon signed rank test was utilized to test $H_1 (EII \geq FE)$. Since there was a significant difference ($p = .01$), $H_1$ was rejected. The students’ exam scores significantly increased as a result of this active-learning exercise. It appears that the Case preparation and presentation can be helpful in learning financial statement analysis topics.

The pre-test/post-test analysis was also used to evaluate whether the Case was more beneficial or helpful for students with different learning preferences. The students’ learning preferences using the VARK Inventory instrument were compared to the students’ change in test scores between the pre-test and the post-test. As was expected, a high percentage of the students’ test results improved or remained the same for the “Read/Write Preference” (100%), “Kinesthetic Preference” (92.86%), and “Aural Preference” (88.89%) students. However, the student results were opposite of what was expected by the researchers for the “Visual Preference” (100%) students. This could have resulted because all of the visual preference students were multi-modal and the other preferences of these students dominated the test results. It appears that this financial statement analysis Case is a good teaching method for students with various learning preferences.

REFERENCES

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