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Get the cite right: Design and evaluation of a high-quality online citation tutorial

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ABSTRACT

As part of a library initiative to foster information literacy, promote academic integrity, and prevent inadvertent plagiarism, a high-quality online tutorial was designed to teach students to cite sources properly. The development of this tutorial, *APA Exposed: Everything You Always Wanted to Know About APA Format but Were Afraid to Ask*, was a collaborative endeavor among research and instruction librarians, learning technology specialists, and an instructor. This study employs a mixed-methods research approach that combines the use of multiple data sources – an online survey, website visitor-tracking software, e-mail correspondence, and a Google search – to evaluate the quality and efficacy of the tutorial. Analyses of online survey data indicate 98% of survey respondents found the tutorial useful or very useful. All of the respondents reported the tutorial improved their understanding of APA style. In addition, 93% of respondents said they planned to use this tutorial as a reference resource in the future and 99% said they would recommend the tutorial to others. The online tutorial received an average of 1055 visits per month. The findings of this study indicate that there is a need for high-quality online citation instruction and that the tutorial meets this need. Providing effective citation instruction online not only benefits tutorial participants but also research and instruction librarians as they can now allocate limited library resources to areas of instruction other then proper citation techniques.

1. Introduction

As part of their induction into the community of scholars, graduate students are taught to communicate their ideas using the discourse genre and conventions of the field. One of those conventions is the proper citation of sources. In the social sciences, and particularly in the fields of education and psychology, researchers generally use the American Psychological Association (APA) citation format (APA, 2007, 2001). "Citation of and specific credit to relevant earlier works are part of the author's scientific and scholarly responsibility and are essential for the growth of a cumulative science" (APA, 2001, p. 16). Thus, it is important that APA style be applied properly and consistently throughout a work.

2. Problem statement

Students in the social sciences often have difficulty employing APA conventions (Lewis, 2008). This may be due to a misinterpretation of the rules detailed in the *Publication Manual of the American Psychological Association* or to conflating APA style with another style, such as those articulated in the *MLA Handbook for Writers of Research Papers* (Gibaldi, 2003) or *The Chicago Manual of Style*

(University of Chicago Press, 2003). Students who inconsistently or inappropriately use citations may appear to be plagiarizing the work they are intending to cite (Brown, Dickson, Humphreys, McQuillan, & Smears, 2008; Dames, 2006, 2007; Froese, Boswell, & Garcia, 1995; Landau, Druen, & Arcuri, 2002; Murray, 2006; Park, 2003). Teaching students to use APA conventions correctly can be challenging and time consuming. This study investigates whether an online citation tutorial can effectively meet the needs of students and scholars seeking information or clarification about how to properly interpret and employ APA citation rules. An extensive review of the extant literature did not yield a single study of the efficacy of citation instruction online, yet this aspect of information literacy warrants research. The present study is an initial investigation of this topic. If online information literacy instruction can be designed to meet the needs of the academic community, librarians will have more time to devote to instruction in other content areas. Moreover, effective online information literacy instruction supports high-quality scholarship by providing scholars essential information in a timely and efficient fashion.

3. Literature review

Scholars have identified three potential sources that together or independently can contribute to citation difficulties as well as unintentional plagiarism: cultural variation in academic writing standards (Boisvert & Irwin, 2006; Born, 2003; Park, 2003;

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Sutherland, 2004); ignorance of citation conventions (Brown et al., 2008; Dames, 2006, 2007; Froese et al., 1995; Landau et al., 2002; Murray, 2006; Park, 2003); and the use of electronic sources (Boisvert & Irwin, 2006; MacDonell, 2005; Murray, 2006; Park, 2003).

Scholars contend that culture plays a role in students' citation difficulties (Badke, 2007; Boisvert & Irwin, 2006; Born, 2003; Park, 2003; Sutherland, 2004). In some cultures, "copying the work of a master…is a sincere expression of respect and flattery" (Boisvert & Irwin, 2006, p. 23). Therefore, students may not realize that this type of replication is not appropriate when writing in a Western academic context. Specifically, students may be unfamiliar with American citation conventions (Sutherland, 2004). Heitman avers, "We end up very often assuming people know the rules and don't tell them what the rules are until they get into trouble" (as quoted in Tomsho, 2006, para. 15).

Lack of knowledge about citation conventions, as well as what constitutes plagiarism, is not only a problem for students from other cultures. Murray (2006) writes, "Some people are blissfully unaware of the correct conventions for acknowledging other people's ideas and the need to express themselves in their own words. Ignorance of such conventions can and has led to accusations of plagiarism" (p. 22). Other researchers have also linked a lack of knowledge about proper citation techniques to inadvertent plagiarism (Brown et al., 2008; Dames, 2006, 2007; Froese et al., 1995; Jackson, 2006; Landau et al., 2002; Murray, 2006; Park, 2003). In addition, researchers have found that an inadequate understanding of how to properly paraphrase information — or cite information that has been paraphrased — can lead to unintentional plagiarism (Guinee & Eagleton, 2006; Jackson, 2006; Landau et al., 2002; Murray, 2006; Park, 2003).

The increased use of digital sources of information (Boisvert & Irwin, 2006; Burke, 2005; MacDonell, 2005; Murray, 2006; Park, 2003) has also been linked to an increase in issues related to plagiarism. Specifically, students' difficulties with citing electronic sources (Davis & Cohen, 2001; Lewis, 2008), coupled with the convenience of conducting a search on the Internet and the ease of using cut-and-paste techniques to preserve culled information, have been associated with a lack of appropriate source attribution in students' academic work. Yet the Internet is an increasingly powerful and important tool for conducting scholarly research. Hence, educators need to devise better ways to foster students' development of the skills required to conduct research and appropriately cite sources in the digital age.

To address source attribution and citation difficulties, many scholars advocate a proactive stance that includes direct instruction on proper citation conventions, such as how to cite secondary sources and the distinction between paraphrasing and copying (Born, 2003; Dames, 2006, 2007; Froese et al., 1995; Guinee & Eagleton, 2006; Jackson, 2006; Kendall, 2005; Landau et al., 2002; Murray, 2006; Park, 2003; Rennie, 1999). Importantly, research supports the efficacy of instructional programs to address these issues (Froese et al., 1995; Guinee & Eagleton, 2006; Landau et al., 2002; Schuetze, 2004). The tutorial described in this article provides students with explicit instructions on the need to provide proper source attribution and how to do so in accordance with the rules articulated in the *Publication Manual of the American Psychological Association* (APA, 2001). Moreover, this article provides preliminary evidence that the use of the Internet, which may initially impede the ability of students to cite sources properly, can be harnessed to remediate students' citation difficulties and thus improve their ability to communicate in academia.

3.1. Academic libraries and information literacy

College and university librarians are at the forefront of information literacy and often provide instruction in this area (ALA, 2003; Lewis, 2008). Thus, it is not uncommon for librarians to be charged with the responsibility of providing instruction on topics such as proper citation techniques. The ability to properly and consistently acknowledge information sources is one of the performance indicators in the Information Literacy Competency Standards for Higher Education (ALA, 2006). Moreover, Jackson (2006) notes that "librarians are looking for pedagogical ways to help campuswide initiatives in support of a culture of integrity" (p. 418). It is in the spirit of supporting a culture of integrity and scholarly excellence that the Harvard Graduate School of Education (HGSE) sponsored a workshop to instruct students on the proper use of citation conventions and later sponsored the adaptation of this workshop into an online tutorial.

4. Research context

The HGSE Gutman Library Research and Instruction Services Department develops and presents research- and library-related instruction to the university's academic community. Citation formatting is a vital component of information literacy and a cornerstone in the important relationship between academic integrity and written work. Hence, the Research and Instruction Services Department sponsored the development of an online tutorial to educate the academic community on the appropriate use and interpretation of APA citation style (APA, 2001).

As soon as software for creating online tutorials was introduced at HGSE, the head of the Research and Instruction Services Department identified the need for an online APA tutorial and realized that the development of such a tutorial would provide an ideal opportunity for an interdepartmental collaboration. She contacted the Learning Technology Center and the creator of the live APA workshop that was then being used to see if they would be willing to collaborate in such an endeavor. Everyone she contacted was interested in testing the software to see if it could effectively support a citation tutorial online, and they agreed to contribute their expertise to the project.

Both students and scholars writing in the fields of education and psychology must be able to employ the most current APA citation formatting in manuscripts submitted for publication (Lewis, 2008). Therefore, the Research and Instruction Services Department annually reviews the tutorial and, when necessary, updates and refines it to reflect modifications in APA formatting requirements (i.e., APA, 2007, 2009) and to make improvements based on participant feedback.

4.1. The live workshop

A live workshop was created to help incoming graduate students quickly master the basic rules of the APA citation system (APA, 2001). This hour-long workshop focused on the types of citations graduate students use most frequently and explicitly addressed students' most common APA citation errors. For example, this workshop covered how frequently to cite a source, how to cite a secondary source, and how to cite a chapter in an edited book.

Sometimes students believe that they have no need for instruction on APA style because they have purchased computer software to insert their in-text citations and create their reference lists. Although available software can often create reference lists in accordance with APA style, this software provides no information about how frequently to cite a source nor does it provide appropriate reference forms for all types of online and hard-copy materials. Thus, even when using this type of software, it is often necessary to correct the references it creates, to create new reference forms within the software, or to create references without the use of the software. To do any of these tasks requires an understanding of APA style. Moreover, to use reference software effectively, it is important to understand aspects of APA style such as the distinction between citing a secondary source and citing the original source. When citing a secondary source, for example, APA format mandates citing the work that was actually read (the secondary source), not the original work that was not read

but that was mentioned in the secondary source (APA, 2001, p. 247). However, students often mistakenly cite the original source, even though this is not the source they actually read. It is likely that students who do not understand the proper way to cite a secondary source and who use software to create their reference lists will erroneously enter the original source into the electronic form provided by the reference software. If inappropriate information is entered into the software, inappropriate references will be produced. The live workshop explained how to use APA format correctly, which could facilitate students' appropriate implementation of referencing software. In addition, the workshop covered other APA basics — the correct typeface, font size, line spacing, and margin size — that students need to use in their papers.

Upon completing the live workshop, students were asked to provide written feedback about its effectiveness. The feedback from participants documented students' appreciation of the workshop content and the clarity of its pedagogical approach, as well as students' perception that the workshop elucidated important aspects of APA format and fostered a clearer understanding of APA citation style. Critical comments were addressed and remedied. For example, students requested information about how to cite a classroom lecture, and they mentioned that the size of the type on the handouts was not large enough to distinguish between commas and semicolons. Details about how to cite a classroom lecture were added to the workshop, and the handouts were redesigned so that the punctuation marks could be easily differentiated.

Although the live workshop was well attended and quite successful, it did not meet the needs of all students. There were always students whose schedules precluded their participation. Those who could not attend were often accommodated with a one-on-one consultation. However, holding individual consultations for APA instruction was not an effective use of library resources. Thus, a more effective response to the needs of the academic community was needed. In addition, there were students who did not realize they had questions about how to cite references until they encountered citation difficulties only hours before a paper was due. These students often turned to the reference librarians for assistance. The large number of requests for assistance with APA formatting, as well as for one-on-one APA sessions, led to the development of an online tutorial that could be easily accessed at the students' convenience.

4.1.1. The online tutorial

The online APA tutorial, *APA Exposed: Everything You Always Wanted to Know About APA Format but Were Afraid to Ask* (*APA Exposed*), combines innovative technology with e-learning best practices to provide a comprehensive tutorial for anyone who cannot attend the live workshop as well as a quick reference for those who need last-minute citation information. The defined learning outcomes for the tutorial focus on developing participants' understanding of the reasons for using APA format and their ability to apply APA format as a practical skill. To support these learning outcomes, a pedagogical framework based on the principals of *universal design for learning* (Rose & Meyer, 2002) was used; specifically, this tutorial provides participants with multiple means of representation and engagement.

Importantly, this tutorial is a multimodal-learning tool. In other words, the tutorial presents the curricular content using multiple means of representation. For example, a PowerPoint presentation is accompanied by an audio track that provides a verbal explanation of the visual content of each slide. In addition, participants can view a complete transcript of the audiotaped explanation. The design of this online tutorial includes both a comprehensive audio track and a full transcript to provide access for users who have vision or hearing difficulties as well as to support different learning styles or preferences. Participants can also view an outline of the tutorial and thumbnails of the presentation slides. A printable handout of the PowerPoint slides is also available.

To provide multiple means of engagement, the tutorial uses a flexible user interface. Although the tutorial takes approximately 40 min to complete in its entirety, participants can elect to skip or replay particular topics. Students can also elect to engage in periodic "learning checks," or they can proceed without checking their comprehension of the material. In addition, the tutorial includes a search box that allows participants to go directly to sections of particular interest. This is especially useful for those who have already taken the full tutorial but want to review a topic pertinent to a specific paper they are writing.

APA Exposed was originally designed for a limited target audience: graduate students enrolled at HGSE. Knievel (2008) notes that, as recipients of online information literacy instruction, graduate students are an "underserved population" (p. 175). *APA Exposed* was specifically designed to address the needs of this underserved population. Hence, this tutorial provides instruction on the basics of APA style and specifically addresses difficulties graduate students often have when first learning to employ APA formatting.

After *APA Exposed* was constructed, a limited audience of other library science professionals was asked to review its content. The feedback from these reviews led the Gutman reference librarians and library administrators to conclude that the larger academic community would find the tutorial valuable. Therefore, the tutorial was made available to anyone with Internet access rather than solely to members of the Harvard community.

5. Research questions

This study was designed to explore whether an online citation tutorial can be an instructionally effective response to the needs of the academic community. Specifically, the study investigates whether participants found the *APA Exposed* tutorial useful and whether they believed it improved their understanding of how to cite sources correctly. In addition, this study examines whether *APA Exposed* is a resource appropriate only for an initial introduction to APA style or whether it is a tool that more advanced students and scholars can use as a reference resource. This study also considers whether students' and scholars' responses to *APA Exposed* differ depending on whether they are affiliated with Harvard or another academic institution. In other words, this study questions whether the response to *APA Exposed* is specific to one institution or whether the response can be generalized to a larger population. Three main research questions guided this study:

1. Does *APA Exposed* fill students' and scholars' need for APA citation instruction at Harvard and at other academic institutions?
2. Do participants' academic affiliations or backgrounds affect their response to the tutorial?
3. Do participants who are unfamiliar with APA style respond differently to the tutorial than participants who are more familiar with APA style?

6. Method

This study employs a mixed-methods research design. Fidel (2008) advocates for the use of mixed-methods research in studies of library and information science, as this approach "allows researchers to address issues more completely than one method could, which in turn amplifies the richness and complexity of the research findings" (p. 266).

An online survey was created to evaluate the quality and utility of the online tutorial (see Mages, 2009, for a copy of the survey). Tutorial participants had the opportunity to decide whether or not they wished to take the survey, which contained 16 multiple-choice questions about the value and efficacy of the tutorial. The respondents answered by clicking on a radio button or selecting an answer from a

drop-down menu. In addition, the survey provided opportunities for respondents to elaborate on their answers in short-answer and narrative-response text boxes. The survey also captured demographic information, such as a participant's university status (i.e., undergraduate, master's student, doctoral student, faculty member). Additionally, respondents were queried about how useful they found the tutorial and whether they felt it improved their understanding of the APA citation format. Finally, the surveys gave participants an opportunity to offer comments or suggestions. Beta testing of the tutorial and the associated data collection took place over a period of one year.

When designing a study, it is important to consider the validity of the evaluative instruments employed (Hernon & Schwartz, 2009). As noted, the survey respondents comprise a self-selected sample. Survey data are self-report data. Both self-selected samples and self-report data can introduce bias into a study. Bias, a threat to internal validity, "refers to factors that systematically affect the value of means" (Cook & Campbell, 1979, p. 80). In other words, tutorial participants who chose to take the survey may differ from those who chose not to take the survey. If it were possible to select a random sample from all of the people who took the tutorial and require that sample of people to take the survey, their responses to the survey would likely be more representative of the responses of the whole population of people who took the tutorial. Self-report data are prone to bias as people are not always aware of what the "true" answer might be and, even when they know the "true" answer, they might not be willing to divulge this information on a survey. For example, people may not respond accurately when asked to report sensitive information such as their annual income or how much they weigh. Thus, survey studies, by their nature, are inherently prone to selection bias and self-report bias, which can pose a threat to the validity of a study. Nonetheless, surveys can provide valuable feedback on participants' responses to curricula or teaching strategies.

Using multiple sources of data to guard against validity threats is known as triangulation (Maxwell, 1996). This study uses triangulation to substantiate the research findings. "Triangulation refers to

soliciting data from multiple and different sources as a means of corroborating evidence and illuminating a theme or a theory" (Rudestam & Newton, 2001, p. 100). To corroborate the survey evidence, this study employs three additional types of data: website visitor-tracking data, e-mail correspondence sent to members of the *APA Exposed* development team, and a Google search of educational institutions that have linked to the tutorial. Two of these data sources, visitor-tracking data and Internet-search data, are unobtrusive forms of data collection that provide additional information on the use of the tutorial.

7. Results

7.1. Visitor usage of APA Exposed

APA Exposed consistently receives a large number of visits. A few months after the tutorial was launched, software was implemented to track the number of visits to the site. During the final 7 months of beta testing, *APA Exposed* received 7384 visits. The tracking software did not distinguish between new visitors and return visitors. Thus, some of the visitors may be using the tutorial on multiple occasions. On average, the site received 1055 visits per month. Fig. 1 displays the number of visits to the tutorial for the last 7 months of the beta testing period.

7.2. Sample demographics from the evaluation survey

Eighty-one tutorial participants elected to take the online survey. Of these, fewer than half (44%) were affiliated with Harvard University, where the tutorial originated. The other 56% came from a number of other academic institutions. The sample includes respondents associated with both small and large schools and both public and private institutions. The majority of respondents were students (85%). Of the students, 52% were master's students and the other 48% were doctoral students. In addition, 6% of the respondents identified themselves as faculty members and 9%
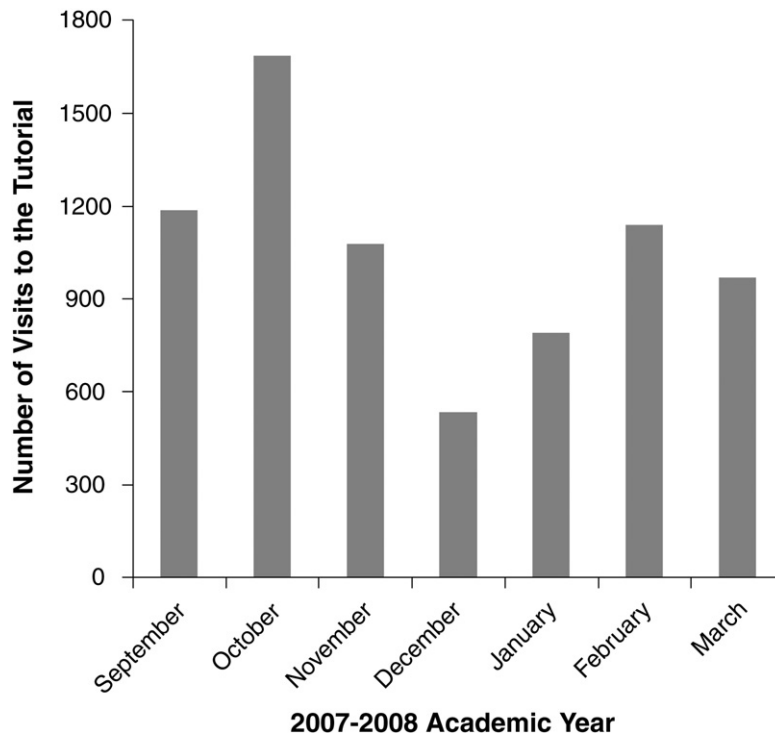
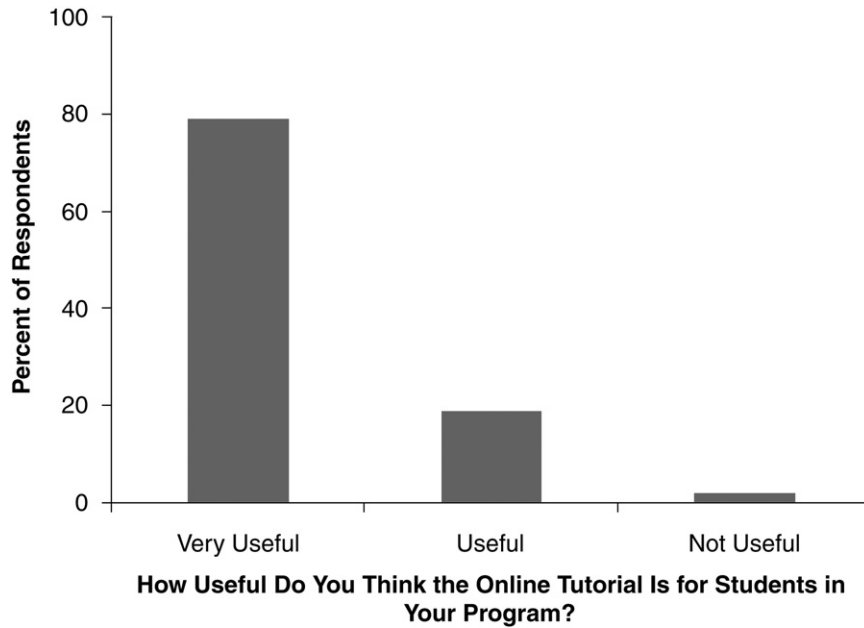**Fig. 1.** Number of visits per month to the APA Exposed online tutorial (*n* = 7384).

Fig. 2. Perceived utility of the APA Exposed online tutorial ($n=81$).

identified themselves either as *staff* or *other*. From their comments, most of the participants who identified themselves as staff or other appear to be university lecturers or university librarians. The majority of the participants identified English (80%) as their native language. The other participants identified Korean (7%), Chinese (4%), Portuguese (2%), Spanish (1%), French (1%), or Slovene (1%) as their native language. Another 4% of respondents did not identify their native language.

7.3. Effectiveness of the tutorial

The majority of the participants (79%) reported that they found *APA Exposed* to be very useful and another 19% reported that they found the tutorial useful. Only two respondents reported that they did not find the tutorial useful (see Fig. 2). Participants were asked, "Has this APA tutorial improved your understanding of how to use APA format?" Forty-nine percent of the respondents reported substantial improvement and another 42% reported some improvement in their understanding of APA format. An additional 9% reported a little improvement. It is worth emphasizing that all respondents felt that the tutorial contributed to an improved understanding of APA format; the response *no improvement* was never selected (see Fig. 3). The reports of improvement are particularly noteworthy, as 65% of the sample stated that they began the tutorial with adequate, proficient, or expert knowledge of APA format. In addition, most of the participants (93%) said they planned to use this tutorial as a reference tool in the future. Virtually all the respondents (99%) said that they would recommend the tutorial to others.
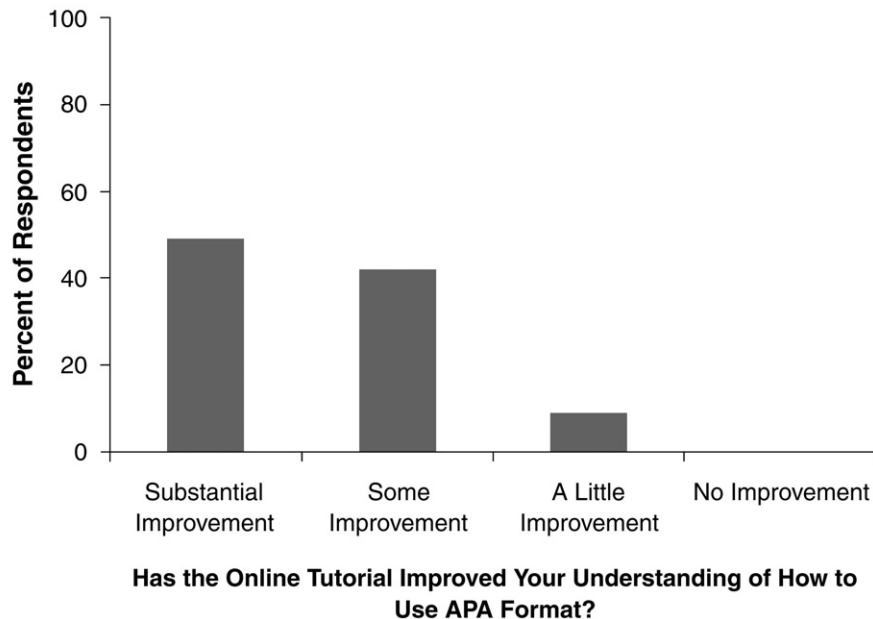

Fig. 3. Perceived improvement attributed to the APA Exposed online tutorial ($n=81$).

A series of χ^2 analyses were conducted to investigate whether the reports of the tutorial's effectiveness differed across educational institutions and whether they were related to participants' initial familiarity with APA style. There were no significant differences between the responses of participants' who attended Harvard and those from other universities. Therefore, participants' initial understanding of APA format, their level of improvement, their overall impression of the tutorial, and whether they would use it in the future appears unrelated to the participants' school affiliation.

The amount of improvement in APA understanding reported by participants was significantly related to the participants' perceptions of their APA knowledge prior to taking the tutorial ($\chi^2 = 24.65$, $p < .01$). An analysis of variance (ANOVA) revealed a significant and generally inverse relation between prior APA knowledge and improved understanding $F(3, 72) = 8.65$, $p < .01$. Although all groups reported improved understanding, those with the least prior knowledge tended to report the greatest improvement in their understanding (see Fig. 4). There was a significant difference in the reported improvement between novice APA users and those who felt they began the tutorial as proficient APA users ($p < .01$). There was also a significant difference between those who began the tutorial with an adequate understanding of APA style and those who began as proficient APA users ($p < .01$). The contrast between novice APA users and those who began the tutorial with an adequate understanding of APA style approached significance ($p = .06$). There were no significant differences in reported improvement between those who classified themselves as experts in APA format and any of the other categories of APA understanding.

On average, people who categorized themselves as novices reported the most improvement ($m = 2.74$) and those who categorized themselves as proficient reported the least improvement ($m = 1.83$). The reported improvement of those who felt they had an adequate understanding of APA (APA, 2001) before taking the tutorial ($m = 2.44$) was between that of the novices and those who were proficient. Interestingly, the reported improvement of people who classified themselves as experts ($m = 2.33$) was most similar to those who felt they began with an adequate understanding of APA format.

In addition to their quantitative evaluations, many respondents provided evaluative comments about the online APA tutorial. Some of the respondents provided suggestions about how to improve the tutorial. For example, participants noted if they encountered technical difficulties and suggested including specific types of reference forms that they frequently need to use in their work. Respondents' comments focused on three areas: the tutorial content, the multi-modal format, and the flexible user interface.

7.4. Survey comments: content

Respondents commented on the sophistication of the information presented. For example, one respondent wrote, "The content was great. It was presented at a level that was not too basic and not too advanced. The organization and learning objectives were clear." Interestingly, respondents with differing levels of expertise found the tutorial valuable. One doctoral student, who began the tutorial with an "adequate" understanding of APA format, wrote:

> This was a fantastic tutorial. I am at the very beginning of my studies and just assumed that APA format was similar to the citation styles I had used before (in undergrad and a masters program). Boy, was I wrong. This got me on the right track....

A doctoral student who self-identified as proficient in APA format prior to participating in the tutorial, wrote, "This tutorial served as a great review. I recommend this site to all scholars." Another doctoral student, who also self-identified as a proficient APA user, commented:

> This would be very helpful for a beginning grad student. I knew most of the info already, but picked up a few new things. For example, I had always had to look up the capitalization difference between books and journals, but now I will remember it.

Similarly, a faculty member not affiliated with Harvard University remarked:

> This is the best tutorial for students I have seen. It is also a great reference for faculty. Having this tutorial always available helps everyone double check their work. We have found that students do not "get it" by just reading the APA manual.
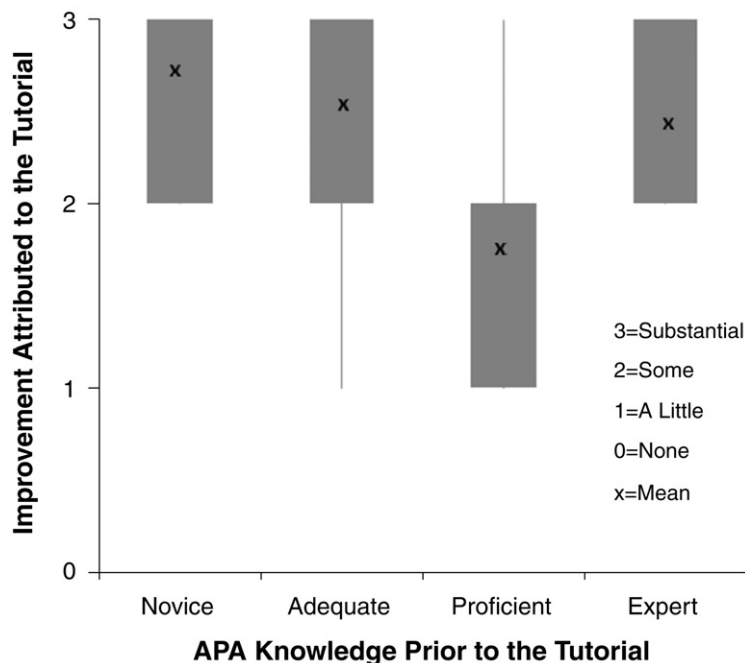

Fig. 4. The relation of prior knowledge of APA style to improved understanding ($n = 76$).

7.5. Survey comments: multimodal format

Respondents' comments suggest the tutorial's multimodal framework addresses the needs of people with different learning styles and preferences. One respondent specifically mentioned the impact of combining the use of an audio track with the visual text-highlighting technique used in the tutorial:

> I thought the "everyday" language used in the tutorial was helpful. The narrator spoke in a way that was clear which made it easy to understand. I also liked how specific examples were shown and highlighted so the reader/listener could follow along and know exactly what the narrator was saying.

Another respondent also expressed appreciation for the use of multiple representations of the information: "I thought something that was really great was the notes section [containing the full transcript]. [It] was helpful for me to read and not just hear." The quality and usefulness of the audio track was specifically noted by one of the non-native English speakers who wrote, "I enjoyed the recorded voice that further explained each topic. It was very helpful. I also enjoyed the learning checkpoints throughout the presentation." A second respondent commented on the value of the learning checks: "Love the format. The assessments were especially helpful."

A few participants commented on the length of the tutorial. For example, one participant wrote, "It was very good but I feel it was a little long." Another participant disagreed: "I was hesitant because it takes almost an hour, but the time flew by! I wish I had done this during orientation rather than now in second semester."

7.6. Survey comments: flexible user interface

Finally, a number of respondents commented on the flexibility of *APA Exposed* as an instructional tool. One respondent who began the tutorial with some knowledge of APA format described how the technical structure of the tutorial can be used to modify the length of the tutorial to meet an individual participant's specific needs:

> The tutorial was well constructed overall. At times I felt like I wanted the speaker to "hurry up and talk faster" so I was happy to be able to click to the next slide. This way, for those who are already familiar with APA style and just want a refresher, they can skip over the parts they already know. The examples offered were helpful to illustrate the format and it was nice when the speaker noted which parts of the format were difficult areas for most students, so one could pay particular [attention].

Another respondent wrote, "You could work at your own pace and take notes in your apa [sic] book."

7.7. E-mail correspondence

In addition to the data obtained through the survey, some participants chose to provide feedback by e-mail. One student wrote, "I took the APA tutorial yesterday, and it was tremendously helpful. I wish I had taken it sooner!" Many of the e-mails commended the tutorial and requested permission to use it. One such e-mail was from the chairperson of a psychology department:

> I must compliment you on the clarity and thoroughness of your explanations. I found your tutorial the most useful of any of the websites on the APA style that I have searched. Our department would like permission to link some of our courses and homepage to your website as a resource for our undergraduate students.

The HGSE administrators believe this tutorial to be beneficial to both students and scholars and, thus, welcome other academic institutions to link to the tutorial.

7.8. Google search

A Google search of the phrase "APA exposed" revealed that a variety of colleges, universities, and libraries have elected to place links to the tutorial on their websites. A number of these links are accompanied by laudatory comments describing the content of the tutorial and recommending its use. In addition, a librarian (The Distant Librarian, 2007) blogged:

> APA Exposed is the title of a really well-done tutorial on how to format papers using APA style....it runs 40 minutes, so is definitely on the long side, but it's quite entertaining and I'm sure would prove useful to [many] students.

This Google search data helps to corroborate the data from the website visitor-tracking software, the online survey, and the e-mail correspondence.

8. Discussion

The online tutorial, *APA Exposed: Everything You Always Wanted to Know About APA Format but Were Afraid to Ask*, was developed to educate incoming graduate students at one particular university about the importance of citing sources correctly using APA style as well as to provide participants with enough explanatory information to enable them to interpret APA citation rules correctly and use them appropriately. The tutorial describes the mechanics of APA style as it explains the rational and communicative intent of proper citation formatting. This approach is designed to foster technical competence and higher-order thinking, both of which are necessary for the proficient implementation of APA style, as well as for the successful use of computer software to create in-text citations and reference lists. *APA Exposed* was created to take advantage of the educational affordances of online instruction. Because of the potential educational value of the tutorial, the Harvard Graduate School of Education made it available to the broader academic community.

The online tutorial was beta tested for one year. Evaluation data on participants' perceptions of the quality and usability of the tutorial were collected using an online survey. The perspectives of participants affiliated with Harvard University and participants affiliated with other academic institutions were considered. Almost all of the respondents reported that they found *APA Exposed* to be useful or very useful. The majority of the respondents believed that participating in the tutorial improved their understanding of APA format and planned to use *APA Exposed* as a reference tool in the future. Moreover, almost all of the respondents said they would recommend the tutorial to others. In addition, respondents commented on their appreciation of the content of the tutorial, the multimodal presentation of information, and the flexible user interface. Importantly, both novice and proficient users of APA style found value in the tutorial. Everyone who took the survey reported improvement in their understanding of APA citation style.

The *APA Exposed* website was quite popular, receiving 7384 visits in the last 7 months of the beta testing period. The number of visits to the *APA Exposed* website may be an additional indicator of site participants' belief in its utility and efficacy. This is particularly noteworthy considering that other researchers have found students were uninterested in using an extracurricular online tutorial, even when the students knew their ability to cite sources properly would constitute a large portion of their grade (Brown et al., 2008).

In this study, multiple sources of data — website visitor-tracking data, online survey data, e-mail correspondence, and a Google search of educational institutions that recommend and link to the tutorial — were used as a form of triangulation to guard against threats to the validity of the findings. Each of the data sources supports the finding that students, faculty members, and librarians generally find the tutorial useful and believe it fosters better comprehension of the APA

citation system. This suggests that citation difficulties, which some scholars contend are exacerbated by the use of digital sources of information (Boisvert & Irwin, 2006; Burke, 2005; MacDonell, 2005; Murray, 2006; Park, 2003), may be ameliorated by an online tutorial such as *APA Exposed*. In this way, it may be possible to take advantage of the power of digital media to improve students' understanding of how to cite sources correctly and, thus, better prepare students to succeed in academia.

Although the data collected for this preliminary evaluation of the online tutorial are quite favorable, it is primarily an assessment of the participants' perceptions of their learning and understanding. It is not an assessment of their ability to use the information that was presented in real-world contexts. However, students cannot use information or rules that have never been presented to them or that were presented in such a manner that students could not comprehend their import or application. It is also worth noting that, after implementing a citation and plagiarism prevention intervention, Schuetze (2004) found that students' perceptions of their improved understanding of citation conventions correlated with their observed performance on a term paper; students who believed they had a better understanding of citation conventions had fewer citation errors.

This evaluation describes novice, intermediate, and advanced APA users who, after viewing the online tutorial, all reported that their comprehension of the APA citation system improved. Novice users indicated that they were aware of more APA rules and felt that they better understood how to apply them. More sophisticated APA users reported that the tutorial reminded them of rules that they had forgotten or improved their understanding of some of the intricacies, nuances, or details of applying APA format correctly. In the future, it would be worthwhile to investigate whether perceptions of improvement after viewing *APA Exposed* are correlated with improved performance, as were perceptions of improvement in Schuetze's (2004) study.

APA Exposed was designed for graduate students, yet the evaluation data suggest that information presented is easily understandable and is also suitable for undergraduates. One faculty member wrote, "I work with undergraduates in Psychology and would be very interested in having them use this as well." Another faculty member emphasized that students were not able to understand the rules for proper source attribution simply by reading the APA manual. This online tutorial may remedy this problem by helping students interpret the rules presented in the APA manual and thus foster a more profound understanding of both how to cite sources and the need to do so. Moreover, the tutorial's explicit explanation of the reasons and importance for citing sources, coupled with its detailed explanation of how to apply APA citation rules when writing academic papers, makes it a proactive tool for preventing plagiarism.

In addition to helping students learn to cite sources in accordance with APA style, the tutorial can also be helpful for faculty members. A number of respondents specifically mentioned that *APA Exposed* is a good reference resource for faculty. The tutorial is updated regularly and thus has utility for faculty members and other scholars who require a more in-depth presentation and explicit interpretation of the latest APA rules. In conjunction with the APA manuals (APA, 2001, 2007, 2009), the tutorial can help scholars who are preparing manuscripts for publication. Providing citation information that is accessible, interpretable, and up to date can help scholars draft manuscripts that require less editing and, thus, save them time revising manuscripts for publication. Moreover, *APA Exposed* enables faculty members to devote more of their course time to content instruction as they no longer need to devote valuable class sessions to teaching citation rules.

APA Exposed is reviewed annually and, when necessary, updated to take advantage of technological innovations and to interpret the most current modifications of APA style (APA, 2009). Sabol (1998) recommends taking user feedback into consideration when revising

a website. User feedback has been essential to all subsequent revisions of *APA Exposed* (for the most recently revised version, see Mages, 2009). Furthermore, survey data continue to be collected and will play a critical role in future revisions.

9. Conclusion

The findings of this study indicate that there is a need for high-quality online citation instruction and that *APA Exposed* meets this need. There are other content areas which may also be particularly well suited to online instruction. Providing effective instruction online not only benefits participants but also research and instruction librarians as it frees limited library resources for use in other areas. As librarians strive to meet the information literacy needs of today's students and scholars, it would be advantageous for them to consider the possible benefits of online instruction.

The efficacy of online instruction is attributable to its quality and its accessibility. In addition, the effective use of assessment strategies to evaluate whether an online tutorial meets the needs of its target audience can contribute to its success. The quality of *APA Exposed* can largely be attributed to the collaborative efforts of a team of research and instruction librarians, learning technology specialists, and an instructor, all with diverse areas of expertise. Research and instruction librarians interested in developing online instruction should seek collaborative partners who can make unique contributions to the content and presentation of a tutorial.

Considering issues of access is critical to the success of any educational endeavor but may be particularly important when designing online instruction. *APA Exposed* integrates principles of universal design for learning (Rose & Meyer, 2002), specifically the use of multiple means of representation and engagement, to provide access to participants with hearing or vision difficulties, participants who are non-native English speakers, and participants with diverse learning styles or preferences. Online instruction needs to meet the needs of the whole community. Thus, when designing online instruction, librarians must pay special attention to how different community constituents will be able to access the instructional content. Furthermore, high-quality online instruction needs to combine technical information with higher-level conceptual explanations to make instruction meaningful and effective for a wide audience.

Evaluation is an essential component in the development of high-quality online instruction. It is necessary to assess whether a tutorial accomplishes what it was designed to do. Thus, an appropriate method for evaluating instructional quality and efficacy needs to be considered in the earliest stages of developing online tutorials. Librarians must be confident in the efficacy of online instruction in general, as well as in the ability of online instruction to properly cover a specific content area, before they can rely on it to address the information literacy needs of the communities they serve. This article documents the methods used to develop and evaluate the efficacy and quality of *APA Exposed*. The findings of this research continue to contribute to the refinement of the content and presentation of *APA Exposed* and provide a generative model for research and instruction librarians interested in designing and evaluating online information literacy instruction.

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