Use It or Lose It? A Longitudinal Performance Assessment of Undergraduate Business Students' Information Literacy

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ABSTRACT

At a large, public, Midwestern, American university, business librarians teach a required, one-credit information literacy course geared towards lower-division students in the school of management. In order to determine the lasting effects of the course, a longitudinal study of individual students' performance on three pre/post-test surveys was conducted across a set of management courses. The first course, a required information literacy class, was generally taken in the lower-division. The second course, a career strategies course, is generally taken after the first information literacy class. Students who took both required courses displayed greater information literacy knowledge and skills than students who took only the second course. Students retained the information uniformly over time, as time between the two courses did not yield a significant difference in scores. These findings show that information literacy courses have a lasting impact on lower-division students as they progress through a college program.

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INTRODUCTION

There is increasingly more pressure placed on libraries to demonstrate their value to stakeholders in quantifiable ways (Booth, Lowe, Tagge, & Stone, 2014; Holliday et al., 2015; Menchaca, 2014; Oakleaf, 2008; Sharun, Edwards, & Goebel, 2014). In the case of libraries playing a role in instruction at higher education institutions, this requires showing "what students know and are able to do as a result of their interaction with the library and its staff" (Oakleaf, 2008, p. 234). Standalone subject-specific information literacy classes taught by librarians (or those courses included in learning communities) have been shown to positively impact students' information literacy within their academic program, since the instructors emphasize and prioritize information literacy instruction throughout the duration of the course (Burgoyne & Chuppa-Cornell, 2015; Lebbin, 2005; Mery, Newby, & Peng, 2012). Librarians recognize that what they teach has lasting value for students, but they have little quantifiable evidence that students retain knowledge of those valuable skills later in the curriculum.

This paper presents a study conducted at a large, public, Midwestern, American university, where business librarians teach a required, one-hundred level, single credit business information literacy course geared towards lower-division students. In order to determine the lasting impact the course has on students' business information literacy, a longitudinal study of individual students' performance on three pre/post-test surveys was conducted across management courses, Information Strategies for Management Students (hereafter C1) and Management Career Lectures (hereafter C2). The study demonstrates that

students retained their knowledge of the information first encountered in C1, as their test scores remained steady over time. Students who took both required courses displayed greater information literacy knowledge and skills than students who took only C2. Students who took the two courses further apart also performed similarly on their pre/post-tests than students who took less time between taking the two courses. These findings show how information literacy courses have a lasting impact on lower-division students as they progress through a college program.

LITERATURE REVIEW

Our study focuses on the longitudinal effects of information literacy instruction on undergraduate students, as well as how different courses within a program impact student performance outcomes. In order to situate these areas of interest within a broader context, this literature review focuses on the following bodies of research: information literacy research, assessment in higher education, pedagogical practice, and curriculum development. First, we reviewed library and information science literature, in order to see how librarians implement information literacy instruction in programmatic curricula and how they assess the outcomes of their instructional efforts. Next, we widened our search to education literature, in order to find instances in which instructors studied the effect the timing of courses has on student learning. Finally, we sought background knowledge on pedagogy and cognitive psychology, in order to see how instructors teach for long term positive effects on student learning. The following literature review presents

relevant research on longitudinal information literacy assessment, course sequencing for curriculum development, and scaffolded librarian-led instruction.

INFORMATION LITERACY ASSESSMENT AND LONGITUDINAL STUDIES

There are several common types of information literacy instruction assessment, including fixed choice tests, performance assessments, and rubrics (Oakleaf, 2008), each of which has a history of use and theoretical background supporting its implementation. Many libraries opt for fixed choice tests, which allow for fast development and grading, are typically scalable and reliable, and support convenient comparisons of study groups (Oakleaf, 2008).

Pre/post-tests—either standardized or locally developed—are commonly used to measure the impact of one-shot information literacy sessions (Bryan & Karshmer, 2013; Fain, 2011; Riddle & Hartman, 2000), stand-alone information literacy courses (Mery et al., 2012; Stonebraker, 2015), as well as students' information literacy over time. Pre/post-tests are often used to study students' confidence levels or their perceptions of the impact of an information literacy intervention (Chen, Chengalur-Smith, Agee, & Rorissa, 2012; Ferrer-Vinent, Bruehl, Pan, & Jones, 2015; Freeman & Lynd-Balta, 2010), as well as their information literacy knowledge or skills. Several researchers tested students' perceptions of their information literacy capabilities, as well as their performance on a pre/post-test assessment before, immediately after, and at a fixed time following an information literacy intervention, in order to determine if information literacy instruction (course-based or by teacher-demand) has a lasting effect on students later in their academic programs (Bruehl, Pan, & Ferrer-Vinent, 2015; Fuselier & Nelson, 2011; Gunn & Miree, 2012; Hristova & Miree, 2013).

Libraries also examine GPA scores and student retention, in order to study the long term effects of information literacy instruction. Studies show increased positive effects of library instruction if tiered in the upper division (Bowles-Terry, 2012). However, confounding variables, such as a student's major, limit these studies from making correlations between grades, student success, and true performance.

COURSE SEQUENCING AND TIMING

Researchers from several disciplines, including psychology, communications, accounting, and chemistry, studied the sequencing or timing of programmatic courses in relation to curriculum planning and development. Researchers examine the most effective ways in which students are exposed to content and methodology, in order to provide recommendations for altering curriculum requirements and enhancing student grades. Barron and Apple (2014) sought to determine when undergraduate students should take methods and statistics courses relative to one another within a psychology program, in order to study how the sequencing of classes affects students' grades and performance on exit exams. Richards (2012) focused on how the sequencing of courses within communications departments can enhance students' grade performance during their course of study. Goess (2014) also showed how the placement of organic chemistry courses can positively impact students' content knowledge and reinforce fundamental disciplinary concepts throughout a sequenced program.

The education literature, however, lacks research on the sequencing of information literacy courses and how the timing and ordering of courses affect student learning. Holliday and Fagerheim (2006) studied the sequencing of information literacy components within two required English composition courses, in order to create a more comprehensive, localized information literacy program. Verhey (1999) also studied the inclusion of information literacy elements across multiple courses within a nursing program, in order to determine if the program enabled students to demonstrate better use of bibliographic databases and academic journals for various course assignments. These studies only look at the effectiveness of embedded information literacy instruction, where

information literacy is not the primary learning outcome. We intend to study how the sequencing of two standalone information literacy courses impacts business students' retention of information literacy knowledge and skills within a management program.

INFORMATION LITERACY ASSESSMENT IN BUSINESS DISCIPLINES

Expanding upon the American Library Association's 1989 Presidential Committee on Information Literacy Final Report's definition of information literacy, Cooney (2005, p. 10) defined business information literacy as "specific programs and practices that your library utilizes to help business students 'recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information'". Natt (2013) conducted a content analysis of the literature to determine the prevalence of business information literacy in scholarly communication and found that despite the growing number of articles that mention the topic between 2001 and 2012, there are significantly fewer articles that focus specifically on business information literacy. Cooney (2005) found that while information literacy is increasingly implemented in the business classroom, there is a low percentage of instructors who utilize the Association of College and Research Libraries' (ACRL) Information Literacy Competency Standards for Higher Education for instructional design and an even lower number of instructors who directly assess students' business information literacy.

Gunn & Miree (2012) assessed the performance of freshman and senior business students on a pre/post-test measuring business information literacy before and after an information literacy tutorial, in order to demonstrate that intentional information literacy interventions are necessary occurrences throughout an undergraduate business program. While promising, the study did not find any statistically significant results. Additionally, student participation was voluntary, which may have resulted in unintentional sampling error. In their follow-up longitudinal study, which did not track students' individual performance, the authors compared groups against one another, in order to determine students' knowledge retention over the course of a business program (Hristova & Miree, 2013). Our study assesses students at the individual level, allowing for a nuanced view of the way in which students retain information literacy knowledge and skills over time.

SCAFFOLDING

Salisbury et al. (2012, p. 10) emphasize the need to make students' information literacy skills replicable over time and across disciplines, specifically arguing that through scaffolding instruction, students can "build, apply, and practice basic generic skills in a non-confronting and comfortable learning environment," preparing them for future discipline-specific learning activities. Scaffolding allows students to learn and create meaning from instructional experiences, as they build off and utilize prior knowledge during the process (Walton & Archer, 2004). The intention of scaffolding is to provide students with sufficient practice with increasingly complicated tasks or content knowledge over time, ideally resulting in students who are capable of flexibly transferring developed skills or knowledge to new situations.

Researchers tend to agree that utilizing prior knowledge and calling upon students' previous experiences during instruction provides opportunities for deeper learning and better transfer. Walton and Archer found during a study of first-year engineering students' web literacy at the University of Cape Town that despite the intentional scaffolding of content and skills implemented within the curriculum, students had difficulties transferring what they previously learned about online searching to new contexts. The authors suggest that students need consistent practice and instruction, in order to be able to generalize techniques and content knowledge to other situations (Walton & Archer, 2004). While this study suggests that students are unsuccessful at transferring knowledge and skills to new situations, the study does not provide longitudinal or quantifiable analysis of students' actual