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## Article information:

**To cite this document:** George Joseph Asha George Sherre Strickland . "Perspectives on Information Literacy in the Accounting Curriculum" *In* Advances in Accounting Education: Teaching and Curriculum Innovations. Published online: 13 Jan 2015; 89-111.
Permanent link to this document:
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# PERSPECTIVES ON INFORMATION LITERACY IN THE ACCOUNTING CURRICULUM

George Joseph, Asha George and Sherre Strickland


## ABSTRACT

Purpose – *Explore perceptions of the importance of information literacy among different stakeholders, and gain a better understanding of its role in the accounting curriculum.*

Methodology/approach – *Literature review, stakeholder surveys, and written feedback.*

Findings – *The perceptions of academics, employers, and alumni uniformly highlighted the importance of information literacy for continuous learning in an evolving environment. The feedback included open-ended questions where the alumni emphasized the importance of the area over the different stages of their careers. While there may be differences in perspectives of academics and employers/alumni on information literacy, with the latter more likely to hold a pragmatic perspective related to career advancement, the overall consensus highlights the need for a systematic approach to the area. Student feedback suggested that the learning process occurred over stages in the college curriculum. Overall, the results of this exploratory study indicate the value of planning*


**Advances in Accounting Education: Teaching and Curriculum Innovations, Volume 16, 89–111**
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**ISSN: 1085-4622/doi:10.1108/S1085-462220150000016005**

*the course curriculum systematically to enable students to develop information literacy skills incrementally and in relation to their specific areas of specialization.*

Practical implications – *Highlights the value of information literacy in deeper and lifelong learning.*

Social implications – *Students are better equipped for continuous learning to meet the challenges of changing environment.*

Originality/value – *Although information literacy is an important pedagogic area, accounting academic research does not appear to have addressed its implications for student learning.*

**Keywords:** Information literacy; course curriculum; accounting; evaluation

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## INTRODUCTION

The explosion of knowledge and information is a widely recognized phenomenon affecting accounting as well as most other specialized professions. This knowledge explosion, resulting from the growth of specialized and professional publications and growing lists of databases and online search engines, increases the demands on professionals in the information age. There is now the increased need to make sense of this growth, or to become "literate" in utilizing such information. Information literacy has been described as the "set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (ALA, 1989).

This paper explores the role of information literacy as part of a university-wide effort to emphasize the importance of information literacy in the classroom. To provide a basic framework for integrating information literacy into the accounting curriculum, we developed a simple framework that included formative and summative aspects of evaluation (Shaftel & Shaftel, 2007). We designed the formative evaluation to develop the underlying goals and objectives of the curriculum through stakeholder feedback, whereas the summative evaluation assesses student learning outcomes and makes provisions for improvement. While most assessment reports and accreditation efforts focus attention on the summative aspect of evaluation, it is through the formative segment that we developed and communicated pedagogic content. We vetted the basic information literacy processes

through the stakeholder feedback to determine their validity. Stakeholders such as alumni, employers, and faculty have insights that could be useful for developing and/or authenticating aspects of the curriculum, both from pedagogic and practitioner orientations. Thus, we generated surveys to acquire stakeholder feedback to examine the congruity and diversity of opinions with respect to the relevance of information literacy from both formative and summative perspectives. We surveyed the stakeholders, including employers, alumni, faculty, and students and analyzed responses in relation to the two perspectives. Overall, the responses from faculty, alumni, and employers indicated that the three stakeholder groups found all information literacy skills important, with particular emphasis on communicating, problem solving skills, and problem identification. The individual narratives based on their job experiences (particularly that of the alumni) added further insights into the results.

Further, we included a summative component (a student assignment on information literacy) and student surveys to elicit information on courses in the curriculum and to extend understanding of integrated information literacy aspects from the student perspective. Student feedback suggested that information literacy skills developed over stages and during a variety of courses that emphasized different components of information literacy. Thus, regarding the curriculum, it may be prudent to see the information literacy components developed and assimilated incrementally through different courses during the student curriculum life cycle.[1] This approach would also enable students to better appreciate the interrelatedness of course content in liberal arts courses (which emphasize information literacy skills) with courses in their major. Specifically, they will be better prepared to integrate and assimilate key discipline-specific and career-related components of information literacy, such as selecting resources (journals, articles, etc.) for reliability, information adequacy, currency, and content, as they begin courses in the major.

New initiatives described as "21st century skills" (Pellegrino & Hilton, 2012) define the set of key skills with labels such as "deeper learning," "college and career readiness," "student-centered learning," "next generation learning," and "higher-order thinking." These labels are typically cognitive in nature, and emphasize competencies such critical thinking and information literacy. Additionally, information literacy becomes an important component for "deeper learning" which is intended to develop the individual expertise in a particular domain of knowledge and/or performance (Pellegrino & Hilton, 2012). The accounting profession has also emphasized the information literacy skillset. The 1998 Vision Report of the American Institute of Certified Public Accountants [AICPA] articulated a

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need for "continuing education and lifelong learning" (AICPA, 1998). The Accounting Education Change Commission was more specific about the need for accounting students to be information literate, specifically having the ability "to locate, obtain, organize, report and use information from human, print and electronic sources" (Jackson & Durkee, 2008). However, recent research has also questioned the adequacy of preparedness of students for the global economy, particularly in the areas of writing, complex reasoning, and communication skills (Arum & Roksa, 2011), all components of information literacy.

The next section expands on the concept of information literacy and provides a basis for evaluating information literacy using formative and summative forms from a stakeholder-based perspective. The section "Stakeholder Feedback and Analysis" provides the analysis, including information on surveys as well as the student project. The final section of the paper discusses the implications of the results and provides conclusions.

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## INFORMATION LITERACY AND PROGRAM EVALUATION FRAMEWORK

A review of the definitions of information literacy (e.g., Accounting Education Change Commission (AECC), Association of College and Research Libraries [ACRL], 2000) leads to the components of information literacy presented in Fig. 1. The goals of information literacy therefore,

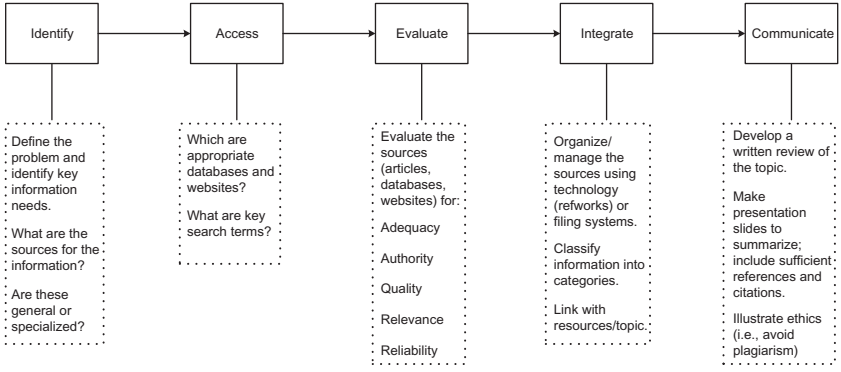


*Fig. 1.* Process Diagram for Information Literacy.

begin with understanding problems and the nature of information required to address these problems. The succeeding stages include determining the sources of such information, and evaluating the sources to determine whether they meet the criteria that make them adequate for the goals of problem solving. The final stages include integrating the information into a form that addresses the problem and communicating the solution. These aspects permeate all disciplines, including accounting, with some variations on the emphasis on specific aspects based on the desired outcomes, which normally consist of some forms of self-learning, whether at the professional or independent level. Accountants have also increasingly acknowledged the importance of information literacy, particularly given the growing rules, regulations, and litigation (e.g., Jackson & Durkee, 2008). Studies in the area have focused on specific aspects such as use of technology and library resources in financial accounting courses (Murphy & Hoeppner, 2002) or use of assignments such as case studies to highlight the value of information, locating and retrieving information sources, and the importance of effective search strategies (Jackson & Durkee, 2008).

At its core, accounting education prepares students to be professionals and equips professionals to be effective contributors to society. What we teach has often evolved from the past (historical), through new advances in the field, and professional goals. Yet, success in the social context also depends on the effectiveness of the individual after entering the work world, and their continued ability to learn. In a world where information continues to grow exponentially, such preparation also involves considering the implications of obsolescence of information, and the need for continued and lifelong learning. In this environment, educators need to integrate aspects of information literacy into the pedagogical framework to prepare students for a diverse workplace, where knowledge and practices continue to evolve.

This paper seeks to understand information literacy from a broader pedagogical perspective that integrates overall processes in curriculum development as indicated through program evaluation.[2] We used a simple framework that includes two aspects, namely, formative and summative assessment. Formative evaluation according to Shaftel and Shaftel (2007) guides the selection of instructional methods and curricular materials to enhance learning or fill gaps in knowledge. The goal is to guide and improve instruction. Summative evaluation occurs at the end of a learning unit and presents conclusions about student learning. The information is used to make judgments about program adoption, continuation, or expansion (Shaftel & Shaftel, 2007). The summative stages include assessing outcomes,

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learning, and feedback loop for continuous improvement (DeMong, Lindgren Jr., & Perry, 1994). Shaftel and Shaftel (2007) point out that the two purposes of evaluation should be kept in balance so that focusing prematurely on summative goals does not result in ignoring the use of data for program improvement (formative evaluation). Nevertheless, faculty and administrators generally emphasize summative evaluation, particularly given the imperatives of accreditation organizations such as the Association to Advance Collegiate Schools of Business (AACSB). AACSB adopts the objective-oriented "outcomes" evaluation approach, with the flexibility to adopt goals and objectives that are specific to the institution. However, they have made recommendations that include evaluation of the effectiveness of instruction with an examination of learning goals. Thus, the goals of AACSB, while summative, assume that there is an effort to develop sound objectives and deliberate development of content. The integration of the two forms of evaluation consists first in developing an understanding of gaps in knowledge in the program, followed by the closing of such gaps through aligning instruction with the desired content and skillsets.

In-line with other studies, (Hansen & Vedung, 2010; Linnan et al., 2010; Upreti, Liaupsin, & Koonce, 2010), we selected stakeholders to better understand the value of the pedagogy from the different perspectives of those with varying proximity to the outcomes (Linnan et al., 2010). Stakeholders in this context refer to those who have influence on the student outcomes, and/or those whom such outcomes affect in a tangible sense. Faculty influence student outcomes through teaching and curriculum development, and are in place to monitor progress. Student outcome and performance also affect students (at least intangibly) in the long term. Outcomes of student learning directly affect employers, while helping build and channel the abilities of student outcomes in the long term. Alumni, the stakeholders directly impacted by the pedagogic systems, provide feedback from two perspectives: as former students who took the courses to equip them for the workplace, and as employees who are putting to practice what they learned. Finally, students form the key constituent, whose feedback is relevant for both formative and summative components of the framework. These four stakeholders form part of the program evaluation framework. Feedback from the stakeholders provides the basis for analysis and integration of information literacy concepts into the program or curriculum.

In addition, we included a summative component in the student evaluation. As indicated earlier, accreditation organizations such as AACSB focus primarily on outcomes assessment (Apostolou, 1999) but the goals of the assessment of student learning are derived from the formative

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evaluation criteria and are rooted in the institution's mission at both program and course levels. The cycle of total quality management (TQM) then continuously improves on the objectives through the data collection and evaluation process as elaborated in DeMong, Lindgren, and Perry (1994). Thus, the two-stage approach first involves assessing information literacy skills based on the underlying goals of learning outcomes, leading to the question of whether there exists gaps between the current and desired information literacy skills. Assessing this gap provides the means to determine which components of the curriculum need adaptation or modification.

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## STAKEHOLDER FEEDBACK AND ANALYSIS

The framework formed a background to develop feedback from stakeholders. As indicated, we derived multiple stakeholder feedback at the formative evaluation stage, while the focus was on the student in the summative stage of the model.

### *Formative Assessment*

The five components of the information literacy process (Fig. 1) formed the basis for the faculty, alumni, employer, and student survey questionnaires. These components included: (a) identifying the nature and extent of information needed and the sources; (b) accessing the sources; (c) evaluating the sources for adequacy, authority, quality, relevance, and reliability; (d) integrating the information to accomplish a purpose; and (e) communicating the information including its ethical use. As each component could differ in relevance to different industries/professionals, we considered them separately in the questionnaire to facilitate understanding their importance from the perspective of the stakeholder in their given environment. The questions were of two types, close-ended questions on a five-point scale, and open-ended questions that allowed independent views and observations of stakeholders from their specific experiences.

The goal of the faculty survey was to understand the perceptions of the faculty based on pedagogy. A senior faculty member screened a preliminary questionnaire to reduce complexity. We provided the process diagram for information literacy (Fig. 1) to the faculty along with a cover message explaining the information literacy skills. We administered the survey by

e-mail to six accounting faculty members who were representative of the accounting sub-disciplines of the small accounting department.

We next conducted surveys of alumni to understand their experiences in the context of information literacy. As with the faculty survey, a faculty member with substantial professional experience first screened the alumni and employer surveys for clarity and readability. The Career Services Office provided information on accounting graduates from Spring 2004 to Spring 2009. We contacted 132 potential participants by e-mail and provided them the instructions to the survey administered using a professional online survey system. The response rate was 31.82% (42 out of 132).[3]

The employer survey focused on identifying information literacy skills that employers valued most. We identified employers where students had interned or were currently employed, using the information from the Career Services Office as well as from the mailing list for the Accounting Resume Book (a book containing resumes of graduating accounting students). As with the alumni, we contacted the employers by e-mail and provided them with instructions to the survey. We used an online survey system to administer the survey. The response rate was 24.32% (9 out of 37).[4]

Table 1 provides a comparative analysis of the responses from the three stakeholder groups. Faculty response averages ranged from 4.30 to 4.48 (on a five-point scale) indicating the almost equivalent importance attached to all of the skills. The response averages from the alumni survey varied

***Table 1.*** Comparison of Alumni, Employer, and Faculty Response Averages.

| | Alumni ($n = 42$) | Employers ($n = 9$) | Faculty ($n = 6$) |
|---|---|---|---|
| Problem identification | 4.61 | 4.56 | 4.30 |
| | (2.04) | (1.11) | (0.93) |
| Identify and access relevant resources (online, prop. db) | 4.44 | 4.11 | 4.40 |
| | (2.26) | (0.78) | (0.75) |
| Evaluate resources accessed | 4.26 | 3.50 | 4.32 |
| | (1.83) | (1.69) | (0.89) |
| Classify and integrate the information | 4.32 | 4.00 | 4.42 |
| | (2.08) | (1.07) | (0.90) |
| Arrive at adequate solutions using that information | 4.71 | 4.38 | 4.42 |
| | (1.82) | (1.58) | (0.90) |
| Communicate solutions in verbal and written format | 4.71 | 4.89 | 4.48 |
| | (1.72) | (0.44) | (0.78) |

*Note*: Standard deviations given in parentheses.

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from 4.26 to 4.71 indicating a slightly higher range of importance between the skills. The most important were communicating the information, arriving at adequate solutions, and problem identification. The employer response averages ranged from 3.50 to 4.89 indicating a much higher range of importance between the skills. The higher importance skills were slightly similar to those indicated by the alumni, namely, communicating the information and problem identification. Table 1 also provides standard deviations, which were generally low.

In contrast to alumni and faculty, employers gave less weight to evaluating sources accessed.[5] This low score could be because of a variety of factors. For example, given availability of internal databases and journals, this response may suggest the limited need for employees to identify or evaluate external sources. In contrast, faculty and alumni seemed to perceive a longer-term perspective, exhibiting greater "stability" in the measurement and assessment, as they potentially see these skills as critical for mobility through different stages of their careers to reach one's potential.

Another related explanation is that the different stakeholders may refer to different databases, for example, tax and law research databases versus journals and professional publications, the former is more relevant for client services, while the latter is important for updating concepts and methods for purposes of continuous learning. In the former case, the lower scores for databases and evaluation of resources may suggest that individual firms provide more guidance but also expect greater conformity.

A third possibility is that the fundamental time constraints within which practitioners work may limit their searching journals, particularly academic ones (e.g., Rynes, 2007). Practitioners usually look for research evidence in response to a particular problem or need. In such situations, although journals may contain all the necessary information, the considerable effort and expertise to find, synthesize, and sort out the disparate findings may appear burdensome. Therefore, web sites are likely to form a preferable and more effective repository of evidence-based knowledge for practitioners.

All three groups of stakeholders considered communicating solutions to be the most important skill. However, faculty gave lower importance to problem identification compared to other stakeholders. This result could imply that faculty provided students more directed assistance for identifying the problem, and the nature and extent of information needed for problem solving. This aspect grows in importance in the real world where the unstructured situations make it more difficult and more important to ascertain the issues and problems clearly before finding a solution.

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As indicated earlier, in addition to the scaled responses, the surveys included an open-ended question that solicited general opinion and feedback from alumni and employers. Overall, the responses suggest that alumni found information literacy important from the early stages of their careers. This importance increased as they progressed in their careers, and met with increased expectations to use research skills for problem solving, understanding emerging issues and trends, with the need for accountants to be able to communicate ideas and results clearly and intelligently. Some specific alumni comments that convey their perspective are as follows:

- Information literacy was important starting day 1.
- As soon as I started as an accountant, they became important. For accountants, I would suggest getting familiar with the new FASB code, and for tax specialists, the IRC.
- It is just now becoming important to me after three years where I am transitioning to a Senior Associate. My firm is small so it takes much longer to transition than it does in others. Now when I have a problem to solve, I am not told the solution anymore, I am told to go use our research tools to find it as my firm has trust in me that I know what to look for and it won't take me that long to do – plus it will be more beneficial for my learning.
- You will be challenged on certain subject(s) and it is imperative for any accountant to give an explanation, clearly and intelligently.
- Please read the material that is given to you during the course of your education because you will find them helpful.

Employers emphasized that problem identification and communication were skills that were essential from the very beginning of a person's career and became more important as he/she progressed in their career. Their responses particularly highlighted their recognition of the increased importance of information literacy skills through different stages of their careers, and the impact such skills had on their cognitive abilities. Some specific employer comments include:

- Issue identification and communication are the two fundamental traits needed throughout career, but are essential right out of the gate.
- About 25 years ago when I got my first job at a software company. It was clear that everyone in the company (nearly 1,000 people) were WAY more tuned in to information literacy than I was. Needed to catch up quickly & have been fighting to keep my head above water ever since.
- Problem solving is something that is acquired through experience, observation of others, mentoring, etc., and becomes more important after 2–3 years of experience.
- Identifying and accessing relevant resources is something that becomes increasingly important as staff progress from experienced staff to senior and senior to manager. Once a manager, these become assumed attributes.

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Students provided feedback in the pre-assignment stage on their familiarity with the components of information literacy based on the five components of the information literacy process. The survey contained questions intended to elicit the pedagogic aspects of information literacy based on the components of Fig. 1. The survey also served to understand the depth of the students' familiarity with and use of the various information literacy skills, particularly based on their previous courses. We administered the anonymous and voluntary survey to two sections of a Junior-level Cost Accounting course, using the Blackboard course management system. Students were Juniors or Seniors, and either Accounting majors or dual (Accounting and Finance or Management) majors. We provided instructions for the survey in class and online. In the first part of the survey, we asked students to reflect on the projects and case studies they had completed in previous courses, and identify the information literacy skills they had to generally use in those projects. In the second part of the survey, we asked students to identify all the courses in which they used the information literacy skills along with the level of the course and their status when they completed the courses.

Out of the 65 enrolled students, 46 students responded to the survey. The responses suggested that students had exposure to specific information literacy skills such as identifying information needed, identifying web sites, organizing information, summarizing findings, and the communication of such findings (Table 2). Most students appeared to indicate that the highest learning and use of the information literacy skills developed in the

***Table 2.*** Student Pre-Project Survey for Exposure to Specific Information Literacy Skills.

| Frequency Distribution (Total Responses: 46) | |
|---|---|
| Identify the information needed | 43 (93.5%) |
| Identify databases | 28 (60.9%) |
| Identify web sites | 40 (87.0%) |
| Use key search terms to access suitable articles | 36 (78.3%) |
| Evaluate the reliability of the database/web sites | 35 (76.1%) |
| Evaluate whether the information was current | 39 (84.8%) |
| Evaluate whether the information was adequate | 36 (78.3%) |
| Organize the information collected | 41 (89.1%) |
| Summarize your findings | 43 (93.5%) |
| Provide a list of references (with links) to the resources from which you collected your information | 43 (93.5%) |
| Present the results in proper form | 41 (89.1%) |

freshman and junior level courses (Table 3).[6] This feedback suggests that student learning on information literacy takes place over different stages in their college years, particularly in the early semesters. A systematic planning of the student learning process may support the progressive development of information literacy skills from the broader liberal arts perspective to a more focused functional specialization perspective that would better prepare students for the complex workplace.

### *Summative Assessment*

We integrated the different components of information literacy (Fig. 1) into a student assignment (see appendix). The assignment connected accounting concepts from the course to a workplace scenario, highlighting the importance of continuous learning and information literacy skills. Clearly, other types of assignments, specifically tailored to meet goals related to course objectives and level of complexity of the course, may be more appropriate in other courses (as elaborated later). Students would also provide feedback on the incremental value of the assignment using a

***Table 3.*** Student Pre-Project Responses Summary.

| Information literacy concepts/year (only courses with values of 5 or more are listed) | | | | | |
|---|---|---|---|---|---|
| Names of Courses Using Information Literacy Skills | Year | | | | Totals |
| | Fr | So | Jr | Sr | |
| *Freshman courses* | | | | | |
| College Writing I | 29 | | | | 29 |
| College Writing II | 22 | 8 | | | 30 |
| *Sophomore courses* | | | | | |
| Operations Analysis | | 5 | 2 | 1 | 8 |
| Professional Communications | | 10 | 6 | 1 | 17 |
| Psychology | 6 | 4 | | | 10 |
| Sociology | 1 | 3 | 1 | | 5 |
| *Junior courses* | | | | | |
| Intermediate Accounting I | | 2 | 17 | 1 | 20 |
| Management Information Systems | | | 24 | | 24 |
| Accounting Information Systems | | | | 5 | 5 |
| Other courses not listed above | 10 | 19 | 17 | 2 | 48 |
| *Total* | 68 | 51 | 67 | 10 | 196 |

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post-project survey. In addition, we combined feedback from the faculty (indicated earlier) to understand the overall effectiveness of the students' information literacy exposure in accounting courses in general. Thus, we gathered information from different sources to explore perceptions of information literacy in the current curriculum, and determine approaches to develop continuous improvement initiatives.

We administered the assignment (appendix) in a Cost Accounting course for accounting majors. It constituted 12.5% of the final grade (written submission and in-class oral presentation), and contained the key elements of information literacy consistent with the feedback from alumni and employers, namely, the need for identifying and using information in the job situation in an increasingly complex environment. We provided the assignment to the class early in the semester, and then formed student groups to work on it. The first stage of the assignment required students to develop a scenario of the workplace using the online (Blackboard) discussion forums. The scenario consisted of an industry of interest to the group members, an example of a new opportunity that may have been available to them if they were employed in that industry, and the accounting concepts that may be required in that opportunity. The outcome at the end of this stage was a list of terms for use in gathering more information about the industry, opportunity, and related accounting concepts. Students received a specific deadline for completion. Each group then had the opportunity to review and discuss their scenarios with the faculty before proceeding to the second stage of the assignment.

In the second stage, students used the scenario and the search terms developed to address questions specifically aligned with the core competencies of information literacy (Fig. 1). We made students aware of the use of the databases by illustrating the search engines of ABI-INFORM and Proquest. Additionally, we provided a suggested list of journals consisting primarily of practitioner journals such as the *CPA Journal* and *Strategic Finance*. At the end, we conducted a post-project survey to gather students' perspectives on the changes in their understanding of the information literacy skills resulting from the project work. The survey also enabled students to identify and appreciate the relevance of each component in the context of the overall framework. We administered the survey to the same two sections of the Cost Accounting course as the pre-project survey using Blackboard course management system. The survey, with instructions provided in class and online, was again anonymous and voluntary. Forty-seven out of the sixty-five enrolled students responded to the survey.

The results of the post-project survey (Table 4) indicated that in most areas, over 50% of the students felt that they had made improvements. Most significant improvements were in the areas of identifying databases, using search strategies, and organizing results. In addition, 66% of the students felt that the project had a positive impact on their understanding of the role of information literacy in their career, while 32% did not see much change in their understanding. In addition to the specific responses, the survey also included an open-ended question. The student responses to the question indicated that the project provided students an appreciation for the various information literacy skills. Importantly, their views indicated an increased awareness of the need for continuous learning through accessing external resources and materials in their discipline. The comments provide a glimpse into an awakening of their overall perceptions on the potential

***Table 4.*** Student Post-Project Survey (Total Responses = 47).

Understanding of each process of information literacy has improved substantially (SC), improved somewhat (I), or remained the same (NC)

| | SC | I | NC |
|---|---|---|---|
| Identifying information needed | 31.9% | 42.6% | 25.5% |
| Identifying databases | 48.9% | 38.3% | 12.8% |
| Identifying web sites | 19.1% | 46.8% | 34.0% |
| Using key search terms to access suitable articles | 36.2% | 40.4% | 23.4% |
| Evaluating the reliability of the database/web sites | 21.3% | 55.3% | 23.4% |
| Evaluating whether the information was current | 14.9% | 31.9% | 53.2% |
| Evaluating whether the information was adequate | 25.5% | 38.3% | 36.2% |
| Organizing the information collected | 23.4% | 53.2% | 23.4% |
| Summarizing your findings | 25.5% | 29.8% | 44.7% |
| Providing a list of references (with links) to the resources from which you collect your information | 25.5% | 42.6% | 31.9% |
| Presenting the results in proper form (using manual of style such as APA) | 19.1% | 36.2% | 44.7% |

| | Positively | Negatively | No Change |
|---|---|---|---|
| Has the project changed your opinion on the role of information literacy in your career? | 66.0% | 2.1% | 31.9% |

| | Y | N |
|---|---|---|
| Do you think this project would add value in future courses in Cost Accounting? | 76.6% | 23.4% |

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applicability of information literacy skills to enhance their careers. Some specific comments include:

- The importance of accounting concepts and research, particularly considering their general narrow financial view of accounting
- The extensive nature of the literature on various topics
- The accessibility of the information from databases
- Evaluating information gathered from various sources, using better search techniques/keywords, and parsing to narrow search
- The research and information that goes into product/service development and a new awareness of web sites that are good sources
- The importance of preparing for future problems, and an understanding of the role of accountants in relaying critical information to end users and clients
- The importance of gathering data from different sources, rather than focusing on "number crunching" alone

The goals of the summative evaluation were to expose students to components of information literacy and assess their overall understanding of the areas (particularly given their prior exposure to different elements in the framework in Fig. 1). The post-project survey also served to identify the stages of the development of information literacy skillsets over the semesters, to develop insights for planning student development of information literacy through information literacy concepts integrated into previous courses. The summative assessment project serves to build on existing knowledge, either reinforcing concepts or expanding and increasing depth of knowledge and skills on the broader courses such as College Writing, which covered broad elements of information literacy (primarily upstream components from Fig. 1). Assessment projects in the major could play a significant role in enabling students to become acquainted with journals and databases, and develop the ability to organize and integrate the body of literature related to their specific areas of expertise as required in courses in their major.

In addition, the faculty survey included a component to assess the gap between faculty perceptions of the importance of an area and the observed competency of students in their classes.[7] The survey questions contained more details than that of the other stakeholders to assess specific gaps that could be of value in the continuous improvement process. The results of the survey (see Table 5 for averages and standard deviations) identified the gaps between the perceived importance of the skill and the observed ability. The analyses indicated higher gaps in three of the five process categories: identify, integrate, and communicate. In the "identify" category, the highest gap between importance and observed ability was for "determining information need," that is, determining the information needed to find a

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***Table 5.*** Faculty Assessment Survey Responses.

| Averages (and s.d.) of faculty responses – Information literacy questions only | | | | |
|---|---|---|---|---|
| Questionnaire Category | Description | Importance | Observed Ability | Difference |
| Identify | Information literacy | 4.00 (0.63) | 2.40 (0.85) | 1.60 |
| | Define research problem | 4.20 (1.02) | 2.67 (0.67) | 1.53 |
| | Determine information need | 4.40 (0.85) | 2.00 (1.00) | 2.40 |
| | Identify databases | 4.20 (0.57) | 2.33 (0.67) | 1.87 |
| | Identify web sites | 4.60 (0.85) | 2.50 (0.71) | 2.10 |
| Access | Key search terms | 4.40 (0.85) | 2.50 (0.71) | 1.90 |
| | Information technology use | 4.40 (0.85) | 2.50 (0.71) | 1.90 |
| | Storing sources | 4.00 (0.00) | N/A | |
| Evaluate | Authority of journal | 4.33 (0.67) | 3.00 (0.00) | 1.33 |
| | Reliability of web site | 4.20 (1.02) | 3.00 (1.00) | 1.20 |
| | Determine reliability of database | 4.33 (0.84) | 2.67 (0.67) | 1.67 |
| | Quality of article | 4.25 (1.14) | 3.00 (0.00) | 1.25 |
| | Currency of information | 4.40 (0.85) | 2.67 (0.67) | 1.73 |
| | Adequacy of information | 4.40 (0.85) | 2.33 (0.67) | 2.07 |
| Integrate | Organize information | 4.50 (0.95) | 2.00 (0.00) | 2.50 |
| | Link with resource and topic | 4.33 (0.84) | 2.00 (0.00) | 2.33 |
| Communicate | Written project/paper | 4.60 (0.85) | 2.50 (0.82) | 2.10 |
| | Presentation | 4.33 (0.67) | N/A | |
| | Ethical aspects: Plagiarism | 4.50 (0.82) | 2.33 (1.22) | 2.17 |

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solution to the problem. In the "integrate" category, both organizing the information and linking the information with the resources and topic showed higher gaps between "importance" and "observed ability." In the "communicate" category, there were moderately high gaps between importance and observed ability in communicating the information through written projects/papers and using the information ethically. This feedback would constitute another dimension to the continued feedback that could enable the development and modification of the assignments in the continuous improvement process. Specifically, the feedback provides a basis for cohesive responses to gaps in information literacy that could be addressed from the collegiate perspective (i.e., through feedback within the larger system such that college level courses could address the specifics of these issues to close the gaps).

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## DISCUSSION AND CONCLUSIONS

This paper explores the role of information literacy in equipping graduates to cope with the changing environment of business and accounting. Exploratory in nature, the paper builds on a framework that integrates formative and summative evaluation, and draws on stakeholder feedback to identify and better understand the relevance of the critical components of information literacy in the context of the larger pedagogic goals. Different stakeholders provide different perspectives and highlight the role of information literacy in the curriculum. The alumni and employers provide the practitioner perspective, critical to accounting, given the primary practitioner-orientation of the discipline. The overall importance attached to information literacy by these external stakeholders indicates the relevance of the topic in the current environment. The differences in responses, particularly in relation to databases and the classification and integration of information may reflect differences in the nature of professions (public accounting, consulting, industry, etc.) and perspectives emerging from differences in stages of careers of the professionals. Additionally, alumni responses may be more likely to reflect the role of information literacy on their careers (given their reference point to the learning experiences at college) in contrast to employers, whose insights may pertain primarily to the immediate needs of the firm (given their possible focus on recruitment). While reflected in their comments, these differences in

perspectives have not led to significant differences in overall perceptions on information literacy.

Students provide yet another perspective, particularly one that is evolving in their perceptions through continued exposure to information literacy in its different forms and from a variety of disciplinary viewpoints. In fact, the ultimate efficacy of the framework is contingent on the student outcomes. Students' feedback highlighted the importance of planning information literacy endeavors holistically to consider how courses in different stages of the curriculum need to build on student information literacy skillsets to enable cohesiveness in the overall development of student abilities in the area. This approach also meets the overall goals of "deeper learning" highlighted earlier where student learning is reinforced through different stages in the curriculum to increase depth of student learning. In the context of information literacy, deeper learning increases depth of knowledge of disciplinary content through insights gained from external resources, and facilitates continuous or lifelong learning through acquiring "learning to learn" skills.

To meet these criteria of deeper learning in specific components of the information literacy process, it is useful to consider an integrated course curriculum through the student college life cycle with adequately planned assignments to meet goals at each stage of student development. For example, assignments may include questions emphasizing certain generic skills at earlier stages of the development of information literacy competencies, with increased focus on content in the major courses. Specifically, courses in the major would also consider constraints on time availability and therefore emphasize aspects related to the course objectives. Given the emphasis on depth of information related to specific topics in such courses, it may be more appropriate to assign readings and therefore, eliminate the uncertainty resulting from students' independent search for sources. This assignment type would emphasis the information literacy skills of organizing, assimilating and communicating information. For Master's level courses (e.g., MBA or MS levels) using a case-based approach, such assignments may be integrated into cases to connect conceptual topic-related information with the specific case, for example, by supplementing a case on activity-based costing [ABC] with readings on the topic relevant to the industry or a specific approach such as time-based ABC. This will consolidate information on the topic while also assessing downstream aspects of information literacy. Alternatively, the assignment may require the selection of an appropriate article (from choices of journals) which may test both upstream (identify, access, and evaluate) and downstream (integrate and communicate) aspects of

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the information literacy processes. Consideration of the specific feedback from practitioners could be valuable in designing assignments to align information literacy components to meet information literacy skillsets in specific areas. Thus, such assignment types with varying emphasis on different information literacy components as necessary, could serve to develop the specific information literacy skill set for such careers. Overall, flexibility is required in the development of assignments consistent with courses and disciplines. Specifically, assignments should emphasize relevant information literacy components such as accessing databases/adequate sources of information, assimilating such information into decisions and problems encountered in practice, and/or communicating such information in writing and orally as appropriate to the level of the course.

It is important to recognize the limitations of the paper. The scope of the paper was limited and essentially exploratory in nature. The focus was on the accounting discipline, and therefore, we had limited access to stakeholder information. The discipline and the specific experiences of respondents would also shape their understanding and responses, and therefore limit generalizability. Nevertheless, the results reinforce the importance of the area and provide useful insights for future research. Specifically, future research in the area could focus on increased depth of analysis, for example classifying external stakeholders into different segments (public accounting, private industry, or areas of specialization such as tax or audit) and increasing the detail associated with these segments to identify the specific types of information literacy skills that such stakeholders may prioritize. Additionally, such extensions could also connect the types of professions (public vs. private accounting professions) with professional demographic information and the usefulness of specific types of information literacy skills and information (databases and journals) at different career stages. Such information may also be integrated with internal perceptions, particularly that of faculty who specialize in related disciplines (e.g., tax, audit, managerial accounting). As indicated earlier, such in-depth feedback could align curriculum development, and specifically, internal development of assignments in different courses with the external stakeholder feedback, thereby increasing student opportunities for successful careers.

In sum, information literacy is important in this information age of continued growth of knowledge. No college curriculum can fully equip students with all the knowledge content and skills required for their careers. Additionally, the growth in knowledge also creates new challenges for employees to keep updated, and become integrators of new information,

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acquiring the ability to assimilate and interrelate facts and concepts from different disciplines into the workplace. Therefore, educators need to continue to examine the approach to education in the light of challenges and changes in the external environment to understand the optimal role that education can play in our knowledge society. We should also examine and bridge gaps where possible, in the perception of educators and employers that may reflect different perspectives. However, we should not lose sight of the fact that information literacy and the pursuit of knowledge has value that extends beyond a career in the corporate world, specifically, in encouraging habits for lifelong learning that could serve the student in all facets of life.

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## NOTES

1. Student curriculum life cycle here refers to the courses and course content in the student curriculum over the undergraduate collegiate years.

2. Program here refers to educational activities that are provided on a continuous basis (JCSEE, 1994). Evaluation is the broad concept that indicates the systematic investigation into the worth or merit of an object (Shaftel & Shaftel, 2007).

3. We requested additional information about job titles, and industry sectors on a voluntary basis to gain a general understanding of the respondents' job backgrounds. Based on reported information, 90% (38 out of 42) were employed in accounting-related professions at the time of the survey. 50% were employed in public firms, 30.95% in private firms, and 9.52% were employed in non-profit and government sectors.

4. All 9 respondents were employed in accounting-related professions at the time of the survey; 66.7% were from public firms while 33.3% were from private firms.

5. The difference of means *t*-test was performed; however, even the items that had apparently greater differences (e.g., evaluate resources accessed), did not have statistically significant differences, perhaps reflecting the decreased power due to the small sample size.

6. We did not provide a specific list of courses and required students to identify the courses based on their experience. Students identified around 45 different courses at various levels (freshman to senior) mostly with one response each; of these, the nine courses listed in Table 3 had 5 or more responses, and were all required courses. Some of the courses with less than 5 responses and not listed in Table 3 included required courses such as Financial Accounting, Managerial Accounting, Economics, and Operations Management, and electives such as American Politics, US History, American Literature, and Capital Planning.

7. The faculty members surveyed primarily taught accounting majors, so their focus was on upper level courses, and they generally concentrated on one area (Intermediate Accounting, Auditing, Accounting Information Systems, Tax, Advanced Accounting) and, on occasion, Principles of Accounting.

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# APPENDIX: STUDENT INFORMATION LITERACY PROJECT

*Scenario*

Having graduated from the Accounting program, you have landed your first job. The initial excitement has faded. Having completed the first six months of training (in which you got acquainted with the other fresh graduates from area universities in the company), you now find that there are new expectations and challenges in your job.

The word goes around that the company wishes to expand to reflect new realities and opportunities. As a young professional, you know that you need to adjust to this new environment to protect and improve your future career at the company that is undergoing this transition. The CEO has indicated that he expects the young professionals to adjust and contribute to this growth to enable the company to be successful with their strategy. You are apprehensive, but also excited. Is this your opportunity to learn and grow with the job that could well shape your future?

*Stage 1 of the Project*

You are required to complete the scenario above, identifying the industry and the specific scenario (opportunities) as well as the accounting methods.

Identify your industry (choose any industry that you may be interested in such as: service (law firms, service chains such as hair salons, banks, airlines), manufacturing (aircraft, furniture, outdoor equipment), retail or others, including non-profit).

New opportunities: (identify any new opportunity such as new customer, new location, new factors, new product, new technology, expansion globally, etc.).

Management Accounting concepts that you could use: ABC, BSC, value chain analysis and cost control, quality costs, and cost of conformance.

*Stage 2 of the Project*

Based on the scenario you customized above, you are required to identify and search the online library databases and web sites for journals and articles relevant to your selected scenario. Use suitable search terms that

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are appropriate to the scenario, evaluate the resources that you have found, and classify the resulting information in a suitable format.

Your written answer should include:

- What online databases and search engines did you use?
- What search terms did you use?
- List the results of your search (i.e., the journals and web site URLs that resulted from your search).
- Did you modify your search to access more appropriate information? What new search terms (or variations of your original search) did you use and what was the outcome?
- Choose at least three sources (articles and/or web sites, at least two of which must be journal articles) and provide reasons for your choice.
- In one page, classify the information from the articles that relate to the project at hand. Use tables, charts, headings and subheadings, or other means as necessary.
- In 250 words, summarize your findings. Is the information current and adequate? Indicate what you would do next to fill in any gaps.

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