Appalachian
STATE UNIVERSITY®
BOONE, NORTH CAROLINA

The Learning Outcomes of Mentoring Library Science Students in Virtual World Reference: A Case Study

GERALDINE PURPUR and JON LEVI MORRIS

Abstract: This article reports on the cognitive and affective development of students being mentored in virtual reference interview skills by professional librarians. The authors present a case study which examines the impact on student learning resulting from librarian mentor participation and collaboration with students on a course assignment. This study explores student reflections on the role of librarian mentoring in relation to perception and effectiveness, learning, confidence gained, and value of professional assessment.

The Learning Outcomes of Mentoring Library Science Students in Virtual World Reference: A Case Study

GERALDINE PURPUR and JON LEVI MORRIS

INTRODUCTION

From 2011 to 2013, the Belk Librarians at Appalachian State University collaborated with the Masters of Library Science (MLS) teaching faculty in the implementation of an assignment called the Reference in Action project (RIA). The assignment was designed to prepare library science graduate students to conduct an effective virtual reference interview. This qualitative study of five semesters involved administering the RIA assignment, collecting student feedback, and analyzing student reflections on the presence of the Belk Librarian as a mentor to students playing the role of virtual reference librarian. The mentoring sessions took in a 3D immersive virtual learning environment.

Reflections collected from the students were used to determine whether the Belk Librarian participation as mentors in the Reference in Action project

contributed to student learning, and if so, in what ways. Findings from the student reflection analysis on the role of librarian mentor in the RIA project indicated that librarian mentoring contributed to student learning and student confidence in their skills necessary for conducting an effective reference interview. The findings have implications for campuses considering collaborations between library science faculty, campus librarians, and students.

BACKGROUND

The Library Science Program at Appalachian State University (ASU) offers a Masters of Library Science (MLS) degree in School and Public Libraries. Accredited by the National Council for Accreditation of Teacher Education and by the North Carolina Public Library Commission, the program is a major educator of public and school librarians for North Carolina. In fall 2010, ASU began offering a fully online MLS degree program of study in the Appalachian Educational Technology Zone (AETZone) a 3D virtual learning community. In addition to the MLS program, other graduate programs at ASU, such as school administration, instructional technology, and higher education have also used the AETZone to facilitate delivery of course content and instruction. The AETZone promotes active engagement among students, faculty, and librarians and a strong sense of online community. The Belk Library has had a space in the virtual environment since its inception in 1999 and has been providing library support and services, including research assistance, library instruction, and access to library resources to students and faculty using the AETZone.

Assignment History

In 2008, Belk Librarians collaborated with a Library Science Faculty member teaching LIB 5020, *Information Sources and Services* in the design of an assignment with a purpose to familiarize MLS students with reference services skills. In this first iteration of the assignment, MLS students spent two to three hours over a two-week period as a virtual reference librarian in the AETZone Belk Library, assisting real students who were in need of research help. A Belk Librarian was present to mentor and guide the MLS student as they interacted with the real student. The following year, the assignment evolved to include the following learning objectives: (1) to build student skills in conducting a reference interview, (2) to give students the experience of providing virtual reference service in a 3D Web-based virtual world, and (3) to allow students to reflect and report on their experience (Johnson et al., 2009). In this second iteration, MLS students were paired together to form a team and took turns playing the role of the reference librarian and the role

of the patron needing research assistance. The reference questions were supplied by the Belk Librarians and were written to prompt a reference interview. The Belk Librarians were present during these sessions as mentors and to provide assistance if needed. Additionally, to prepare the students for this assignment the Belk Librarians provided an orientation to the AETZone Belk Library in the form of a treasure hunt and a presentation focusing on *RUSA Guidelines for Implementing and Maintaining Virtual Reference Services.*

RIA Project Assignment

In 2011, shortly after ASU began offering the MLS degree online, the course *Information Services and Sources* was redesigned by two MLS Faculty to incorporate the application of Presence Pedagogy (P2) and to better utilize the communication and technology tools inherent in the AETZone. Many of the original activities were included, but rather than focus on specific skill sets, e.g., search skills or reference interview skills, they were re-designed to build on and interact with each other (Matzen et al., 2013). The newly designed course resulted in a re-vamped assignment called the Reference in Action (RIA) project, which merged several activities, namely, reference skills, search skills, creation of the pathfinder, and the mock reference interviews. For the RIA project, students formed groups charged with selecting a topic, developing a wiki pathfinder on the topic, and creating a pilot, testing a variety of patron profiles, and developing a list of reference questions related to their topic and pathfinder. Over a four-week period, the students took turns playing the role of the reference librarian and the role of the patrons they had created. The reference interviews took place in the Belk Library AETZone under the tutelage of active academic librarians who were experienced in providing both in-person and virtual reference service.

As mentors, the Belk Librarian role was to critique the session by offering positive feedback, comments, and suggestions. The reference interview session critique was based on a list of common behaviors and included:

- greeting
- negotiation of the reference query
- verbal feedback during the session
- incorporation of virtual world software technologies
- knowledge of sources
- closure

At the beginning of each session, the mentor librarians introduced themselves to the student-librarian and the student-patron, explained their role, and explained that in most cases they would not comment during the session. Occasionally, if it was obvious that a student-librarian was struggling

with a particular aspect of the reference interview or with a technical issue, the mentor librarian interjected via private text chat with suggestions. Likewise, the student-librarian was encouraged to ask the mentor librarian for help when needed. The mentor librarians also recorded each session using the built-in recording features of the 3D immersive world. The recordings were placed in a Web guide for the students to review and study their performances. For each reference interaction, students were asked to write a 3–5 page paper that included:

- a summary of their experience;
- reflections on the patron they encountered;
- reflections on the reference interview;
- reflections on their ability to provide the patron appropriate help;
- reflections on having the assistance of a Belk librarian as a mentor; and
- general thoughts about the experience. (Matzen et al., 2013)

For three years the RIA project was incorporated into the *Information Services and Sources* course. The Belk Librarians participated as mentors for five semesters between 2011 and 2013. At the conclusion of each semester, the Belk Librarians met with the MLS Faculty to discuss the assignment and if necessary, made changes based on observation and experience.

PURPOSE OF THE STUDY

The main purpose of this study is to examine the effects of the Reference in Action project mentored by librarians and administered through the AET-Zone. Specifically, the study is intended to document the student learning outcomes in the following three categories: evidence that learning took place, perception and effectiveness of librarian mentoring, and students' emotional progression.

LITERATURE REVIEW

The experiences and challenges for conducting a reference interview vary, depending on the method of interaction—face-to-face reference, traditional online chat reference, and 3D virtual reference. Very little has been written specifically about mentoring library science students in a 3D virtual learning environment, but there is a significant body of literature that documents the numerous benefits of mentoring in the field of librarianship. Effective mentoring is vital to the success and growth of the library profession (Freedman, 2009). New librarians gain the knowledge and wisdom of seasoned professionals, which in turn strengthens the future of the library

profession (Stoll, 2012). A positive mentoring experience instills confidence in a library science student or new library professional and ensures a successful start to their career. According to Creighton (2007), who has mentored library media specialists throughout her career, the purpose of a mentor is "to act as a coach or model to a new library media specialist and provide feedback and reflection on these new learning experiences. Mentoring also helps to prevent turnover and develops confident and knowledgeable practitioners" (p. 25). Kawasaki (2012), a strong advocate of mentored internships states "For the mentee, a library science graduate student, a mentoring relationship with a practicing librarian not only provides an opportunity to gain practical experience; it also provides an environment where he or she can develop a professional identity and professional behaviors. The mentor serves as a valuable role model ..." (p. 129).

Different Types of Mentoring Programs

Mentoring in the field of librarianship can be accomplished in many ways and is applicable to all types of libraries. Some libraries have very structured formal mentoring programs for new librarians, staff, and student workers, while others mentor "on the fly." A mentored internship or practicum as a course in an MLS graduate program offers the MLS student an opportunity to "reach levels of knowledge and professionalism that might otherwise be unattainable in programs comprised solely of graduate courses" (Kawasaki, 2012, p. 130). Kelly (2011) recounted her own experience as an MLS student as a mentee for one year and describes the many benefits of library science students working with professional librarians for all parties involved. She also advises how to successfully implement such programs. "One-on-one mentoring ... can be very impactful for students entering the library field" (p. 145). A mentoring program geared toward MLS students creates a cooperative relationship between the library and the library science program.

Auxiliary Benefits

Experienced librarians who mentor gain the advantage of learning about emerging technologies, new perspectives, and innovations in the field. Mentoring library science graduate students benefits the librarian in several ways, including challenging them to articulate and assess their own methods and keep abreast of current trends in the profession. Kawasaki (2012) suggests that mentoring library science graduate students is in itself an effective modeling of professional behavior: it shows that professional librarians give back of themselves by investing their time mentoring library science students, and in so doing also hone their own skills. Collaborating with library school

faculty and master's library science students is also beneficial to developing the skillsets of the professional librarians participating in these interactions. Lee (2011) wrote that "Having a library student complete an assignment within the library helps to keep the librarians fresh and on the cutting edge of what library students are learning and expecting from the library profession. More important, it helps to keep the library abreast of what is being taught in library schools today" (p. 29).

Mentoring may also be focused on a specific skill, service, or quality, such as conducting the reference interview, distance education librarianship, or leadership in the library profession. A study conducted by Smith (2013) to determine the impact of a mentor in leadership development on MLS students pursuing school library careers found that "mentors had a positive impact on the leadership development of the participants and that the provision of mentors had a great influence on the students' degree program experience" (p. 15).

Mentoring in virtual reference training allows trainees to receive personal assistance from librarians more experienced in working with virtual reference (Luo, 2008). As described by Ronan (2003), online mentoring in a virtual reference session may take the following forms: (a) simulation—the mentor simulates a user to give the mentee some practice and experience with the reference interview, (b) lurking—the mentor is behind the scenes observing a real-time session and has the ability to take over the session modeling skills as needed, and (c) coaching—the mentor monitors the session and provides feedback privately, at the conclusion of the session. According to Ronan (2003), working with mentees one-on-one while they are online is one of the most effective ways to conduct virtual reference training. In 2007, a volunteer/mentorship program for ASKColorado (a statewide virtual reference service) was formed between students enrolled in the MLS program at the University of Denver and librarians from ASKColorado member libraries. The librarian mentors were charged with "providing feedback on the student's sessions with patrons by reading over session transcripts, making suggestions for improvement, and praising positive aspects of the session" (Johnson, 2012, p. 122). Initially, there were 12 partnerships, each lasting 3 months. The feedback from the students and librarian mentors on their experience was extremely positive. One student said, "being mentored at the nascent stages of my career has made me a more skilled, more poised, more effective librarian" (Johnson, 2012, p. 127).

DATA COLLECTION AND ANALYSIS

The RIA project assignment was carried out between the years of 2011 and 2013 and included five semesters. The number of reference interactions a student was required to participate in and reflect on varied according to

TABLE 1 Study Timeline and Participant Data

Semester	RIA sessions per student	Student Total
Spring 2011	3	19
Spring 2012	2	11
Spring 2013 (section no. 1)	2	11
Spring 2013 (section no. 2)	1	14

the MLS Faculty member teaching the course. In other words, some students played the role of librarian and patron 3 times each, while others only played these roles two times, or one time. Our sample included 55 students and 8 sets of student reflections, for a total of 114 reflections. The overview of the timeline, RIA sessions, and study participants may be seen in Table 1.

Two Belk Librarians, who participated in all of the RIA sessions, used the student reflections on having the assistance of a Belk Librarian as mentor section to investigate whether student learning had occurred as a direct result of the Belk Librarian mentoring experience during and after the RIA project assignment. The librarians began data analysis by reading through the student reflections multiple times. After several readings, the librarians devised an initial coding scheme, assigning a code or phrase to each important quote. Next, codes were redefined, removed, and added as new themes emerged. The student reflections were then read again and the new coding scheme was applied to the data. All of the coded data was sorted and grouped together and read for conformity. If a coded text passage was found to be incompatible, it was removed or re-coded. Glesne (2011) writes that the process of developing categories or themes enables the researcher to gain new insight from the data and make new connections. After coding the data, three categories were devised: evidence that learning took place, emotional progression, and perception and effectiveness of librarian mentor. Summary of findings and discussion of results will be presented in the next section.

FINDINGS AND DISCUSSIONS

Evidence that Learning Took Place

The students frequently reported that the librarian mentor feedback helped their learning process, which led to the creation of this category. There were 131 remarks related to this category and 24 specifically mentioned that they would incorporate mentor suggestions into their next RIA session or workplace reference interview. The comments relating to implementing mentor suggestions usually occurred in the reflections after the second RIA session and one class of 13 students had only one session. When asked to reflect upon having the assistance of a Belk Librarian as mentor, the students most often began with a detailed description of the feedback provided.

They mentioned each behavior and skill that the Belk librarian discussed in relation to their "performance" and based on this discussion, noted which aspects of the reference interview went well and where there was need for improvement. This suggests that the students internalized the advice from the Belk librarian mentor with the expectation of applying what they had learned to their next reference interaction.

The students talked about learning in several ways. Specifically, they talked about learning from reviewing the recording of the RIA sessions, observed learning, and the difference between virtual and face-to-face reference interactions.

Reviewing Recording Yielded New Learning

One way the researchers found evidence of learning was when the students talked about reviewing the recording. The Belk Librarian mentors recorded each RIA session using the video recording function, which is one of the technologies built into the AETZone. The recordings were placed in a libguide (Web-based guide), enabling students to review their RIA sessions at a later time. There were 31 comments related to this code. Students reported that reviewing the recording after the session was beneficial because it gave them the opportunity to critique their performance. Student comments included, "I realized there was a lot of down time, too many long pauses, could listen and think about librarian mentor feedback, helped me understand what was missing, realized I repeated certain phrases multiple times." In spring 2012 and 2013, the recording function was unreliable and we were unable to record all of the sessions.

Observed Learning

Students reported 26 times that playing the patron role, observing their classmates' RIA sessions, and listening to the critique of their peers contributed to learning. As one student noted "Having the opportunity to listen to the feedback the [mentor] librarian gave to the other acting librarians was also helpful. I was able to listen to my classmates conduct reference interviews and then take ideas away from those interviews and the feedback they received." The first 3 RIA sessions, yielding 8 comments, were comprised of the student librarian, the student patron, and the Belk Librarian mentor, yielded 8 comments. The subsequent sessions, yielding 18 comments, were changed so that the entire class was present for each RIA session, enabling all to observe their classmate's reference interactions, as well as listen to the Belk Librarian mentor feedback for each session. This approximately 40% increase in student reportings indicates that revamping the RIA session

model from having only the student-librarian, student-patron, and Belk Librarian mentor present during a session, to having the entire class present was a beneficial learning experience.

Difference Between Virtual and Face-to-Face Interview

Finally, the researchers discovered evidence of learning when the students talked about the difference between the virtual and face-to-face interview. There were 12 comments focusing on the unique challenges and perceived difficulties inherent in the virtual reference interview. Students noted that conducting a face-to-face reference interview is easier. Students pointed out that in a virtual reference interview the librarian is unable to take advantage of eye contact and body language interpretation. Additionally, the process of guiding the patron to the appropriate resources and communicating with the patron requires a different approach.

Lastly, a new skill set is necessary in order to competently conduct a virtual reference interview and interact effectively with a patron in a 3D virtual environment. As a result of librarian mentor feedback, students became more proficient at incorporating the 3D world technology into the reference interview, as well as adapting to the necessary behaviors, e.g., verbal feedback during the session, therefore improving the quality of the reference interaction. As one student commented, "Doing a virtual reference interview is so different from face to face interaction. This process has to be intentionally conducted in a specific manner to receive the desired outcome for the patron."

Emotional Progression

In this overarching category, the researchers looked at students' self-assessed emotions from the RIA role playing assignment. The vast majority of students' comments aligned with two codes: anxiety level and confidence level. Forty comments related students feeling high anxiety, stress, or nervousness before and during the RIA librarian role-playing assignment. One student wrote: "I must admit, when I first arrived I was scared out of my mind. I could feel my blood boiling as if I was about to deliver a speech in front of thousands of people." Sixty-eight students commented that their confidence had increased as a result of the RIA assignment and working with the Belk Librarian Mentor. Example: "[The Belk Librarian Mentor's] feedback has given me confidence and validated my decision to become a librarian." Lastly, 15 students commented that the RIA experience caused them stress, but that this stress encouraged their learning and/or engagement. Another student said, "Overall this experience, as nervous as I was, is one of the most

priceless experiences thus far into my graduate courses. This really helped me understand real life reference work rather than just reading about how to be a reference librarian."

It is notable that students' comments on their emotional states fell into two main areas: peak feelings of nervousness/fear at the beginning of their RIA role-playing sessions, and feelings of confidence afterwards. This data says most clearly that students felt that engaging in the RIA sessions with the mentor librarians was both rigorous and rewarding. Perhaps the most insightful comments were the ones noting the connection between the challenge of the RIA assignment with the benefit of completing it, such as this student's comment: "... having that person [the librarian mentor] ... in the room the entire time, for the sole purpose of critiquing me, made a huge difference, especially the first night. There was truly a component of fear for me. ... if we had been in there, just the five of us, role playing, ... it would have been much more natural and comfortable for me. I also know now, that I would not have gotten as rich or meaningful of an experience as I ended up having. Please don't change a thing."

Perception and Effectiveness of Librarian Mentor

There were 166 remarks on how students perceived the librarian mentors and the validity of their role. Students commented 129 times that they found the librarian mentor helpful, comforting, and/or supportive. In contrast, 12 students specifically said the presence of a professional librarian made them nervous, though 5 of them said in the same paragraph that they only felt that way at first. This is an example of the anxiety and resulting confidence students experienced when engaging in the RIA sessions that was discussed earlier in the emotional progression code. One student commented:

> ... the fact that a Belk librarian was listening and offering his/her input scared me the most about this entire process! ... I thought I might get "drilled" with criticism, which is why I was so nervous to begin with, but I found the opposite reaction after I finished the interview. The Belk librarian was quite helpful and encouraging, and I am glad there was one there to critique and offer suggestions.

Of particular note, were the 76 comments from students on specific techniques the mentor librarians instructed on or modeled for them. Thirty students mentioned that having a professional librarian available to monitor and mentor them one-on-one was valuable, and 17 made suggestions or criticisms to improve the mentoring librarian's role. Some of the 166coded comments fell into more than one category, and this explains why their sum is greater than 166.

CONCLUSION

As reported in the literature, mentoring is an effective teaching and learning technique. Findings from the student reflection analysis on the role of the librarian mentor in the RIA project support this conclusion. The research findings also revealed that after each mentoring session students gained confidence in their ability to be a professional librarian, improved and sharpened their reference interviewing skills, and made progress towards understanding and adapting to the nuances which arise during a virtual reference interaction. Lastly, the findings show that having an experienced librarian present to offer constructive criticism and advice afforded the opportunity for students to gain knowledge of best practices needed to manage an effective virtual reference interview. As one student pointed out, "In this interaction as with all the others, the assistance of a Belk librarian as a mentor was a valuable asset to the learning process."

Throughout the history of the RIA assignment, the Belk Librarian mentors collaborated with four MLS faculty members. This collaboration helped strengthen the relationship between librarians and MLS faculty members, as well as the entire MLS department. In addition, the RIA project has provided opportunities for the MLS faculty and Belk Librarians to co-author articles and present at conferences together. The RIA assignment also benefited Library Science graduate students at Appalachian State University by introducing them to the practicing librarians on campus, and establishing a point of contact for students for networking connections and career advice from practicing academic librarian professionals. This study suggests that other schools would benefit from such partnerships.

REFERENCES

Creighton, P. M. (2007). Mentoring a new library media specialist: A model relationship. *School Library Media Activities Monthly*, *24*(4), 25–28.

Freedman, S. (2009). Effective mentoring. *IFLA Journal*, *35*(2), 171–182. Retrieved from EBSCO*host*.

Glesne, C. (2011). *Becoming qualitative researchers: An introduction*. Boston: Pearson.

Johnson, K. (2012). Mentoring MLIS students in collaborative virtual reference: The AskColorado mentorship program. In C. Smallwood & R. Tolley-Stokes (Eds.), *Mentoring in librarianship: Essays on working with adults and students to further the profession* (pp. 120–128). Jefferson, NC: McFarland & Company.

Johnson, M., Purpur, G., & Abbott, L. T. (2009). Learning to provide 3D virtual reference: A library science assignment. *Journal of Library & Information Services in Distance Learning*, *3*(3/4), 138–147.

Kawasaki, J. L. (2012). Mentoring MLIS graduate students. In C. Smallwood & R. Tolley-Stokes (Eds.), *Mentoring in librarianship: Essays on working with adults and students to further the profession* (pp. 129–133). Jefferson, NC: McFarland & Company.

Kelly, K. (2011). Beyond the classroom: Mentoring MSLIS students in an academic library. In C. Smallwood & R. Tolley-Stokes (Eds.), *Mentoring in librarianship: Essays on working with adults and students to further the profession* (pp. 145–150). Jefferson, NC: McFarland & Company.

Lee, M. (2011). *Mentoring in the library: Building for the future*. Chicago: American Library Association.

Luo, L. (2008). Toward sustaining professional development: Identifying essential competencies for chat reference service. *Library & Information Science Research*, *30*(4), 298–311. doi:10.1016/j.lisr.2008.02.009

Matzen, N. J., Becnel, K., Purpur, G. (2013). Pedagogical evolution in the teaching of reference services enabled by the use of a 3D immersive virtual world technology. In A. Sigal (Ed.), *Advancing library education: Technological innovation and instructional design* (pp. 183–196). Hershey, PA: IGI Global.

Reference and User Services Association (RUSA). (2004, June). Guidelines for implementing and maintaining virtual reference services. Retrieved from http://www.ala.org/rusa/resources/guidelines/virtrefguidelines

Ronan, J. (2003). *Chat reference: A guide to live virtual reference services*. Westport, CT: Libraries Unlimited.

Smith, D. L. (2013). The role of mentoring in the leadership development of pre-service school librarians. *Education Libraries*, *36*(1), 15–23.

Stoll, C. (2011). Creating good karma through mentoring and passing it on. In C. Smallwood & R. Tolley Stokes (Eds.), *Mentoring in librarianship: Essays on working with adults and students to further the profession* (pp. 13–20). Jefferson, NC: McFarland & Company.