**An Interdisciplinary Approach to Principles of Accounting:   
Optimizing the Use of a Finance Lab**

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***Abstract***

*The integration of technology has become a fundamental element of instruction and engagement on many university campuses. In university schools of business, finance labs and trading rooms are proving to be a beneficial addition to business education. Through electronic displays of global market information and access to real-time data, students engage in hands-on learning and real-world experience. Finance labs also provide the opportunity for innovation and impact, as well as an interdisciplinary approach to business education, research, and collaboration. The current study seeks to determine student perceptions of the learning environment of a finance lab, as well as perceptions of the hands-on course activities using Morningstar financial data.*

Keywords: finance lab, trading room, accounting, active learning, innovative instruction

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**Introduction**

Universities worldwide have begun incorporating the use of finance labs into their business school curriculum. The labs integrate a hands-on approach to the traditional methods of learning finance, as well as other business courses. In contrast to ordinary computer labs, finance labs include additional features such as stock tickers, world clocks, and electronic displays of global market data. In addition, the labs provide student access to financial platforms used by professionals in the finance industry, such as Reuters, Bloomberg, and Morningstar.

In the fall semester of 2017, Jacksonville State University’s School of Business & Industry opened the doors of its new state-of-the-art finance lab. An accounting faculty member undertook an experiment which involved teaching a Principles of Accounting course in the finance lab. The students had the benefit of the latest technology, along with the financial database, Morningstar, to incorporate into their learning experience. This provided an opportunity for innovate instruction, as well as the chance to implement a more active classroom model, in contrast to the primarily passive learning model of a traditional lecture setting. The instructor’s goals were to improve engagement, enhance the learning experience, and increase understanding.

The 2013 AACSB International Accreditation Standards require business schools to demonstrate continuous improvement in terms of engagement, innovation, and impact. Consistent with the standards, modifications to the Principles of Accounting course allowed the course to be offered in a finance lab environment, thus representing a significant innovative endeavor. An additional intent was to create new student engagement opportunities to provide for maximum impact on student learning and engagement through quality education. AACSB standards also encourage interdisciplinary research and collaboration. With multi-disciplinary approaches, business schools possess significant assets for taking a leading role in fostering innovation in the future.

As to the use of the finance lab in teaching the Principles of Accounting course, the instructor made periodic reference to the information displayed, including stock prices, market barometers (DJIA), and other information relating to the interdisciplinary areas of economics, finance, and accounting. In addition to the data readily provided in the lab, the instructor also utilized the Morningstar financial database to incorporate “real-world” and “hands-on” active learning experiences into the course. Students were required to access online company financial statements using Morningstar financial statement data. Such companies included Apple, Wal-Mart, Dollar General, and Coca-Cola. Students applied concepts such as constructing financial statements, performing ratio analysis, and analyzing annual Securities and Exchange Commission reports.

The purpose of this study is two-fold. The first purpose is to determine student perception of active learning in a finance lab environment. This includes aspects such as whether or not the finance lab provides a motivating environment, enhances concept application, and increases understanding. The second purpose of this study is to assess student perception of the applied Excel and Morningstar assignments. This includes aspects such as whether or not the assignments increased participation, enhanced the learning experience, and improved concept application.

**Literature Review**

**Instructional Use of Finance Labs**

Finance labs, also called trading or dealing rooms, embody the active learning approach. Students do not merely listen to lectures about abstract financial topics. They are able to apply concepts from the textbook through a hands-on approach, using real-time or historical data of actual companies. A study by Stewart, Houghton, and Rogers (2012) found that students were positively impacted by “integrative instructional design” provided by the use of the finance lab. Additionally, students enrolled in a course that used the finance lab demonstrated greater financial knowledge than students in the same course that was taught using the traditional approach. A similar study by Brooks (2011) also found that students in an active classroom outperformed students in a traditional classroom, with all other factors held constant.

There is a growing body of literature that supports the benefits of finance labs. A study by Lester and Cole (2009) analyzed the use of a trading room as an interdisciplinary, learner-centered resource. The study included nine propositions developed by the authors, demonstrating the benefits of technology-enhanced instruction through the active learning method embodied by the finance lab. All propositions received evidential support through the authors’ observations. Noted observations included improvements in the following areas: retention of concepts, student and faculty interaction, interdisciplinary collaboration, real-world application, access to internship and employment opportunities, and student retention and recruitment. A study by Lambert, Tant, and Watson (2008) surveyed students to determine perceptions of learning effectiveness through the use of a dealing room. The study indicated that students believed that the learning experience was improved by concept application and collaborative learning. Students also perceived the active classroom to be more effective than traditional individual learning. In addition, the dealing room enhanced student motivation by encouraging participation and providing additional learning resources.

While finance labs were originally developed for finance courses, they are also beneficial for other business disciplines. Business operations are interdisciplinary, and it is necessary for students to understand the relationships among finance, accounting, and economics. In addition, it is critical that business schools have a commitment to collaborate and connect with other disciplines. Business schools should seize opportunities to expand models and incentives that support interdisciplinary research to facilitate interdisciplinary learning. From a finance perspective, the objective of the company is to maximize shareholder wealth (value), which is based on the market price of the company’s common stock. A major focus on the information displayed in a finance lab relates to the stock market and stock prices. Primary external users of accounting information are shareholders or investors who use financial statements to decide whether to buy, sell, or hold stock. In this aspect, the finance lab unites both finance and accounting disciplines.

In 2008, a survey of nearly 150 deans of AACSB accredited business schools indicated that 77% of the deans agreed that integrated business curriculum was critical for students’ future career success (Athavale, Davis, & Myring, 2008). As a pivotal resource, the finance lab motivates faculty to cross disciplinary boundaries, integrating real-world experiences into the curriculum (Lester & Cole, 2009). In order to integrate finance and accounting courses, La Salle University’s business program linked two courses, “Fundamentals of Financial Management” and “Introduction to Managerial Accounting.” In developing such curriculum, several overlapping topics were noted, including balance sheet items, primarily liabilities (debt financing, bonds, long-term financing); assets (working capital management, short-term planning); equity (equity financing – stocks); and financial statement analysis. La Salle faculty members Leauby and Wentzel (2007) conducted a pre- and post-course survey of the students enrolled in the course. It was found that after taking the integrated course, students made more specific connections between shared topics in finance and accounting. Among other topics, students were able to identify interdependency of the two disciplines in the following areas: ratio analysis, financial performance, income statements, balance sheets, and cash flow statements. Similarly, Bentley University developed a two-course sequence that integrated general business, finance, and accounting. The course resulted in an increased student interest in accounting and finance (Bianco, Levy, Marcel, Nixon, & Osterheld).

**Innovative Instruction in Accounting Courses**

In accounting instruction, there is a great opportunity for innovation in instruction and student engagement. The use of technology in business education presents a medium for linking textbook concepts to “real world” accounting practices and competencies. Accounting professionals must be competent in utilizing technology to input, analyze, report, and communicate financial data. Accordingly, accounting education and career preparedness should include the use of software and web-based resources.

In recent years, several different accounting organizations have proposed frameworks for accounting competencies, with an emphasis on technology. In 2012, the American Accounting Association (AAA) and the American Institute of CPAs (AICPA) formed The Pathways Commission on Accounting Higher Education to develop pathways to enhance the accounting curricular model. One such objective was to “transform learning experiences to reflect current and emerging technologies” (Pathways Commission, 2012). The AICPA also has a Core Competency Framework that addresses accounting, business, and professional competencies. Technology is included as an accounting competency. Specifically, the AICPA identifies that accounting professionals should be able to “identify and utilize relevant technology and tools to analyze data” to perform assigned tasks effectively and efficiently (AICPA, 2018). Likewise the Institute of Management Accountants (IMA) also includes technology and analytics in the IMA Management Accounting Competency Framework, stating that accountants must keep pace with advances in technology (IMA, 2019).

Several relevant studies within the literature suggest positive student responses to the use of technology in business and accounting curricula. Accounting education becomes more engaging when traditional teaching methods are combined with student-centered approaches. Through this blended learning, students receive information in ways that they can understand and apply (Jaijairam, 2012). Evidence suggests that using Excel with a “web-enhanced instruction mode” is effective in business education (Peng, 2015). In addition, it is beneficial for students to concurrently develop these professional competencies while completing the accounting curriculum (Grimm & Blazovich, 2016).

In a 2012 study, student learning was compared between two sections of the same introductory accounting course – one in a traditional classroom setting, and one in a computerized classroom. Results indicated that students in the computerized classroom performed significantly higher on exams (Lusher, Huber, & Valencia, 2012). In a 2016 article, Grimm & Blazovich described an Excel-based financial statement analysis. Students applied course concepts to real company data by performing data analysis, calculating financial ratios, and applying analytical skills to compare financial statements. The assignment was consistent with the AICPA Core Competency Framework. In post-assignment surveys, students responded favorably regarding the integrated assignment and its supporting activities (Grimm & Blazovich, 2016). By actively participating in spreadsheet assignments, students remain more engaged and more firmly master the material (McCloskey & Bussom, 2013).

**Methodology**

The methodology used in this study is similar to that of the aforementioned study by Athavale, Davis, and Myring (2010) in which business school deans were surveyed about their perceptions of an integrated business curriculum. The results of their analysis were then presented in several corresponding tables. Similarly, students in this study were surveyed on their perceptions of the innovative nature of the Principles of Accounting course offered in the finance lab, an integrated curriculum endeavor in an AACSB accredited school of business. The survey was administered at the end of the semester, after the instructor implemented the following techniques to integrate collaborative activities into the course curriculum.

Throughout the Fall 2017 semester of the Principles of Accounting course taught in the finance lab, the instructor made periodic reference to the information displayed, including stock prices, market barometers (DJIA), as well as economic information and other information impacting stock prices. Also, the instructor stressed that the stock market (NYSE & NASDAQ) along with the averages (DJIA & S&P 500) serve as the trading arena for corporate stocks; corporate stock price data is provided through the trading arenas. As various topics and chapters of the course were covered, the instructor stressed that the net income (profits) provided by the income statement and the composition and mix of assets, liabilities, and equity from the balance sheet are major determinants of stock price and stockholder wealth.

The instructor also implemented chapter-specific Excel assignments using Morningstar financial data that allowed students to apply textbook concepts to actual company data. Selected student assignments and their purpose are shown in Table 1.

Table 1 – Selected Chapter-Specific Applied Assignments

|  |
| --- |
| **Chapter 4 – Completing the Accounting Cycle** |
| The student must choose a company to research in the Morningstar financial database. They must view the balance sheet of the company, and complete the Excel assignment. The Excel assignment requires the student to input the company’s name, industry, and financial period for analysis. The student must then input amounts for: current assets, non-current assets, current liabilities, non-current liabilities, and stockholders’ equity. The student must ensure that the sheet balances. Then, based on each of those classifications, the student must then input examples of each of those types of accounts, specific to the company’s balance sheet.  This gives the student additional familiarization with Morningstar and how to utilize the resource for financial statement analysis. It also provides a hands-on experience by demonstrating the types of accounts that are specific to the business that the student chose. |
| **Chapter 6 – Accounting for Merchandising** |
| The student selects two companies – a merchandising business and a service business. They must view and compare the balance sheets for the companies. They should analyze the differences in the accounts that appear on the balance sheets, primarily noting the Inventory account that appears on the balance sheet of a merchandising business. The student must then report the inventory balance of the merchandising company. The student must then view the income statement for the two companies, noting that the merchandising business has a Cost of Goods Sold account. The student must then report the cost of goods sold balance.  The exercise reinforces the basic financial statement structure. It also introduces the concept of comparing financial statements of different companies. Further, it demonstrates the distinction between the accounts used for a merchandising versus a service business. |
| **Chapter 7 - Inventories** |
| The student selects a merchandising business and view the balance sheet, noting the Inventory account. In order to further analyze the company’s reported inventory balance, the student views the 10-K report for the corresponding year. The student must then answer questions related to inventory:   1. What is the ending inventory balance for the period? 2. Where can you find additional information pertaining to inventories? (e.g., in which note to the financial statements?) 3. How is the cost of inventory determined?   This exercise has many benefits. First, it allows the student to see an actual 10-K document. It demonstrates how to navigate the document to find additional information and notes related to the financial statements. It also gives a visual representation of the inventory concepts learned in the chapter. |
| **Chapter 8 – Sarbanes-Oxley, Internal Control, and Cash** |
| The must select a company and view the 10-K for the most recent year. The student must then answer the following questions:   1. What agency requires the 10-K to be filed? 2. Who are the first three executives listed on the 10-K, and what are their titles? 3. What is a risk the company is facing? 4. Are there any legal proceedings? 5. Who is the company’s independent auditor? 6. Upon reading the audit report, locate the verbiage that answers the following to questions:    1. Regarding internal control, what is management’s responsibility?    2. What is the independent auditor’s responsibility   This exercise further familiarizes the student with reading a 10-K. The textbook discusses the 10-K and the audit report, but the activity gives the student “hands on” experience with locating information in the report. |
| **Additional Assignment – Financial Ratios** |
| This exercise should be done after the students learn how to manually calculate financial ratios, understand their meanings, and know how to interpret their analysis. The student should choose three companies. In an excel sheet, the student will complete the following chart:    This requires the student to locate the 4 ratios for each company. The student will then compare the ratios among the 3 companies, and answer the following questions:   1. Which company has the lowest debt to equity ratio, and why is this preferable? 2. Which company has the highest current ratio, and why is this preferable? 3. Which company has the highest inventory turnover ratio, and why is this preferable? 4. Which company has the highest accounts receivable turnover, and why is this preferable?   This activity teaches the student how to locate financial ratios on Morningstar. It also emphasizes critical thinking to apply textbook concepts to actual company data. |

After all coursework was completed, the instructor administered a two-part survey to the students in the course. The first part of the survey pertained to student perception of the finance lab environment. Students were asked to respond to the statements in Table 2. The responses were based on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).  
  
Table 2 – Part One of Survey Statements: Student Perception of the Finance Lab

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| --- |
| 1. I believe that taking ACC 200 in the Finance Lab provided me with an environment that increased my interest in the topics covered as compared to the course being taught in the traditional classroom. |
| 1. I believe that taking ACC 200 in the Finance Lab increased my understanding of financial accounting concepts and principles as compared to what it might have been if the course had been taught in the traditional classroom. |
| 1. I believe that taking ACC 200 in the Finance Lab enhanced my ability to apply material from the textbook more so than if the course had been taught in the traditional classroom. |
| 1. I believe that taking ACC 200 in the Finance Lab motivated me to work harder and learn the material covered more so than if the class had been taught in the traditional classroom. |
| 1. I believe that taking ACC 200 in the Finance Lab provided valuable hands-on classroom engagement that might not have been possible if the class had been taught in the traditional classroom. |
| 1. I believe that taking ACC 200 in the Finance Lab provided experience that will help me in my future career more so than if the course had been taught in the traditional classroom. |
| 1. I believe that taking ACC 200 in the Finance Lab helped me improve my grades in the course as compared to what might have been possible in the traditional classroom. |
| 1. I believe that taking ACC 200 in the Finance Lab made the material more interesting than it might have been if the course had been taught in the traditional classroom. |

The second part of the survey pertained to student perception of the applied assignments using Morningstar financial data. Students were asked to respond to the statements in Table 3. The responses were based on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Table 3 – Part Two of Survey Statements: Student Perception of Applied Assignments

|  |
| --- |
| 1. Completing assignments using Morningstar financial data improved my participation and engagement in the course. |
| 1. Completing assignments using Morningstar financial data made the course material more interesting. |
| 1. Completing assignments using Morningstar financial data improved my understanding of the concepts taught in the course. |
| 1. Completing assignments using Morningstar financial data enhanced my learning experience. |
| 1. Completing assignments using Morningstar financial data improved my ability to apply information from the textbook. |
| 1. Completing assignments using Morningstar financial data provided me with valuable hands-on experience. |
| 1. Completing assignments using Morningstar financial data improved my understanding of the accounts that appear on financial statements. |
| 1. Completing assignments using Morningstar financial data improved my understating of financial statement format. |
| 1. Completing assignments using Morningstar financial data improved my understanding of the annual 10-K report. |
| 1. Completing assignments using Morningstar financial data improved my understanding of financial ratios. |

**Results and Discussion**

A total of 25 students enrolled in ACC 200 Principles of Accounting course completed the survey. Half of the students were female; all were under 24 years of age; 14 were sophomores and 11 were juniors; and 23 were full-time students. The majority were business students for which the course is a requirement. There was no significant correlation between students’ grades and their responses to the survey statements.

The responses to the first part of the survey, regarding the Finance Lab environment, are tabulated in Table 4.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Table 4 – Student Responses – Student Perception of the Finance Lab | Strongly Agree | Somewhat Agree | Neutral/No Opinion | Somewhat Disagree | Strongly Disagree |
| Provided me with an environment that increased my interest in the topics covered | 20 | 4 | 1 | 0 | 0 |
| Increased my understanding of financial accounting concepts and principles | 20 | 5 | 0 | 0 | 0 |
| Enhanced my ability to apply material from the textbook | 19 | 4 | 2 | 0 | 0 |
| Motivated me to work harder and learn the material covered | 18 | 3 | 4 | 0 | 0 |
| Provided valuable hands-on classroom engagement | 18 | 6 | 0 | 1 | 0 |
| Provided experience that will help me in my future career | 18 | 5 | 2 | 0 | 0 |
| Helped me improve my grades in the course | 18 | 4 | 3 | 0 | 0 |
| Made the material more interesting | 22 | 2 | 1 | 0 | 0 |

According to the survey responses, 88% of students strongly agreed that the finance lab finance lab provided an environment that increased interest in the course topics and increased understanding of financial accounting concepts and principles. The finance lab improved the ability to apply material from the textbook for 76% of the students surveyed. Seventy-two percent of students strongly agreed that the Finance Lab motivated them to work harder, improved their grades, and provided valuable hands-on application that will help in their future career.

The responses to the second part of the survey, regarding the applied Morningstar assignments, are tabulated in Table 5.

Table 5 – Student Responses – Student Perception of Applied Assignments

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Strongly Agree | Somewhat Agree | Neutral/No Opinion | Somewhat Disagree | Strongly Disagree |
| Improved my participation and engagement in the course | 18 | 7 | 0 | 0 | 0 |
| Made the course material more interesting | 22 | 3 | 0 | 0 | 0 |
| Improved my understanding of the concepts taught in the course | 17 | 6 | 2 | 0 | 0 |
| Enhanced my learning experience | 18 | 7 | 0 | 0 | 0 |
| Improved my ability to apply information from the textbook | 16 | 7 | 2 | 0 | 0 |
| Provided me with valuable hands-on experience | 21 | 3 | 1 | 0 | 0 |
| Improved my understanding of the accounts that appear on financial statements | 21 | 4 | 0 | 0 | 0 |
| Improved my understating of financial statement format | 21 | 4 | 0 | 0 | 0 |
| Improved my understanding of the annual 10-K report | 17 | 2 | 5 | 1 | 0 |
| Improved my understanding of financial ratios | 18 | 6 | 1 | 0 | 0 |

According to the survey responses, 88% of students strongly agreed that the Morningstar applied assignments made the course material more interesting. Eighty-four percent of students strongly agreed that the applied assignments provided valuable hands-on experience and improved understanding of financial statement accounts and format. The applied assignments improved participation and engagement, as well as enhanced the learning experience, for all students surveyed. Seventy-two percent of students strongly agreed that the assignments improved their understanding of financial ratios, while 68% of students strongly agreed that they were better able to understand the annual 10-K report.

The survey instrument also allowed for additional student comments. Students provided the following responses:

* *“I like the atmosphere the room supplied. It made accounting more interesting and kept the class fun.”*
* *“Taking ACC 200 in the Finance Lab has greatly improved my understanding of Accounting.”*
* *“This course was different than the first time I took ACC 200 because we had more hands on examples. The technology in the finance lab was great when it came to seeing the problems work, etc.”*
* *“Using Morningstar helped to improve my understanding of the financial statements.”*
* *“Morningstar was good for hands on experience and helped me understand and apply what I learned in class to the real world.”*

In addition to the survey that was administered, course evaluations were compared for two sections of the ACC 200 course taught by this instructor – a section taught in Spring 2017 in a traditional format, and the section taught in Fall 2017 in the finance lab. The evaluation asked students to respond to several statements using a 5-point Likert scale ranging from “All the time” to “Never.” Two statements on the evaluation were of particular relevance to this study.

The first statement of particular relevance stated, “The instructor used technology when appropriate to increase student learning.” The responses to this statement are valuable because of the use of new technology in the active learning format. In the traditional format, 92.6% of the students responded that technology use was appropriate either all the time or the majority of the time. In the course taught in the finance lab, that value increased to 100%.

The second statement of particular relevance stated, “The course included a variety of teaching methods that helped me stay focused on the course throughout class sessions.” The responses to this statement are valuable because of the hands-on nature of the newly introduced applied assignments. In the traditional format, 81.48% of the students responded that the course included a variety of teaching methods either all the time or the majority of the time. In the course taught in the finance lab, that value increased to 95.23%. In addition, a student provided the following comment, “We used real examples of balance sheets and income statements instead of just reading from the book.”

The responses to the statements in the university-administered evaluation are consistent with the data collected from the instructor-administered survey. Student perceptions of the finance lab and the Morningstar applied assignments are, therefore, relevant to the overall course evaluation. The research herein is important to influence university support and funding for the use of finance labs in business curriculum.

**Limitation of the Study**

One limitation of the study is that only one semester of data was collected and tabulated. The initial intent of the study was to collect data for several semesters. However, on March 19, 2018, while students were away from campus on Spring Break, an F-3 tornado tore through the campus of Jacksonville State University and the small town of Jacksonville, Alabama. The Merrill Building, which housed the School of Business & Industry and thus the finance lab, was destroyed. Merrill Building, over a year later, still stands and is waiting for issues to be worked out to demolish the building and in its place erect a new building to house the University’s School of Business & Industry. Once the new facility is up and running, the intent is to continue with this experiment.

**Conclusion**

In university schools of business, finance labs are proving to be a beneficial addition to business education. Through electronic displays of global market information and access to real-time data, students engage in hands-on learning and real-world experience. Consistent with the research of Stewart, Houghton, and Rogers (2012), this study found that the “integrative instructional design” of the finance lab increased student interest in the topics covered. However, finance labs are not exclusively beneficial to finance courses, as this study determined. Finance labs provide the opportunity for innovation and impact, as well as an interdisciplinary approach to business education, research, and collaboration. Consistent with AACSB International Accreditation Standards, modifications to the Principles of Accounting course represented an innovative and collaborative endeavor.

Through fostering an active classroom structure in the finance lab with the use of the Morningstar applied assignments, students in this study reported many positive outcomes. Students noted improved participation and engagement, increased understanding, and valuable application of hands-on course concepts. Many students perceived the innovative course structure to be more efficient and effective than a traditional lecture course. This is consistent with the research of Lambert, Tant, and Watson (2008), who found that students believed the learning experience was improved by concept application and collaborative learning in a dealing room. The students in the present study noted that the active classroom structure provided experience that would help them in their future careers. This exemplifies the mission of the Pathways Commission to align learning experiences with emerging technologies, thus enhancing the quality of accounting education.

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