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Improving Financial Information Literacy in Introduction to Financial Accounting

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ABSTRACT

The motivation for this study came from a desire to improve teaching of the use of accounting information for decision making. The information literacy standards and related performance indicators guided the development of a semester-long case study by accounting faculty and academic business librarians. Their collaboration yielded a series of instruction modules and related student exercises leading up to a group activity involving the evaluation of a company as a potential investment for retirement savings. Students enrolled in two sections of an introductory accounting course volunteered to participate in this study. They provided information about their knowledge before and after all of the activities using a repeated measures research design involving pre-test and post-test questionnaires. The results of the study suggest significant improvements in financial information literacy upon completion of the case study.

Introduction

The American Institute of Certified Public Accountants (AICPA) has been a leader in efforts by the private sector to develop programs aimed at achieving financial literacy. Initiatives such as “360 Degrees of Financial Literacy” and “Feed the Pig” are designed to encourage the American public to effectively manage their personal finances (AICPA, 2007). The success of these programs remains in question as the number of individual bankruptcies soars (Cory and Pickard, 2008). At the same time, the United States (U.S.) Government Accountability Office (GAO) emphasized the growing importance of financial literacy in their report on the progress of the Financial Literacy and Education Commission (Commission). One reason is that “workers today are increasingly responsible for managing their own retirement savings” (GAO, 2007, p. 1).
Therefore, an even greater crisis may be looming in the future as the burden of providing sufficient income during their retirement years falls on individual citizens. Throughout this decade, information literacy has been a priority of the American Library Association (ALA). In 2000, the board of directors of the Association of College and Research Libraries (ACRL), a division of the ALA, approved the information literacy competency standards. The standards provide “a framework for assessing the information literacy of students” and address five levels of proficiency (ACRL, 2000, p. 3). Specifically, the standards for information literacy encompass the capacity to recognize the need for information, the ability to retrieve relevant information, the competency to evaluate the quality of the information, the skill to use the information effectively, and the understanding of the ethical implications of information retrieval and application.

This paper discusses a pedagogical research project designed to measure the effects of a collaboration between accounting faculty and academic business librarians to improve financial information literacy of students. The information literacy standards and related performance indicators are developed to provide a framework necessary to craft an interrelated sequence of instruction activities and associated exercises where introductory accounting students apply the knowledge and skills gained through the exercises. The primary focus is evidence of learning activities, designed to measure the achievement of specific learning objectives. The end result was the development of “information literacy standards and the related performance indicators for each of the standards. In this way, the outcomes of learning activities, designed to measure the achievement of a specific standard, can be assessed. The ACRL believes that ‘both higher order and lower order’ thinking skills, based on Bloom’s Taxonomy of Educational Objectives, are evident throughout the outcomes…[and they emphasize] that assessment methods appropriate to the thinking skills associated with each outcome be identified as an integral part of the institution’s implementation plan” (ACRL, 2004, p. 3).

Table 1 lists ACRL's five information literacy competency standards and the related performance indicators. Several studies have recommended a separate university course to introduce students to available library resources (Sharkey, 2006; Goebel and Neff, 2008). Simon (2009, p. 252) refers to a study by Calley et al., 1977; Alfino, Pajer, Pierce, and Jenkins, 2008; Sult and Mills, 2006). Academic librarians have also emphasized the importance of “a course-specific collaborative approach to incorporating IL/BIL” (Information Literacy, ‘Business Information Literacy) into individual classroom settings” (Simon, 2009, p. 252). In summary, the review of the literature suggests no clear consensus for information literacy instruction. Faculty and academic librarians have struggled to find the correct balance of lecture, course-integrated, and credit-bearing information literacy instruction to meet the needs of faculty and students. The structure of information literacy instruction for this research project is consistent with Zabel (2004) where “it must be integrated, relevant, ongoing, collaborative, and applied” to be successful (p. 20).

Information Literacy

The development of the information literacy (IL) competency standards for higher education followed the efforts by the American Association of School Librarians Task Force on Information Literacy Standards to improve information literacy at the elementary and secondary education levels. The end result was the development of “a continuum of expectations... for students at all levels” (ACRL, 2008, p. 3). In addition, the ACRL detailed multiple performance indicators for each of the standards. In this way, the outcomes of learning activities, designed to measure the achievement of specific standards, can be assessed. The ACRL believes that “both higher order and lower order” thinking skills, based on Bloom’s Taxonomy of Educational Objectives, are evident throughout the outcomes...and they emphasize that assessment methods appropriate to the thinking skills associated with each outcome be identified as an integral part of the institution’s implementation plan” (ACRL, 2004, p. 3).

Background

Financial Literacy

As part of the Fair and Accurate Credit Transactions Act of 2003, the Financial Literacy and Education Improvement Act (Financial Literacy Act) established the Commission under Title V (U.S. Department of Treasury, 2009). The purpose of the Financial Literacy Act is “to improve financial literacy and education of persons in the United States” to ensure that people are able to manage their own money wisely including their retirement savings (U.S. Department of Treasury, 2009). An important aspect of this management is the ability to effectively invest these funds in various financial instruments including those offered by business enterprises.

The responsibility of individuals to provide for their own retirement has become increasingly important over the past twenty-five years. With Social Security on the road to insolvency (Far- nam, May 13, 2009), the steady and dramatic decline of single-employer defined benefit pension plans necessitates an effective retirement investment strategy by each individual. (Pension Benefit Guaranty Corporation, 2009). In defined benefit pension plans, employees promise to pay specific monthly benefits to participants during retirement so the burden of accumulating sufficient funds to satisfy the projected retirement benefits is the employee’s. Many defined benefit defined plans have been replaced with defined contribution plans where employees contribute specific amounts to pension plans with no guarantee of benefits to be received by participants during retirement. In many defined contribution plans, employees make investment decisions for their retirement account funds that were historically left to plan sponsors in defined benefit plans.

Research aimed at measuring and assessing the benefits of financial literacy programs has been plagued by the “primary challenge [of] defining and quantifying ‘success’” (Beanstein and Welch, 2002, p. 449). The authors go on to suggest that the best measures of effective programs are when the program results can be compared with specific outcome measures based on an established goal. The information literacy standards and their related performance indicators outcomes formed the basis for the development of the instruction and various exercises for this project, designed to enhance financial information literacy.

A study on computer usage in the finance curriculum suggests that various databases can be included in classroom student exercises. Clines- bell & Clinesbell (1995) surveyed finance department of U.S. colleges and universities and found that fifteen percent of respondents included databases in their introductory finance courses (p. 135). Information literacy questions in this study addressed the use of databases for company and industry analysis.

Therefore, an even greater crisis may be looming in the future as the burden of providing sufficient income during their retirement years falls on individual citizens.
In the context of this introduction to accounting course, three overarching objectives of the class are articulated in the course syllabus. Students should be able to:

- Analyze and interpret the accounting information of business enterprises for making decisions about the three primary activities: 1) operating, 2) investing, and 3) financing.
- Describe the components of the four required financial statements and their interrelationships in the annual report of an enterprise. The four statements are the: 1) Income Statement, 2) Balance Sheet, 3) Statement of Retained Earnings, and 3) Statement of Cash Flows.
- Analyze the annual report of business enterprises in order to assess their performance for decision-making and to identify their major strengths and weaknesses.

Accounting education must be proactive in adopting methods to improve decision-making capability. Having the proper information as well as interpreting that information correctly is essential to accomplishing this purpose. One cannot form appropriate conclusions about business activities and effectively communicate these conclusions to others unless one possesses the information literacy skill set to acquire high quality and relevant information. Therefore, the "call for changes in accounting education to better teach these [critical thinking and continuous learning] skills is congruent with goals of business librarians to teach information literacy skills in disciplines such as accounting" (Cunningham and Anderson, 2005, p. 4).

Past studies have also shown the effectiveness of collaborative teaching efforts for information literacy training. Murphy & Hoepner (2002) found that the combined efforts of an accounting educator and librarian helped with student preparation for class projects in an intermediate financial accounting course. Jackson & Durkee (2008) also utilized a collaborative approach that had a positive impact on information literacy skills of students in an international accounting course. Still, collaboration between accounting educators and librarians could be further explored. Cooney (2005), in a survey on business information literacy instruction, found that most efforts were directed to graduate students or upper-level undergraduates. Cooney concluded that "[p]erhaps the greatest challenges to collaboration are engaging the interest of faculty who have not collaborated in the past, and enlarging upon the collaborative efforts already in place." (p. 18).

### Methods

In order to determine whether there were improvements in students’ financial information literacy, a repeated measures research design was used involving a pre-test and a post-test. The primary interest is whether there was a significant shift to greater knowledge as demonstrated by the selection of the correct response after all instruction and related classroom/ homework activities were completed. The nonparametric sign test was used to test the significance of the post-pre differences (Siegel and Castellan, 1988). The exact upper-tail p-values were computed using a binomial distribution calculation.

### Participants

Sixty-two students enrolled in two sections of an introduction to financial accounting course in a Midwestern University volunteered to participate in this study. The participants included in their chosen majors including liberal arts, education, pharmacy, fine arts, and business even though the majority indicated that they were interested in business. Both sections were taught by the same professor and a script was used for instruction to eliminate differences associated with section. The responses from fifty-four of the participants were used to analyze the data; the difference between the number of volunteers and usable responses is attributable to two factors, withdrawals from the course (four students) and failure to take the post-test (four students).
Instruction and Student Activities

Two categories of instruction were provided to students over the course of the semester in between the completion of the pre-test and post-test questionnaires. The first category involved the classroom discussions of financial accounting at the introductory level including financial statements and their analysis. The second category of instruction emphasized the effective use of library resources and the ethical use of information. This latter training was divided into three modules. After each training session, students were assigned classroom or homework assignments in order to immediately reinforce the knowledge conveyed in the instruction and ultimately to permit an evaluation of a company as a potential investment (Bloom, 1996). The critical point to note here is that the information gathered on the questionnaires was taught in an applied setting where students actually used the information to evaluate a potential investment in a real company rather than simply parroting the information they were told in accounting lecture or in the library instruction. Refer to Appendix A for an outline of the sequence of instruction and student activities. The training and student exercises were developed to address a specific information literacy standard and performance indicator and embedded in a course involving collaborations between business faculty and librarians. The analysis and discussion in this paper is limited to the first category where the instruction of information literacy concepts. Table 2 presents a summary of the findings where significance was found for each question and for all five questions overall. The first question asked about a potential investor's considerations of a company's current financial condition to its industry and/or its own financial history in evaluating a potential investment in a company. On the Pre-Test, a sole participant indicated "I don't know," and a surprisingly high percentage of students (79.63%) indicated correctly that both industry and the company's own past financial performance would be relevant to this decision. Students were required to provide at least three years of historical company financial ratios as well as industry ratios in connection with the group project of the case study. Almost all students selected the correct response on the Post-Test; the frequency of respondents choosing the correct response on the Post-Test was 96.3%. The sign test showed significance (p<.0020) suggesting a significant improvement in students' knowledge of information useful in evaluating a potential investment in a company. The second question addressed specific knowledge of common-size financial statements. The researchers' expectations were realized by the Pre-Test results. The results showed that the majority of students (53.7%) responded "I don't know" and that only two participants (3.7%) selected the correct response on the Post-Test. Therefore, the majority of participants admitted that they did not have knowledge of common-size financial statements at the beginning of the course. Excel-based common-size income statements and balance sheets were generated and submitted by each group as part of the group project portion of the case study. There was no requirement, however, that each student prepare his/her own set of common-size financial statements. On the Post-Test, the correct answer was associated with the highest frequency of responses (61.11%) and the sign test was also significant (p<.0001). These results suggest a significant improvement in knowledge of common-size financial statements at the end of the course. They also encourage faculty to require all students to apply their common-size financial statements through individual student preparation in order to enhance learning effectiveness.

The third question asked about the U.S. Securities and Exchange Commission database which is available to the public without an access charge. The Pre-Test, 74.14% indicated the correct response and 55.56% indicated "I don't know" the name of the EDGAR database. The first library instruction module discussed this database and student responses showed that students used the EDGAR database in their search log in connection with the second library instruction session. In addition, students used EDGAR for their group project concept of financial information in the company's Form 10-K for their evaluation of the potential investment. The histogram for the Post-Test results showed the selection of the correct response with a frequency of 85, low sign test value (p<.0001) and significance (p<.0001) consistent with this evidence. Similar results were found in the data on the fourth question inquiring about the database which allows a user to search for information using a company's ticker symbol. The correct responses accounted for 75 and 57.41% of respondents indicated "I don't know" on the Pre-Test. The ticker symbol was introduced in the first library training module. Students were likely to use a company's ticker symbol in their search log even though a student could perform some of their search activities using the company's name or other identifiers. They may also have used the company's ticker symbol in their investigation activities for the group project.
Table 2: Frequencies and Significance Findings

<table>
<thead>
<tr>
<th>In evaluating an investment in a company, a potential investor should make comparisons of the company's current financial condition to:</th>
<th>Pre/Test</th>
<th>Post/Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. its industry.</td>
<td>8</td>
<td>14.81</td>
</tr>
<tr>
<td>B. its own financial history.</td>
<td>2</td>
<td>3.70</td>
</tr>
<tr>
<td>C. Both A and B are true.</td>
<td>43</td>
<td>79.63</td>
</tr>
<tr>
<td>D. None of the above.</td>
<td>1</td>
<td>1.85</td>
</tr>
<tr>
<td>E. I don’t know.</td>
<td>1</td>
<td>1.85</td>
</tr>
<tr>
<td>Significance: p&lt;.0001</td>
<td>54</td>
<td>100</td>
</tr>
</tbody>
</table>

- **Common-size financial statements involve:**
  - A. Investigating financial statements of companies with similar total asset size.  
    - 13 respondents selected this option.
  - B. Converting financial statement dollar values into percentages.  
    - 13 respondents selected this option.
  - C. Evaluating financial statements of companies all in the same industry.  
    - 9 respondents selected this option.
  - D. None of the above.  
    - 1 respondent selected this option.
  - E. I don’t know.  
    - 29 respondents selected this option.
  - Significance: p<.0001
  - The U.S. Securities & Exchange Commission provides free access to a database of company filings with this agency. What is the name of this database?  
    - A. SECFORMS  
      - 9 respondents selected this option.
    - B. GOVDOCS  
      - 13 respondents selected this option.
    - C. GASB  
      - 11 respondents selected this option.
    - D. EDGAR  
      - 4 respondents selected this option.
    - E. I don’t know.  
      - 30 respondents selected this option.
  - Significance: p<.0001
  - Which database allows you to search for information using a company's ticker symbol?  
    - A. Market Insight  
      - 5 respondents selected this option.
    - B. Mergent Online  
      - 2 respondents selected this option.
    - C. Business & Company Resource Center  
      - 2 respondents selected this option.
    - D. All of the above.  
      - 14 respondents selected this option.
    - E. I don’t know.  
      - 31 respondents selected this option.
  - Significance: p<.0001

**Future Research**

Several avenues are anticipated for future research. Data has been collected and has yet to be analyzed regarding differences in financial information literacy related to the demographic characteristics of the participants. Chen & Volpe’s (1998) research findings suggest significant differences may exist based on gender and major. Their study found evidence that female subjects tended to be less knowledgeable than their male counterparts about financial matters including investments and that business majors were more knowledgeable about personal finance than non-business students.

In addition, some questions on the pre-test and post-test questionnaires that have not been discussed in this paper, address specific concepts and resources that were taught to some of the business students in an earlier course. The investigation of significant differences on these questions between the trained and untrained participants is important from a pedagogical perspective to see if information literacy skills can be learned and utilized in subsequent coursework. Further, an analysis of students’ perceptions of the helpfulness and desirability of instruction and collaborations between accounting faculty and academic business librarians could be performed. Such evidence may lead to increased use of these interactions in the future.

It would be interesting to research potential differences in student learning by comparing classes with an embedded librarian similar to this study with classes where a librarian visits the classes for the standard “one-shot” instruction session. In this way, research into learning effectiveness of a particular instruction methodology could be assessed. Finally, it is important to study the impact of collaborative teaching efforts between faculty and librarians on students’ financial information literacy in other course settings and with other subjects.

**Summary and Conclusions**

This study investigated whether collaborative efforts between accounting faculty and academic business librarians could have significant positive effects on financial information literacy of students in an introduction to accounting course. The information literacy standards and related performance indicators of a proposed development of a semester-long case study entailing a progression of instruction and student activities integrated into the course design. The results of this study provide some evidence that significant improvements in financial information literacy can be achieved, thereby encouraging faculty and librarians to develop opportunities to pool their collective talents and expertise for the benefit of students.

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**Note:** The correct responses are in bold print.
References


Implying Financial Information Literacy in Introduction to Financial Accounting
Appendix A
Outline of the Sequence of Instruction and Student Activities

Scenario One (applicable to Activities One through Four done on an individual basis):

Last year, you established a retirement savings account and this year, you are interested in selecting several public companies in which to invest. A good friend of yours has suggested that a great potential investment is (Public Company’s Name). Therefore, you want to thoroughly investigate (Public Company’s Name) before you invest any of your money in this company.

I. Information Literacy Standard One: The information literate student determines the nature and extent of the information needed.

A. Performance Indicators for Standard One Relevant to Activity One:
1. Students define and articulate the need for information.
2. Students identify a variety of types and formats of potential sources for information.

B. Activity One:
Exercise 1: Determine the nature and extent of information needed.

Homework Questions – Prepare a word-processed response to each of the following questions. Bring two copies of this homework to class and one copy will be turned in before the beginning of class.

1. Do you need information to accomplish this task? (Yes or No)
If so, what specific information do you need? If not, why not?
If so, what types and formats of potential sources of information do you need?

C. Classroom Discussion of Activity One (Led by Accounting Instructor)

Instruction Module One: Library Training on Available Library and Online Resources – Students are instructed about resources available online and through the University’s library including databases and print materials. Laptops are made available to students so that they can pursue these resources while the instruction is ongoing.

II. Information Literacy Standard One: The information literate student determines the nature and extent of the information needed.

A. Performance Indicators for Standard One Relevant to Activity Two:
3. Students consider the costs and benefits of acquiring the needed information.
4. Students reevaluate the nature and extent of the information needed.

B. Activity Two:
Exercise 2: You received library training on the resources available through the University’s library and online in order to assist you in investigating (Public Company’s Name).

Homework Assignment – Prepare a word-processed response for each of the following requirements.

1. In Exercise 1, students specified the types of information necessary to make good investment decisions about (Public Company’s Name) which included the following:
   a. financial history
   b. ratio analysis
   c. stock price history and dividend trends
   d. future plans
   e. global market considerations
   f. economic and political environment
   g. comparisons with competitors and industry performance
   h. others
   
   Briefly discuss the costs and benefits of acquiring each type of information.

2. In a separate paragraph, describe how you might want to change the types and formats of potential sources of information from your original thoughts based on the library training you received for the project.

C. Classroom Discussion of Activity Two (Led by Accounting Instructor)

III. Information Literacy Standard Two: The information literate student accesses needed information effectively and efficiently.

A. Performance Indicators for Standard Two Relevant to Activity Three:
1. Students select the most appropriate investigative methods or information retrieval systems for accessing the needed information.
2. Students construct and implement effectively-designed search strategies.
3. Students retrieve information online or in person using a variety of methods.
4. Students refine the search strategy if necessary.
5. Students extract, record, and manage the information and its sources.
IV. Information Literacy Standard Three: The information literate student evaluates information and its success critically and incorporates selected information into his or her knowledge base.

A. Performance Indicators for Standard Three Relevant to Activity Four:
1. Students summarize the main ideas to be extracted from the information gathered.
2. Students articulate and apply initial criteria for evaluating both the information and its sources.
3. Students synthesize main ideas to construct new concepts.
4. Students compare new knowledge with prior knowledge to determine the value added, contradictions, or other unique characteristics of the information.
5. Students determine whether the new knowledge has an impact on the individual’s value system and takes steps to reconcile differences.
6. Students validate understanding and interpretation of the information through discourse with other individual, subject-area experts, and/or practitioners.

B. Activity Four:
Exercise 4: Now that you have been able to access information on (Public Company’s Name) and its industry, you should be able to evaluate information and its source critically. Conduct a search on Google using the keywords “soft drink industry” or “beverage industry.” From your search output, select one link to evaluate using the criteria listed in the “Evaluating Sources” handout.

Homework Assignment – Prepare a word-processed or an Excel-based response for each of the following requirements.

Requirement 1: Using the “Evaluating Sources” handout as your guide, answer the three questions for each of the criteria (Source, Currency, Scope, Content).

Requirement 2: Based on your evaluation, decide whether or not you believe the source is credible. Explain why or why not.

Instruction Module Three: Library Training on Proper Citations and Plagiarism – A PowerPoint Presentation is prepared and used in the third library training session. Students are also provided information for the group activity including background information, assignment instructions along with the minimum ratio analysis required for satisfactory completion of the project, and the method of evaluation. Several library guides are made available to students through the library website including a Library Tip Sheet specifically designed for this group project as well as citation guides.

Scenario Two (applicable to Activities Five through Seven done in groups of 3-4 students):
Last year, you established a retirement savings account and this year, you are interested in selecting several public companies in which to invest. You have investigated information about (Public Company’s Name). Now, you are going to use this experience to investigate another company as a potential investment.

V. Information Literacy Standard Four: The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.

A. Performance Indicators for Standard Four Relevant to Activity Five:
1. Students apply new and prior knowledge to the planning and creation of a particular product or performance.
2. Students revise the development process for the product or performance.
3. Students communicate the product or performance effectively to others.

B. Activity Five:
Exercise 5: Download information on your company and industry in order to: (1) gain an understanding of the past, present, and future; (2) perform detailed financial analysis of the company on Excel that must include a common-size balance sheet and income statement and ratio analysis for the most recent three years; and (3) assess the current state of the industry in relation to the company including industry ratio data on Excel for the most recent year.

Deliverable: Generate Excel worksheets to be turned in the day of your group presentation.
VI. Information Literacy Standard Five: The information literate student understands many of the economic, legal and social issues surrounding the use of information and accesses and uses information ethically and legally.

A. Performance Indicators for Standard Five Relevant to Activity Six:

1. Students understand many of the ethical, legal and socioeconomic issues surrounding information and information technology.

2. Students follow laws, regulations, institutional policies, and etiquette related to access and use of information resources.

3. Students acknowledge the use of information sources communicating the product or performance.

B. Activity Six:

Exercise 6: Prepare a PowerPoint Presentation with your group discussing the desirability of investing in this company, short- and/or long-term. In this context, assess the financial health of your company and your company’s industry.

Deliverable: Create a PowerPoint Presentation with appropriate citations to share your findings with the rest of the class.

C. Activity Seven: Complete a group member evaluation and evaluate the group project as a learning experience.