Assessing the Integration of Information Literacy into a Hybrid Course Using Screencasting

Evaluando la Integraciíon de Información sobre Alfabetismo en un Curso Hibrido Utilizando Investigacion de Calidad

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Abstract

The development of information literacy has become an essential curricular goal. This article reviews the results of a case study investigating the use of screencasting as a tool for teaching information literacy skills in a blended learning environment. A college librarian and a faculty member in the speech pathology and audiology program collaborated to assess the effectiveness of online tutorials used by undergraduate students in a course emphasizing research skills. The results support combining the use of authentic measures of assessment, such as rubrics to evaluate course projects in addition to static assessments such as tests of knowledge and skills.

Keywords: Screen Casting, Information Literacy, Faculty-Librarian Collaboration, Distributed Education

Resumen

El desarrollo de información sobre alfabetismo ha llegado a ser una meta curricular esencial. Este artículo revisa los resultados del estudio de un caso examinando la investigación de calidad como una herramienta para enseñar habilidades de información de alfabetismo en un ambiente de aprendizaje combinado. El bibliotecario de un college y un miembro de la facultad en un programa de patología del habla y audiologia colaboraron para evaluar la eficacia de tutorías online usadas por estudiantes universitarios en un curso enfatizando las habilidades de investigación. El resultado apoya combinar el uso de auténticas medidas de evaluación, tales como rúbricas para evaluar los proyectos del curso en adición a evaluaciones estáticas tales como pruebas de conocimiento y habilidades.

Palabras claves: Investigación de calidad, Información de Alfabetismo, Colaboración Bibliotecario-Facultad, Educación Distribuida.

Introduction

College and university students have rapid access to a wealth of knowledge via electronic means. The vast amount of information so readily available can be overwhelming to students and beginning researchers. Students must learn how distinguish between quality information and materials that might be biased, inaccurate or out of date. As a result, information literacy has been identified as an essential skill in higher learning.

According to the Middle States Commission on Higher Education (2003), information literacy skills "apply to all disciplines in an institution's curricula" (p. 42). An information literate individual is able to determine the information that is needed and be able to retrieve it efficiently. Once the information is located, it needs to be critically evaluated and applied appropriately. Using the information also carries legal and ethical responsibilities (Association of College and Research Libraries, 2000).

Being able to teach information literacy skills presents a challenge in undergraduate education. Students enter colleges and universities with diverse experiences and learning styles. Many appear over-confident in their information literacy skills because they are comfortable using popular search engines such as Google. The task of the faculty member in teaching information literacy includes getting students to

become aware of their strengths and weaknesses and addressing those weaknesses in a pedagogically sound manner.

Two major curriculum models for information literacy instruction are the *compartmentalized curriculum model* and the *distributed curriculum model* (Middle States Commission on Higher Education, 2003). In the compartmentalized or separate curriculum model, students enroll in a course dedicated to the development of information literacy skills. Compartmentalized courses are often taught by library faculty. These courses usually emphasize beginning skills in information literacy such as determining what information is needed and locating it. Students are introduced to evaluation skills and issues such as copyright and plagiarism. The development of higher level skills such as being able to apply the information to a specific research problem are usually addressed later by discipline specific courses in the student's major. Collaboration between library faculty and discipline-specific faculty is often missing in the compartmentalized model.

In an integrated or *distributed curriculum model*, information literacy skills are embedded into the curricula of discipline specific courses. According to The Middle States Commission on Higher Education (2003), this model allows students to "understand the importance of information literacy within their chosen fields", allows for broader and higher-level research opportunities, and "engages faculty members by making them partners in information literacy instruction" (p. 17). Best practices in information literacy should include collaboration between library and discipline faculty (Buck, Islam, & Syrkin, 2006).

The distributed curriculum model may be developed as a partnership between discipline-specific and library faculty and can be delivered in a variety of formats. Traditionally, library faculty provide direct instruction on library research skills within a single classroom session. For example, Kenney (2008) described how the use of a problem-based learning model increased student engagement and the application of information literacy skills within the single library session. Collaborative information literacy instruction can also be infused throughout the course. Jacob and Heisel (2008) described increases in critical thinking and scientific writing skills through collaborative instruction with library faculty in an introductory biology laboratory course that included hands-on information literacy activities.

Providing quality collaborative information literacy instruction becomes more of a challenge in distance education courses (Association of College and Research Libraries, 2005). The Association of College and Research Libraries Distance Learning Section Instruction Committee published the results of a 2005 survey that examined information literacy instruction practices for off-site students. At the time of the survey, 62% of respondents reported that some form of information literacy instruction was provided to distance education students, but 38% reported that no such services were offered. For distance programs reporting successful information literacy instruction, collaboration between library faculty, discipline faculty and other instructional support personnel was identified as essential. The ability to utilize a variety of instructional tools including both face-to-face communication and online assistance were also recognized in successful programs.

Instructional Tools for Distance Learning

In an analysis of best practices in collaboration for distance information literacy instruction, Buck, Islam, and Syrkin (2006) suggested utilization of synchronous and asynchronous instruction through course management software. Blogs can be used for asynchronous communication while chats provide "live" or synchronous interaction.

Online tutorials are emerging as another form of electronic collaboration. Tutorials that utilize both graphics and audio accommodate a variety of learning styles and are more appealing to students than audio or print only formats (Robertson & Jones, 2009).

Screencasting is a tool that allows for an asynchronous multimedia form of instruction. A screencast is a digital recording of the activity on a computer screen. Besides the activity on the screen, screencasting software can capture audio as well (Udell, 2005). Examples of screencasting software include *Snagit, Capture,* and *Camtasia*. As described by Betty (2008) screencast tutorials allow librarians to meet students "at the point of need" (p. 296).

Assessing Screencasting as an Instructional Tool

A number of articles have described using screencasts in library education programs (Clark & Qinghua, 2008; Kerns, 2007; Murley, 2007; Schnall, Jankowski, & St. Anna, 2005). Selvester, Mulholland, and Wong (2006) discussed how a particular type of screencasting tool, *Camtasia*, can be used in the college classroom to accommodate different types of learning styles. The authors also advocated that providing archived instruction in a multimedia format allowed students to learn more independently.

Screencasting allows for the integration of the cognitive principles described by Terry, Doolittle, Scheer, and McNeill (2004). The *multimedia principle* suggests that learning is more likely to occur when both words and pictures are presented to the learner. The simultaneous presentation of video and audio input utilizes the visual and verbal channels of information processing facilitating memory and leading to meaningful learning (Templeman-Kluit, 2006; Terry, Doolittle, Scheer, & McNeill, 2004).

Assessing the use of screencasting in distance learning

In an article summarizing best practices in distance information literacy instruction, based on the results of the 2005 Association of College and Research Libraries survey, Buck, Islam, and Syrkin (2006) asserted that "(a)ssessment and documentation are critical to the success of any library initiative" (p. 76). A concern identified by the authors was that only 11% of the respondents "reported that they conduct any form of assessment to measure whether distance learning students have acquired particular information literacy skills as a result of instruction" (p.16). Buck, Islam and Syrkin called for further research to assess the effectiveness of collaboration between librarians and faculty in the development of information literacy skills. The current project seeks to add to this need for assessment.

Current Study

The authors of the current study sought to assess the use of screencasting as an effective tool in information literacy instruction for a group of upper level undergraduate students in a speech-language pathology distance education course. The course was delivered in a blended or hybrid format. Tutorials were developed using the screencasting software, *Camtasia*. While screencasting has been identified as an effective tool for instruction, its specific application for information literacy instruction in a hybrid course has not been presented widely in the literature.

Course Design

Hybrid courses incorporate face-to-face instruction with online delivery. In this blended learning environment, "face-to-face communication and online written communication are optimally integrated such that the strengths of each are blended into a unique learning experience…." (Garrison & Vaughan, 2008, p. 5). Blended learning allows for a range of learning activites including lectures, labs, virtual discussion, self-assessment, and tutorials. Using an inquiry approach to learning, blended learning allows students to actively engage in self-directed expereinces.

Seminar in Speech Pathology and Audiology is a senior level undergraduate course. Among the course objectives are (a) developing skill in oral and written expression, (b) learning how to find and use resources for answering questions and solving problems, (c) learning how to analyze and critically evaluate ideas, arguments, and points of view, and (d) acquiring an interest in learning more by asking questions and seeking answers.

Information literacy was integrated into the course for several reasons. In addition to an increased institutional focus on information literacy, a need to develop information literacy skills has been identified within the professions of speech-language pathology and audiology. According to the American Speech-Language Hearing Association (ASHA), speech-language pathologists and audiologists should engage in evidence-based practice which involves "the integration of: (a) clinical expertise, (b) best current evidence, and (c) client values to provide high-quality services reflecting the interests, values, needs, and choices of the … individuals …" (American Speech-Language Hearing Association, 2009, ¶ 3). Evidence-based practice relies on the ability to locate, evaluate, and apply information reported in scholarly sources about best clinical practices. A survey by Nail-Chiwetal & Bernstein Ratner (2007) revealed, however, that speech-language pathologists most frequently asked colleagues for information related to practice issues rather than utilize database searches or published jounals. Respondents reported lacking the knowledge and skill for finding relevant information. This trend reflects a gap in information literacy

instruction in the profession and a reason why it has been emphasized in the curriculum of the current course.

The instructor wanted to maximize the amount of instructional time spent on critical reading and writing skills as well as information literacy. As the course management system for the class was compatible with video tutorial delivery, online instruction was seen as an option for the information literacy content.

There were several advantages of utilizing online tutorials. First of all, the tutorials were instructional resources that students could continually refer to throughout the semester. Face-to-face information literacy instruction during a single class session had been used in previous semesters. Unfortunately, if students were absent for this session, they were responsible for scheduling an individual meeting to review the points covered in the session with one of the librarians. Students rarely followed up with the make-up session which was reflected in the poor quality of their written projects. Integration of the information literacy component throughout the course was intended to make student aware of the connection between information literacy skills and their abilities to locate, analyze, and utilize professional literature for coursework. The potential for viewing the tutorials multiple times in contrast to attending a single lecture on skill instruction was seen as an advantage and a good match for distance-learning students.

Development of Tutorials

As summarized by Robertson & Jones (2009) college students prefer library instruction that is visual and dynamic. According to Terry, Doolittle, Scheer, and McNeill (2004) the *segmentation principle* suggests that "narration and animation should be kept to short, user-controlled segments rather than continuous presentations" (p. 101). In addition, keeping the tutorials free of extraneous words, pictures, or sounds increases the efficiency of working memory and decreases cognitive overload.

The online tutorials incorporated these criteria. In order to maximize student learning the guiding principle for video production became *keep them short, keep them simple, keep them short*. Each tutorial was designed to be less than six minutes in length.

Multiple videos relating to the same database were organized into *toolkits*. A toolkit would comprise several videos covering: search construction, basic search techniques for a particular database, advanced searching techniques, and preserving the results.

The content for each video mirrored what would be covered in a face-to-face class. For example, if the material covered techniques for constructing a search, the video would use Power Point slides with audible narration to show how to put an idea into a question, select search terms, develop synonyms, and delete stop words. To show a basic search, a live search in an appropriate database would be conducted with some information on printing and saving articles. By using the "chat" function of *Blackboard* students could also have questions answered in a timely manner by a faculty member.

After posting the videos to the library's web page, (see Figure 1) the script for each video was also attached. Providing a script was necessary to make the tutorials accessible for students with disabilities, per the Americans with Disabilities Act (ADA) (U.S. Department of Justice, 2010).

The tutorials were designed to serve several different groups. The original audience was meant to be distance education students taking virtual classes. Prior to the development of the tutorials, the library rarely had any way of offering library instruction to this group. Scheer, Terry, Doolittle, & Hicks (2004) identified principles for supporting effective distance education. Among these was "the availability and access to student support services" (p. 16). Such support services should be readily accessible, provide students with strategies to solve problems, and reduce a sense of isolation.

Another unexpected group turned out to be faculty who showed the tutorials in class. Most of the faculty in this group had been resistant to collaboration with librarians, primarily because of the time commitment involved but the tutorials became a tool to overcome this challenge. The third target group included students who had previous library instruction but needed a refresher.

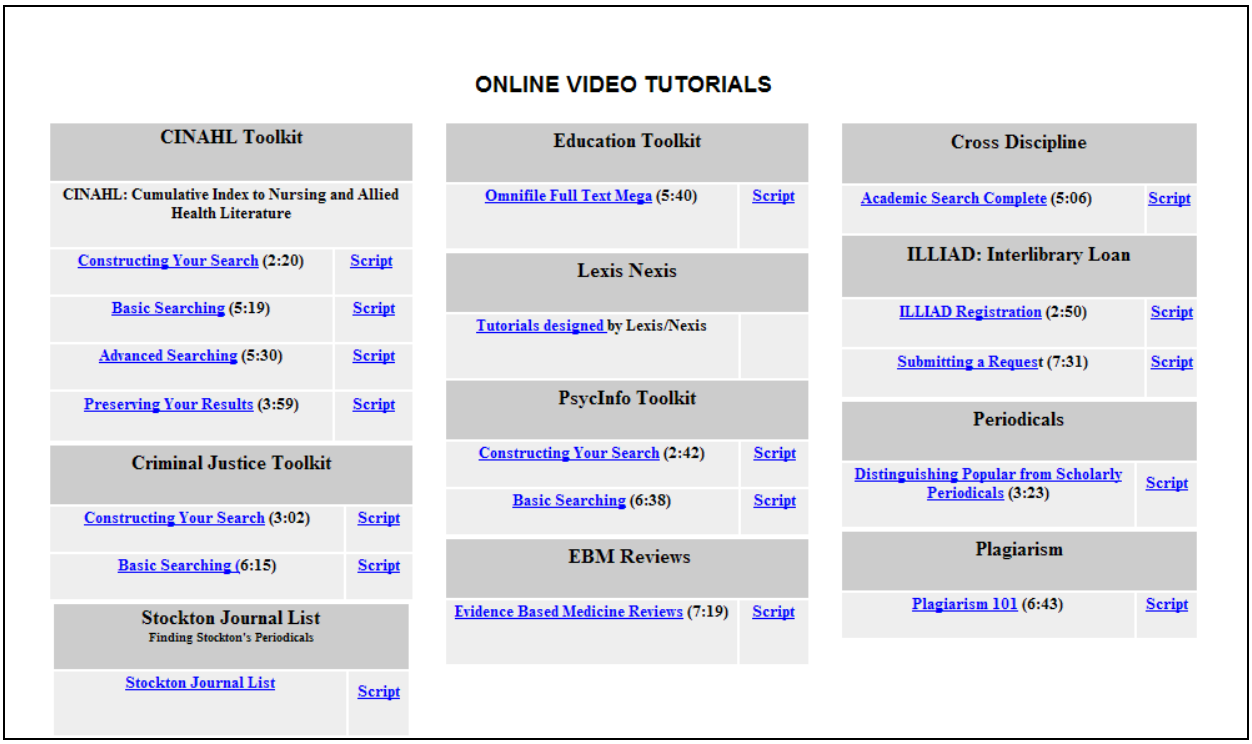

Figure 1. Illustration of the online menu for tutorials.

Collaboration

During the spring 2009 semester, online tutorials developed by the librarian were integrated into the speech-language pathology and audiology course. Screencasting allowed for ongoing availability of information literacy instruction throughout course in an interactive format. Students were provided with links to the screencast tutorials through the online course management system. One of the assigned tutorials was a toolkit about the *PsycInfo* database. Another addressed plagiarism. A third tutorial illustrated the differences between scholarly and popular sources.

In addition, students were given several assignments directly related to content in the tutorials. These included web based discussions and the evaluation of a website. In addition, students were responsible for completing a research paper with implications for evidence-based practice in speech-language pathology and audiology. The assignments assessed both knowledge and application of information literacy components. With the exception of the final research paper, the assignments were developed in collaboration between the faculty member and the librarians.

Assessment

At the beginning of the semester, students were given an assessment on knowledge of information literacy skills. The tool was developed by one of the authors and had been previously used to assess prior knowledge and as a formative tool for curriculum development (Trail, Gutierrez, & Lechner, 2006). Items on the test probed basic information literacy skills such as reading a citation, Boolean logic, and identifying scholarly materials. At the end of the semester, students completed the information literacy assessment again as a post-test measure. The students also completed survey questions related to frequency of library usage and attitudes toward the library at both the start and the end of the semester.

As an assessment measure, after independently viewing the tutorials online, the students completed a quiz related to content. As a follow-up assignment, students completed a critical evaluation of an assigned webpage using an evaluation tool created by the librarians. In addition, students engaged in an online discussion about information literacy skills they had learned in the course.

Thirty percent of the grade for the final research paper related directly to the application of information literacy skills. For example, students needed to demonstrate that they included information from scholarly sources including peer-reviewed journals. Grades for the final paper were determined using a rubric. Rubrics have been found to be effective measures of the application of information literacy skills by undergraduate students (Knight, 2006).

Results

The tool used to measure information literacy skills at the beginning and end of the semester contained five survey items related to previous experience with information literacy instruction at the college and student attitudes on the effectiveness of library instruction. An additional 18 items probed specific knowledge and skills.

Pre-test and post-test performances on the 18 knowledge and skills items of the class were compared using a paired samples t-test. Fifteen of the twenty-three enrolled students participated in both of the administrations.

Among the students who took both the pre-test and post-test, 6 reported that they had previously received library instruction at the college, but 9 reported that they had not. While the results were gathered from a small sample, it is of concern that more than half of the upperclassmen enrolled in this course reported no previous library instruction. The students varied in their library experiences and knowledge about the ethical use of information. In an open ended question, students commented that the types of courses they are enrolled in help to determine how often they use the library.

No significant statistical difference was noted in the mean raw scores of the pre-test and post-test measures. An item analysis, however, did reveal gains in some of the skill areas. For example, at the beginning of the semester, none of the students could correctly identify one of the four major journals published by the American Speech Language Hearing Association. On the post-test 6 scored correctly on this item. Those who scored incorrectly on the item did not list the journal title accurately, but included key words from the article title.

There was a minor shift in how students rated their library experiences on the post measure. Thirty-three percent of students responded that their experience at the college contributed *very much* to their knowledge, skills, and personal development in evaluating the quality of material. Less than one percent of students recorded a response of *very much* for this item on the pre-test.

Having viewed the tutorials, students completed an online assignment asking them to evaluate a variety of websites based on: accuracy, authority, scope, objectivity, currency, and usability. Each student was assigned a specific website to research. Students used the *Evaluation of a Website* tool developed by the librarians. Some of the websites were from clearly identifiable and reliable sources such as the National Institute of Health. Other sites were posted by special interest groups, support groups, or individuals but contained information related to communication sciences and disorders. The students posted their reviews in an online discussion. The class received a mean score of 58 on a scale of 60 points for effectively presenting the results of their evaluations in an online discussion.

In addition, the mean score for the final paper was 91.4 out of 100 based on the rubric. Individual student's scores did range, however, from 55 to 100. On the portions of the rubric directly related to information literacy skills, students received a mean score of 28 out of 30 possible points. Students were expected to synthesize information from a variety of scholarly sources into their work.

Discussion

The current study was developed to gather assessment data on the collaborative efforts of a discipline-specific faculty member and a college librarian to integrate information literacy instruction into a distance education course using screencasting. Both knowledge and application of skills by students were assessed.

Of the students enrolled in the course, fewer than half reported previous library instruction. In addition, they had varied library experiences ranging from "never" using the library to "at least two times per week". Instead of a traditional face-to-face library instruction lecture, the students participated in screencast

tutorial instruction delivered online. The information literacy knowledge and skills of the students were assessed using a variety of measures.

Use of a pre-test/post-test measure did not yield a significant difference in mean scores related to knowledge items. One factor may have been the limited number of items on the test. In addition, the group engaged in both phases of the assessment was relatively small (15 students). Also, the instrument may not have been sensitive enough to detect small changes in learning.

Based on student discussion and responses to an attitude survey, students acknowledged that they learned about information literacy and how the library can be useful in locating information needed. Students demonstrated that they were able to evaluate websites based on accuracy, authority, scope, objectivity, currency, and usability.

Use of a scoring rubric for the final paper allowed for an authentic measure of the application on information literacy skills presented in the tutorials. Emphasis was placed on utilizing scholarly sources to investigate a topic related to evidence-based practice. According to the Middle States Commission (2003), "course-embedded assessments, such as students' papers and other measures of student performance are rich sources of assessment data at both the course and the program level because they are closest to the learning process" (p.50). Authentic assessment should be used in conjunction with tools such as surveys of student perception of learning.

The current results are not without limitations. The outcomes in the present study were based on the case of one senior level undergraduate class in speech-language pathology. Assessment of the knowledge, skills, and attitudes of a larger sample of students should be conducted.

Conclusions

Screencasting is a means of providing ongoing instruction that can be reinforced throughout a class. It provides instruction in a multimedia format which makes it accessible for students with a variety of learning styles. Students can review the information multiple times at their own pace.

Based on the results of the current study, after participating in tutorial instruction using screencasting, students were able to apply information literacy skills in the development of a review of literature. They were able to identify and discuss key concepts related to information literacy. The use of authentic measurement tasks such as rating the information literacy skills used to produce the final paper provided more information for assessing learning outcomes than did the measures to assess recall of knowledge such as the online quiz.

Based on preliminary data, screencasting appears to be an effective tool for information literacy instruction in a distance learning environment. Students benefit from being able to access the tutorials multiple times at a time and place convenient to them. In addition, to integrate skills into the curriculum, students need multiple opportunities to apply information literacy skills in meaningful assignments.

Information literacy has been identified as an essential goal in undergraduate education. Distance-learning students represent a population with diverse learning needs. Screencasting is an instructional method that allows students who are off-campus access to quality instruction in this essential area. In the case of blended or hybrid instruction, screencasting allows for material to be presented in a multimodality format outside of scheduled class meetings. Skills can then be reinforced both in class and through web-based assignments. Screencasting offers flexibility for both students and instructors.

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