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Kristal Sergent Boulden

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# LIBRARIANS AND IMMERSIVE LEARNING: OPPORTUNITIES FOR COLLABORATION USING VIRTUAL REALITY

KRISTAL SERGENT BOULDEN

## INTRODUCTION

Makerspaces have become increasingly popular on university campuses. With their focus on creativity and experimentation, makerspaces are ideal arenas for partnerships and collaborations. While technologists in makerspaces primarily collaborate with students and faculty, there are also opportunities for reference and instruction librarians to contribute to these creative enterprises.

This paper presents a case study of a liaison librarian's collaboration with a team of emerging technologies librarians to implement virtual reality (VR) tools in an undergraduate anthropology assignment. The development and implementation of this assignment will be analyzed from the perspective of a liaison librarian, not a technology specialist. The collaborative process between the librarian, technologists, and professor will be discussed. Strategies for partnering successfully with faculty and technologists will be explored. Finally, this paper provides suggestions for identifying collaborative opportunities in the library and on campus.

## INNOVATION @ THE EDGE

In January 2016, the University of Oklahoma (OU) Libraries opened Innovation @ the Edge, a "flexible experimentation and innovation space" that provides access to and training for emerging technologies ("Innovation @ The Edge," 2016). This makerspace is operated by a team of emerging technologies librarians and student employees. The Edge, as it is commonly known, includes two Oculus Rift stations which are part of the Oklahoma Virtual Academic Laboratory (OVAL). This networked virtual environment allows for collaboration across campus. OVAL stations are also located at the Innovation Hub and Donald E. Pray Law Library. The Edge also features an HTC Vive, four 3D printers, and microelectronics kits. Located in Bizzell Memorial Library, the Edge is open to the local community and encourages creativity, innovation, and learning. Workshops are taught every week. Students and faculty can experiment with technology or work on their own projects in a creative environment. The emerging technologies librarians frequently collaborate with faculty and have worked with 25 classes including structural biology, interior design, and southwest archaeology.

## GENERAL ANTHROPOLOGY VIRTUAL REALITY ASSIGNMENT

In August 2016, an anthropology professor contacted the Emerging Technologies Coordinator about using virtual reality in her General Anthropology class. General Anthropology is a freshman level course that meets one of OU's general education requirements. Many of the students are not anthropology majors but come from other disciplines. This was an exciting opportunity to expose students to emerging technologies they might not normally use in their disciplines. After being approached by the professor, the Emerging Technologies Coordinator contacted the Social Sciences & Humanities Librarian, the liaison librarian for anthropology, to let her know about the collaboration. The librarian immediately knew she wanted to be involved so she could learn more about the technologies and their impact on student learning.

For their assignment, students worked with a partner to analyze and compare skulls of different hominid species. This type of analysis would not normally be possible because students do not have access to delicate physical remains. Multiple skull models were uploaded to the virtual environment and students could fly-through and zoom in on models of *homo habilis*, *Australopithecus afarensis* and *Australopithecus africanus*. Students were tasked with taking screenshots of the skulls, answering questions about the

skulls' features, and making inferences about the lives of prehistoric peoples. After analyzing the models, students submitted both their screenshots and completed assignments to the professor.

## **LIBRARIAN-TECHNOLOGIST-FACULTY PARTNERSHIP**

This collaboration began as a partnership between faculty and technologists and expanded to a librarian-technologist-faculty partnership after the Social Sciences & Humanities Librarian was invited to participate. In addition to the librarian, professor, and Emerging Technologies Coordinator, the team included a post-doctoral fellow specializing in archiving 3D models and virtual environments.

This semester-long project required several meetings and communications to ensure that the professor's assignment was feasible and successful. A timeline of the collaboration is detailed below:

- August 2016: Anthropology professor contacts Emerging Technologies Coordinator about utilizing VR for an assignment
- August 2016: Emerging Technologies Coordinator contacts the Social Sciences & Humanities Librarian to notify her that a professor in one of her departments was collaborating with the Edge
- September 2016: Students received library instruction and an introduction to the Edge
- September 2016: Consultation with anthropology professor, librarian, Emerging Technologies Coordinator, and Post-Doctoral Fellow
- October 2016: Librarian, Emerging Technology Coordinator, and Post-Doctoral Fellow test feasibility of assignment
- October – November 2016: Students complete assignment using VR
- December 2016: Emerging Technology Librarians made a presentation to anthropology faculty and graduate students about 3D modeling and VR

Before this collaboration, the librarian had not interacted with this anthropology professor as she was just hired for the Fall 2016 semester. The librarian recognized that the September consultation with the professor was an opportune time to learn more about the professor's research interests and courses. During the consultation, the librarian took extensive notes which were emailed to all collaborators following the meeting. In addition to discussing the assignment, the team also discussed the professor's research interests, courses, and the molecular anthropology laboratory she works in. The librarian asked the professor pointed questions to learn more about how molecular anthropologists conduct their research and the tools they use for these tasks. This inquiry led to discovering how 3D modeling and VR tools can support researchers in molecular anthropology, bioinformatics, and archaeology.

The September consultation was the only in-person interaction the library staff had with the anthropology professor for this project. The group communicated via email for the remainder of the semester. The library staff also communicated internally using email and HipChat, a messaging application. Documents, including the class assignment, were stored in Dropbox for the group to access.

Before the assignment was deployed, the librarian and technologists completed a test of the assignment to ensure that the models were working correctly and that students would be able to complete it successfully. Although the librarian had used the VR headsets in the Edge before, this opportunity allowed her to experience the assignment as the students would and learn more about the technology and its impact on learning. The librarian was also introduced to a new collection of anthropology resources to share with other students and faculty. The skull models used in the virtual environment were from [AfricanFossils.org](http://AfricanFossils.org) and the Smithsonian's National Museum of Natural History 3D collection.

An unexpected outcome of this project was a presentation by the library technologists to anthropology faculty and graduate students about using 3D modeling and virtual environments. During this presentation, the professor from the collaboration spoke about her experience using the tools and encouraged her colleagues to learn more. The audience expressed interest in the technology and the departmental presentation laid the foundation for future collaborations.

## **THE COLLABORATION**

The librarian had experience consulting with faculty about instruction sessions and research projects. However, this was the first time the librarian had collaborated with both faculty and library technologists to produce a learning experience of this nature for students. An analysis of the collaboration network reveals several interesting insights. The librarian had more interaction with the library technologists during this project than with the professor. Neither the librarian nor the technologists met with the professor in person after the initial consultation. The anthropology professor had interactions with her students every week. To complete their assignment, students had to visit the Edge or the Innovation Hub. During this time, the students interacted with student employees

or emerging technologies librarians. The only interaction the librarian had with students during this collaboration was during an instruction session that was taught on the same day as the introduction to the Edge. During the project, the librarian had not considered how little interaction she would have with the students or how this might influence the outcome of the assignment. Upon reflection, the librarian realizes she could have created a more engaging learning experience for the students during the instruction session. This topic is explored in the next section of this paper.

## LESSONS LEARNED

This collaboration was an exciting one for the librarian who had not worked with virtual environments before. Upon reflection, however, there are several questions the librarian would have asked the anthropology professor during the consultation to better understand her expectations of the assignment and her students. What does success look like for this assignment? What are the critical skills you want your students to learn with this assignment? With an understanding of the professor's desired outcomes, the librarian could have planned more appropriate activities and interactions to contribute to student learning.

Because the Edge has limited seating, it was not possible for the entire class to visit the makerspace at once. The professor proposed that the students split into two groups, with one group visiting the Edge and the other receiving an information literacy session for anthropology resources. Then the groups would switch. The librarian taught the information literacy session but did not realize until afterward that the students were not assigned a research paper for this course. The instruction session was not directly tied to a class assignment and unfortunately was a lost opportunity to engage students. The librarian could have developed a learning activity that would have complemented the VR session and sustained their interest in learning about anthropology in an interactive way. Going forward, the librarian will be more mindful about the types of instruction she provides to students and will look for appropriate opportunities to contribute to student success.

Assessment is an important aspect of any project and the technologists in the collaboration did deploy an online survey to students after they completed their virtual experiences. Because the survey was not mandatory, there was low participation. The results are currently being used to develop an improved survey instrument and deployment method. For this project, an informal assessment from the professor would have been helpful to both the librarian and technologists. Next time, the librarian will request a follow up meeting with all team members to discuss what aspects of the project went well, what could be improved, and steps for moving forward.

## STRATEGIES OF SUCCESSFUL COLLABORATIONS

Working collaboratively brings both new opportunities and new challenges. As Langley, Gray, and Vaughn (2006) explain, librarian-faculty collaborations face several challenges including “differences in work styles, work schedules, ethics, long-term schedules, disciplines and work loads” (p. 99). Additional complications could include personality differences, technological difficulties, and unanticipated changes to the project. For the anthropology assignment, the professor originally wanted students to measure certain aspects of the skulls within the virtual environment and compare them. However, upon investigation, the library technologists determined that the measuring tool in the virtual environment was not accurate enough for this task. The professor had to update her assignment and remove the measurement tasks. While this was a disappointment, it did not dramatically impact the assignment.

The success of this collaboration can be measured in multiple ways. Did the students correctly complete the assignment? Were the students excited about using new tools and learning anthropology? Was the professor satisfied with using a virtual environment to introduce non-anthropology majors to the discipline? An important question to ask collaborators when working on this type of project is—What does success look like? Additionally, these strategies can help facilitate a successful collaboration:

- During a consultation, create action items for all individuals involved
- Follow up with faculty regularly
- Create the collaborative tools and resources needed for the project to run successfully
- Be responsive and flexible to changing needs. Unexpected problems will occur. This is a natural part of collaborations and must be met with agility
- Use every interaction with faculty and students as an opportunity to learn about their interests, projects, and research needs
- Keep the momentum of the project going by following up with the department, other faculty, or students. Demonstrating your expertise and willingness to collaborate encourages future partnerships
- Document all consultations and interactions with your collaborators. Also, document all important stages of the project and any changes

## **MAKING NEW PARTNERSHIPS**

Partnerships within the library and on campus sometime happen unexpectedly. Librarians can also initiate collaborations by being proactive at their institutions. When working with technologists, it is important to remember that one does not need to be an expert in the technology to contribute to a partnership. Understanding how these tools can engage students in learning is more important than knowing all their features. Creativity and enthusiasm can inspire students to try new skills and tools. Librarians should also leverage their subject expertise and research interests to develop learning activities or integrate relevant resources into the project. With these strategies, librarians can form successful partnerships with their colleagues in instructional design, digital scholarship, and educational technology.

Supervisors can facilitate new collaborations between librarians and technologists by requiring librarians to attend technology workshops in the library and on campus. After attending these workshops, librarians can identify possible collaborations and suggest projects for students and faculty.

Technologists should reach out to their librarian colleagues when faculty in their subject areas are involved with a project. Librarians can provide additional information about the department and the research in the discipline. Instruction librarians can also design activities and use their subject expertise to make assignments more meaningful. Partnering with other library staff also demonstrates the library's collaborative spirit and willingness to support teaching and research with multiple resources.

After partnering with the Emerging Technologies Librarians on this project, the Social Sciences & Humanities Librarian became interested in other ways to cultivate student creativity. One of the librarian's passions is handcrafts, specifically knitting. She wanted to bring this "traditional" and "low-tech" form of making to the Edge. The Emerging Technologies Coordinator supported the idea and in March 2017, the librarian co-taught a Fiber Arts Workshop. This event included a basic introduction to knitting and crochet. Eight students and staff attended the workshop. This was the first craft event in the Edge and it sparked interest from faculty and students across campus. The librarian is excited to teach more craft workshops this fall and build a community of crafting on campus.

## **NEVER RIDE ALONE**

Liaison librarians are increasingly expected to collaborate with specialists and technologists to support the missions of their libraries and universities. As Jaguszewski and Williams (2013) explain, "an engagement model in which library liaisons and functional specialists collaborate to understand and address the wide range of processes in instruction and scholarship is replacing the traditional tripartite model of collections, reference, and instruction" (p. 16). Being a highly engaged liaison or instruction librarian means stepping outside of one's comfort zone and meeting students and faculty where they are. Makerspaces are an optimal venue for exploring one's creativity, trying new tools, and cultivating collaborations across campus. Without becoming technology experts, librarians can leverage their own creativity and interests to support students and faculty as they create new knowledge and develop new projects.

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