

Screencasting Library Tutorials for Distance Learners: A User Evaluation

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Distance education has been offered for over a century using multiple modes and models. Regardless of the mode or model employed, access to a library and library services is needed to supplement or complete coursework. However, the quantity and variety of resources are sometimes overwhelming. Additionally, library processes, are often confusing or complicated and not easily communicated in an e-mail or over the telephone. The e-Learning Librarian at Brigham Young University created short screencasts to deliver information literacy instruction and help to distance learners to address these problems. The screencasts were evaluated by distance learners and the findings are reported in this article.

Distance education has been offered for over a century using multiple modes and models. Correspondence courses were the earliest and simplest mode and with the advent of new technologies, other modes followed. Some courses were delivered via "CD-ROMs, audio and videotapes/discs, radio and television, computer software, and audio and video conferencing" (Moore & Kearsley, 2005, p. 15). More recently, courses offered at open universities utilize one or more of these methods with the addition of a live tutor for support. Today many courses are offered via the Internet with synchronous or asynchronous communication capabilities. Some are still largely text-based and others are offered via desktop conferencing systems. Whatever the delivery mode or model employed, students usually need access to a library or library services to supplement or complete their coursework.

In the pre-Web delivery days when courses were primarily delivered via mail, radio and television, use of the library and its resources was supplemental and optional. Cooke (2004) notes that "Research was conducted primarily through the print versions of books and magazines, with some research being conducted through computer programs and CD-ROM products" (p. 52). Books and articles were provided via mail to students, but many courses were self-contained due to the difficulty of access to library resources. However, in the mid-1990s, when Web delivery of distance education became widely used, delivery of library resources and services also changed to a predominately Web-based model. Because of ubiquitous access, library resources and services to distance learners are no longer supplemental or optional but are a vital component of distance education courses. Distance learners now have access to online full-text databases, electronic

books, library tutorials, virtual library tours, delivery of materials to their home or workplace and reference assistance via e-mail, chat, instant messaging or video conferencing.

Distance education students lead busy lives, typically being employed full-time, some with families, and most with limited time to devote to their studies. This makes convenience a major factor in the delivery of services to distance learners. Living worldwide, these students rarely have the opportunity to visit the library of their home institution to receive instruction or help using the resources available to them. Many are returning to school after an extended absence from higher education, are sometimes less technically adept, and lack even basic library knowledge. As Rosenquist-Buhler (1996) observed "training and assistance with electronic services are almost as important as the information itself. This is ... even more critical for the remote user" (p. 23).

Librarians who serve distance education students strive to provide the full range of library services and resources available to their on-campus counterparts. However, the quantity and variety of resources are sometimes overwhelming. Additionally, library processes, such as ordering materials via interlibrary loan (ILL) or searching databases, are often confusing or complicated and not easy to communicate in an e-mail or over the telephone. Librarians have responded to this problem in the past by preparing paper handouts, library handbooks, user guides, online forms, Web pages, brochures and other materials.

Brigham Young University (BYU) has a strong commitment to and a long history of providing distance learning using the Independent Study (IS) model. Courses were offered using the correspondence model beginning in 1920. With the advent of the Internet and associated technologies, the model continues, with many courses transferred to a Web-based delivery method. When the author assumed the position as the first librarian dedicated to serving IS students, no mechanism was in place to provide library services for these students. IS students are not included in the campus student database and, therefore, do not receive user IDs and passwords. An alternate method of authentication was devised for them using a Library Services Portal. The portal contains links to research guides, online databases, the library catalog and ILL services as well

as contact information for the course librarian. However, the open entry, open exit nature of IS courses makes it difficult to provide information literacy instruction to these students or to teach them processes like setting up an ILL account and ordering materials.

The advent of online library resources and processes created a need for “flexible, portable, asynchronous library instruction ...” (Betty, 2008, p. 33). The author sought a way to provide instruction and specific directions for accessing and using library services available to IS students on their own time and in their individual courses. Several methods of providing instruction to IS students were considered. Online text-based instruction is one method of providing instruction to distance learners; however, it can be confusing without a visual component and technical difficulties can cause frustration. Furthermore, it does not provide a mechanism for students to seek clarification of anything not understood in the text (Viggiano, 2005, p. 41). PowerPoint slides were considered; however, the static nature of screenshots was somewhat limiting for demonstrating a process or for teaching information literacy concepts and skills. Additionally, not all IS students have access to the Microsoft Office suite on their home computers.

The functionality of screencasting software offered an efficient way to visually and dynamically demonstrate library processes and procedures. Screencasts, sometimes described as animated online tutorials, employ video screen capture, including mouse movements, narration and other features that focus attention on the relevant area of the screen, and are rendered in a video format. Dewald (1999) notes the following advantages of online tutorials: (1) providing instruction at the student’s point-of-need, (2) removing limitations of the one-shot session, and (3) the availability anywhere, any time to distance learners (p. 26). Other benefits include repeated viewing of screencasts, if needed, and the ability to embed information literacy instruction in the screencasts. Subsequently, the author produced six short screencasts, which contained a title screen, an objectives screen succinctly stating what the student would learn, the information itself and a review screen. The review screen included a reminder that the student could contact the course librarian for more help.

The screencasts included information literacy instruction and help with library processes. Three of the information literacy screencasts taught concepts related to searching for articles. The *Finding and Evaluating Articles* screencast included instruction on entering search terms in a database, using truncation, limiting searches to scholarly sources, and evaluating articles using the standard criteria of authority, credibility, timeliness, relevance and perspective. The *Focusing Your Search* screencast provided instruction on using database limiters such as scholarly or peer-reviewed articles, publication types and sorting results by relevance or date. *Finding An Article from a Citation* taught searching

concepts for known articles, and *Finding Books* taught the concept of title and keyword searching in the online catalog. The other two screencasts demonstrated library processes unique to BYU. *Ordering Books and Articles* walked through the process of setting up an ILL account and ordering materials, and *Getting Help* explained additional methods of receiving assistance from the library.

Literature Review

In a review of international distance education research, Slade (2004) found that the literature dealing with library services for distance learners tended to be of four types, none of which directly addressed evaluation of online tutorials (p.8). There are articles in the literature about instruction for distance learners using online tutorials (Green, Wu & Nollan, 2006; Balin & Pena, 2006; Templeman-Kluit, 2006; Notess, 2005; Behr, 2004; Jones, 2004; Wakaruk, 2002; Pival & Tunon, 2001). As early as 1996, Rosenquist-Buhler noted that the increased usage of electronic services posed problems for distance learners. Remote users are generally unfamiliar with the electronic resources and often have no idea how to “navigate through the system” (p.223). Viggiano (2005) observed that while many tutorials for distance learners have been created, they often “assume that the student is not at a great distance from the college or university” (p.41). Udell (2005) asserts that screencasting is a huge improvement “over conventional documentation and training” (p.34). Assessment of online instruction for distance learners is scarce and is mostly limited to full tutorials or information literacy courses. Articles in the literature addressing the evaluation of instructional screencasts produced by libraries are scarce at this time. Dewald, et al. (2000) discuss the critical nature of assessment for online instruction to distance learners and the difficulty of getting feedback. Lindsay (2004) compared two online information literacy courses that used a course management platform as the delivery mechanism but did not assess student experiences. A 2005 article by Bury & Oud reports their efforts in usability testing. Betty (2008) describes the process of creating tutorials and employing usage statistics as well as articulating the need to evaluate the usability, effectiveness of content and presentation (p.302). This article specifically addresses the evaluation of usability, helpfulness, and effectiveness of library instruction delivered via online screencasts.

Methodology

After producing the screencasts and incorporating them into the Library Services Portal, the author assessed them. Students watched the screencasts and completed a survey about their effectiveness and usability. The effectiveness of the presentation format in teaching information literacy skills was important because the author hoped that after viewing the screencasts, students would be able to successfully employ

the concepts and processes presented. Usability was also a major concern, particularly if the presentation format was ineffective or technical problems were experienced. This could result in both student frustration and discontinued use of the screencasts.

Institutional Review Board (IRB) approval was obtained for the study and IS students were chosen to evaluate the screencasts. Students were required to be over 18 years of age and to have a valid e-mail address in order that the survey invitation could be efficiently delivered to them wherever they resided. The course a student was enrolled in was not a factor at the time of the study. Problems arose in choosing a truly random sample of students for the study. The author used the BYU Division of Continuing Education's student information system to gather a sample and found that many records lacked the information needed to determine if the student was a possible candidate. Each record had to be opened individually to see if the student met the age and e-mail criteria. One hundred and one student names met the criteria and were chosen for this study. However, it is unknown whether the student assistant doing the extraction examined the entire database or simply chose the first one hundred and one names that met the selection criteria. If so, this was not a true random sample of the entire IS student population, but those chosen met the established criteria for respondents.

In order to evaluate the screencasts, each respondent was randomly assigned two screencasts to watch. The presentation of the screencasts was programmed so that the second screencast did not appear until the first screencast was viewed. The survey did not appear until both had been viewed. After viewing the screencasts, the respondents answered a twelve question survey evaluating the screencasts and soliciting suggestions for their improvement.

The survey (Appendix A), constructed and administered using the Qualtrics software, included a combination of multiple choice, Likert scale and short answer questions. The questions assessed the ease of use, helpfulness, and effectiveness of the screencasts, respondent confidence about applying what they learned, technical problems experienced, likeliness of using the screencasts, and suggestions for improvement. Four demographic questions collected data on age, gender, self-rated technology expertise and number of Independent Study courses taken.

An incentive was offered to students who participated in the assessment. At the completion of the survey, respondents had the option to provide their names and mailing addresses in exchange for \$25 Amazon gift certificates. To protect the privacy of respondents, names and addresses were gathered in a separate survey so that they could not be associated with answers in the survey.

The survey invitation was e-mailed to 101 IS students. Eight invitations were returned as undeliverable, and one respondent asked to be taken off the list. During the three-week period that the survey was active, two follow-up messages were also sent at spaced intervals to those who had not yet completed the survey. Of the remaining 92 invitations, 21 respondents began the survey, but only 18 completed it. This translated into a 20% return rate, not as high as the author had hoped.

Those who completed the surveys were primarily males between the ages of 18 and 25. These respondents did not fit the expected profile of IS students at BYU. The typical IS student at BYU is a 39-year-old woman who has been out of school for longer than 10 years and is not particularly technologically adept. However, the surveys that were completed provided valuable information about the screencasts.

The author was not satisfied with the low rate of return and the respondent profile. Subsequently more participants were invited to take the survey. For the second survey, IS students over the age of 35 were sought. An additional criterion was that they were currently enrolled in any one of five courses that had demonstrated heaviest use of the Library Services portal. A student assistant returned to the Division of Continuing Education and again opened every record in order to determine which students met the participation requirements. A sample of 100 was desired, however only 73 could be found that met the age and course requirements. In an effort to secure more participants, the student assistant also recorded an additional 13 names of students who had recently completed one of the five courses. Of those 86 names, only 60 met the additional requirement of having a valid e-mail address. The same procedures for e-mailing invitations and reminders, viewing screencasts and completing the survey were repeated for the second survey.

The second survey netted data from an additional 20 respondents, all of whom completed the survey, for a 33% response rate. Respondents to the second survey were primarily females over the age of 35. The combined results of both surveys included responses from 25 females and 13 males, for a total of 38 responses. All responses were analyzed by the library's statistical officer using SAS software and are reported in the following section. After an initial analysis of the findings, results from the surveys were correlated to respondents' genders and self-reported rating of technology expertise which was characterized as either novice, intermediate or expert. One respondent did not report his/her level of technology expertise; therefore, the totals of all correlations of answers to level of technology expertise are 37 instead of 38. Percentages have been rounded to the nearest whole.

Results

When respondents were asked about the ease of use of the screencasts, the majority responded that the screencasts were *very easy*, *somewhat easy*, or *easy to use* (Figure 1). One respondent indicated that the screencasts were *somewhat hard to use*. Results for correlation with self-reported technology expertise and gender were remarkably similar for this question. With one exception novices, intermediates or experts reported that the screencasts were *very easy*, *somewhat easy*, or *easy to use* (36:1). One expert reported that the screencasts were *somewhat hard to use*, and one respondent did not answer the technology expertise question. The same was true when results were analyzed by gender. Females (23:1) and males (13:0) found the screencasts *very easy*, *somewhat easy*, or *easy to use*, and one female found them *somewhat hard to use*.

Respondents were then asked to rate the helpfulness of the screencasts using a seven-point Likert scale (Figure 2). Point one was *very helpful*, point four was *neutral* and point seven was *not very helpful*. Eighteen respondents marked points on the scale between *very helpful* and *neutral* (1-3), five marked *neutral* (4), and 15 marked points on the scale between *neutral* and *not very helpful* (5-7). When analyzed by technology expertise, slightly more experts or intermediates (18:13) thought it was *helpful* than *not helpful*. One expert and two intermediates rated the helpfulness as *neutral* (1:2). Novices rated the screencasts as either *neutral* or *not helpful* (2:1). Gender correlations for this question showed no consensus among females (12:4:9). Twelve rated it *helpful*, but nine rated it *not helpful* and four marked *neutral*. Males were evenly divided between *helpful* and *not helpful* at six each (6:6). One male marked *neutral*.

The next question asked about the effectiveness of the screencasting format to deliver the information. Of the 38 responses, 33 indicated that yes the format was *effective* and five indicated no the format was *not effective* (Figure 3). Those who marked *no* were asked to suggest what formats would have been better. The intention of this follow-up question was to elicit ideas about different formats; however, respondents suggested changes to the current format rather than identifying a different format. Over three times as many experts thought the format was *effective* as *not effective* (11:3). Intermediates overwhelming thought the format was *effective* with only one exception (18:1), and slightly more novices thought the format was *effective* as *not effective* (3:1). Gender correlations showed that a majority of females felt the format was *effective* (23:2), and three times as many males felt it was *effective* as not (10:3).

Respondents used a seven-point Likert scale in the next question as well to specify how confident they were that they could successfully complete the processes explained in the screencasts. Thirteen respondents answered *extremely confident*, five marked *neutral*, and six

Figure 1: Ease of Use of Screencasts.

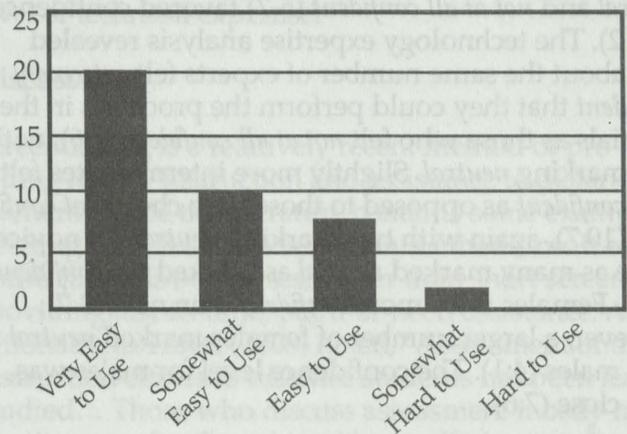


Figure 2: Helpfulness of Screencasts

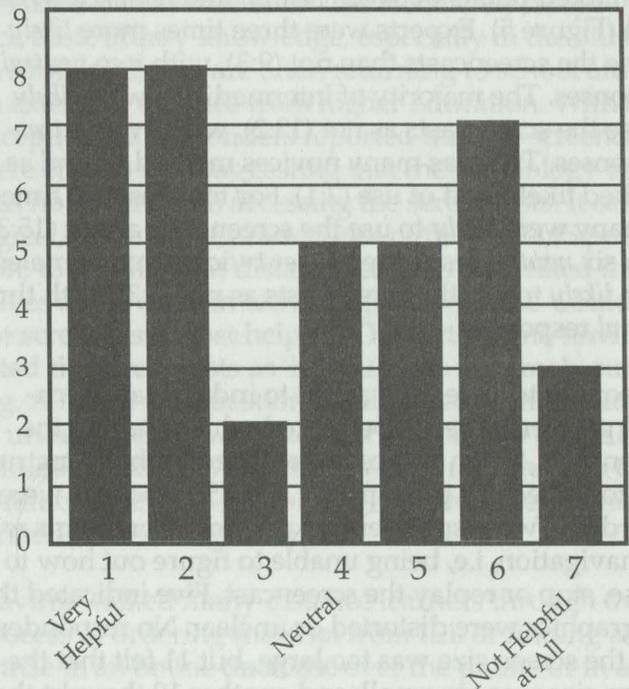
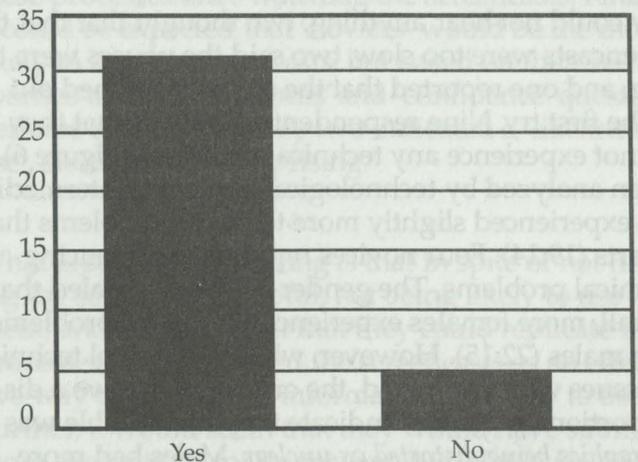


Figure 3: Effectiveness of Screencasting Format



chose *not at all confident* (Figure 4). The points between *very confident* and *neutral* (1-3) and the points between *neutral* and *not at all confident* (5-7) favored confidence (21:12). The technology expertise analysis revealed that about the same number of experts felt *extremely confident* that they could perform the processes in the tutorials as those who felt *not at all confident* (7:6), with two marking *neutral*. Slightly more intermediates felt *very confident* as opposed to those who chose *not confident* (10:7), again with two marking *neutral*. Of novices, twice as many marked *neutral* as marked *not confident* (2:1). Females were more *confident* than not (13:7); however, a larger number of females marked *neutral* than males (4:1). The confidence level for males was very close (7:6).

Respondents were then asked to indicate how likely they would be to use the screencasts for assistance. On a seven-point Likert scale, 23 marked points between *very likely* and *neutral* (1-3), nine marked *neutral* (4), and six marked points between *neutral* and *not likely at all* (5-7) (Figure 5). Experts were three times more *likely* to use the screencasts than not (9:3), with two *neutral* responses. The majority of intermediates were *likely* to use the screencasts as not (13:2), with five *neutral* responses. Twice as many novices marked *neutral* as marked likelihood of use (2:1). For females, five times as many were *likely* to use the screencasts as not (15:3) with six *neutral* responses. Over twice as many males were *likely* to use the screencasts as not (8:3), with three *neutral* responses.

Respondents were then asked to indicate any technical problems they experienced while viewing the screencasts. Seven choices were listed with the instruction to "Check all that apply," and 45 responses were recorded. Two respondents experienced problems with the navigation, i.e. being unable to figure out how to pause, stop or replay the screencast. Five indicated that the graphics were distorted or unclear. No respondent said the screen size was too large, but 11 felt that the screen size was too small, and another 10 thought that the font size was too small. Nine respondents marked *other* at which point a text box allowed them to explain their particular problem. Three respondents, thinking that there was audio in the screencasts, explained that they could not hear anything, two thought that that the screencasts were too slow, two said the pauses were too long, and one reported that the screencast timed out on the first try. Nine respondents indicated that they did not experience any technical problems (Figure 6). When analyzed by technological expertise, intermediates experienced slightly more technical problems than experts (19:14). Four novices reported experiencing technical problems. The gender analysis revealed that, overall, more females experienced technical problems than males (22:15). However, when individual technical issues were examined, the only item to have a disproportionate number indicate they had trouble was in *graphics being distorted or unclear*. Males had more

Figure 4: Confidence in Completing Processes

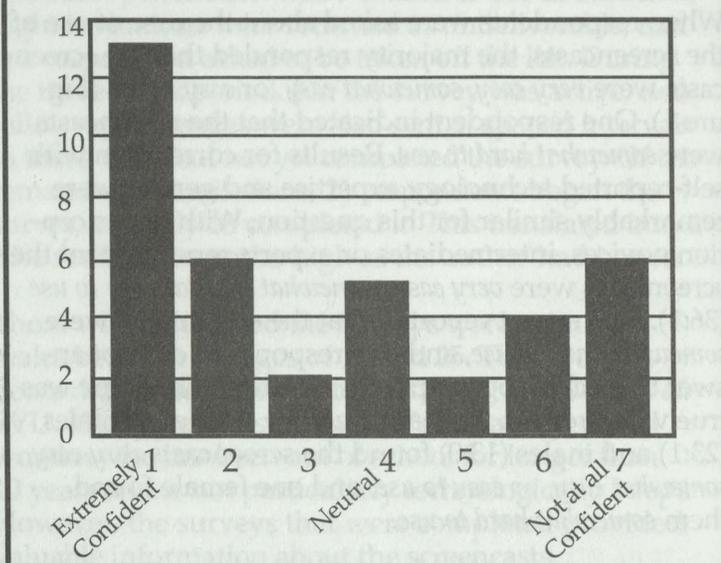


Figure 5: Likeliness of Using Screencasts for Assistance

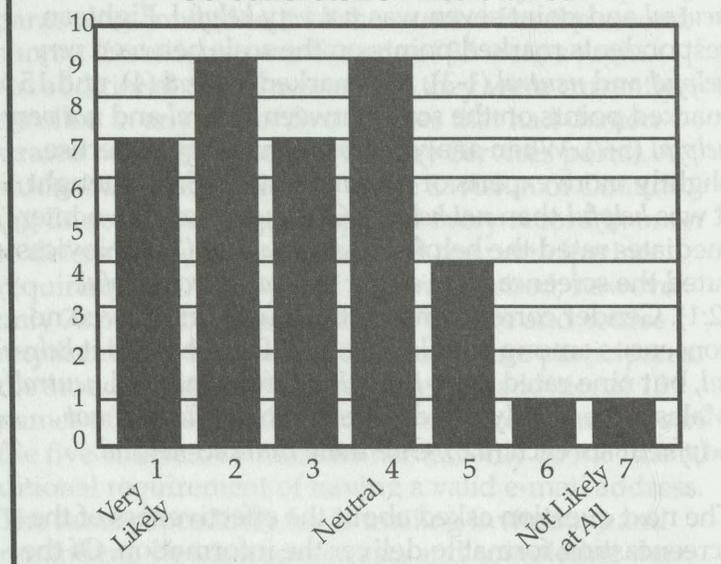
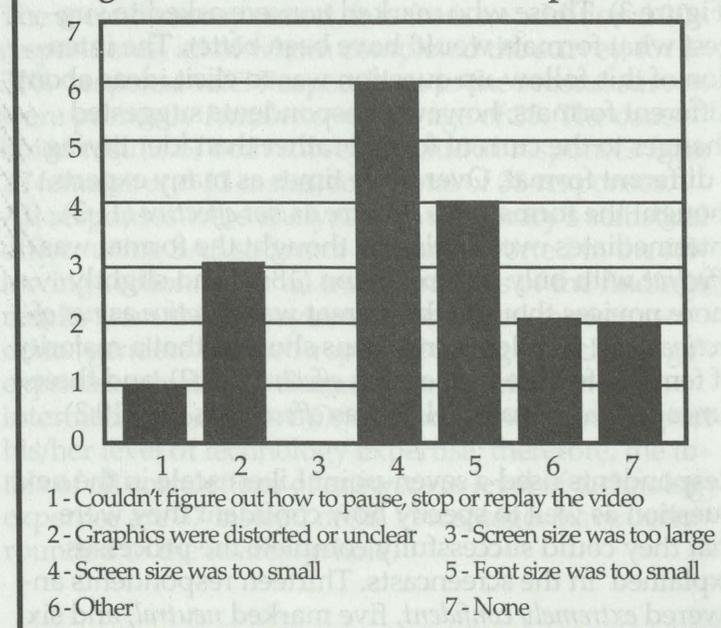


Figure 6: Technical Problems Experienced



trouble with this than females (3:2).

Lastly, respondents were given an opportunity to suggest improvements to the screencasts. Twenty-nine respondents suggested improvements and one offered *none*. The suggestions centered on three main themes that were also mentioned in the responses to technical issues experienced. The first was speed of the screencasts. One respondent commented, "I was literally strumming my fingers waiting and waiting for the next part to pop up." Another said, "I found myself wanting to fast-forward but was afraid I'd miss something important." When screencasts were originally created, text callouts were used and sound was not included. Screencasts were filmed slow enough so that viewers could read the text. But the survey indicated that everyone, both males and females from all age groups and with all levels of technology expertise, thought they were too slow and suggested increasing the speed. In addition to increasing the speed, the ability to determine how fast the screencasts played was a suggestion for improvement.

The second theme was the need for audio in the screencasts. Ten respondents commented that adding sound would greatly improve the screencasts. One suggested an option for watching with or without sound, another thought it would improve the screencasts to have the text read aloud, and a third thought that audio would make it possible to shorten the pauses in the screencasts. Audio is clearly an option that respondents not only wanted, but would find helpful.

The third theme addressed screen and font size. Respondents who answered this question generally felt that both the screen size and the fonts needed to be increased. One suggested adjustable fonts and screen size, and another suggested that areas being explained could be enlarged or bolded to make them stand out. Assorted other suggestions included:

- Make the screencasts interactive
- Use a slideshow format with a "next" button rather than a video format
- Divide the screencasts into segments so that the student could move on when finished reading the text.
- Make sure that the screencasts "work good on all the media".
- Explain what the different databases are all about. Which database would be most effective for different types of searches.

When suggestions were correlated by technical expertise, intermediates and experts were almost equal in the number of suggestions submitted (13:12). Two nov-

ices suggested improvements; one reported *none*; and one submitted a suggestion without indicating his/her level of technical expertise.

Discussion

Screencasting is a relatively recent method of providing library instruction and assistance to distance learners. While the literature contains some examples of using Web-based presentation methods, most are entire tutorials or courses, rather than short screencasts providing just-in-time, point-of-need assistance. Additionally, as Hines (2008) noted, "Assessment of these instruction efforts to distance students has been less studied... Those who discuss assessment mostly mention it as an afterthought, without offering results..." (p.468). The results of this study add new information to the literature of assessing the use of screencasts with distance learners.

Distance learners are often less technically adept, lack basic library knowledge, especially in the online environment, and are often returning to school after an extended absence from higher education. With one exception, all responders reported that the screencasts were easy to use, suggesting that the technology used was not a barrier to accessing the screencasts. It seemed logical, given the characteristics of the BYUs IS population, to assume that distance learners who rated themselves as 'novices' in technological expertise would find the screencasts most helpful. The fact that no novices rated the screencasts as 'helpful' was extremely surprising. A follow-up question would have been instructive in understanding why. Related and similar to the helpfulness question, were the 'novices' responses to their confidence level in completing the processes demonstrated in the screencasts.

Having walked many distance learners through the process of ordering material from ILL or finding an article in an online database over the phone or in an e-mail, the screencasts, with their ability to be replayed as often as necessary, would appear to increase their confidence in navigating the library. However, again 'novices' expressed a lack of confidence in completing these processes after watching the screencasts. Finally, it could be expected that 'novices' would be the most likely to use the screencasts, but based on their responses to the 'helpfulness' and 'confidence' questions, perhaps the fact that only two indicated a 'likelihood of use', should not be surprising.

What is still more puzzling is that in spite of not finding the screencasts helpful, not being likely to use them, and not confident that they could replicate the processes, 'novices' rated the screencasts as an effective way to present the information and easy to use. Further, it would seem that they would have submitted more suggestions for improvements. However, only

three suggestions were received from this group. One possible explanation is that since 'novices' indicated little likelihood of use, they did not submit suggestions for improvement. Another is that since a few reported experiencing some technical problems, they felt those responses explained the needed improvements.

Conclusions

Respondents overwhelmingly reported that the screencasts were easy to use and thought that screencasting was an effective information delivery format. However, perceptions about the helpfulness aspect of the screencasts and their confidence in being able to perform the processes explained in the screencasts were not as conclusive. Generally, respondents indicated a likelihood for using the screencasts; however, 'novices' in both surveys were least likely to use them. The technical issues of screen and font sizes were similar in both surveys. Suggestions for improvements were also consistent across both surveys, focusing on speed, audio and the size of the screen and fonts.

Although two surveys were administered, the constraints on the method of selecting participants and the size of the combined responses are not a representative sample of BYU's IS population. While this makes it hard to generalize the results with certainty to either the BYU or the general distance learning population as a whole, the findings did provide valuable information about how to improve the screencasts. Nevertheless, these results can inform other librarians who are experimenting with screencasting, not only for distance learners, but also as a virtual reference tool, as just-in-time support for students on campus who choose to use the library remotely, for point-of-need help for students in the library during busy times at the reference desk, or late at night when face-to-face help is less available.

Further investigation is needed to reveal why respondents who reported their technology expertise as 'novice' did not find the screencasts helpful and why they were unlikely to use them. Focus groups would allow a further exploration of the reasons behind the responses. Adding interactive elements to screencasts is another area for further research that would yield valuable information about learning processes of distance students. As the population of distance learners continues to increase, continuing a critical examination of online learning tools is necessary to insure the highest quality and most effective formats for delivery of instruction to this audience.

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