

Inside Look: EOU's Mobile Virtual Reality Lab

by Sarah Ralston
Associate Professor/Instruction
Librarian,
Eastern Oregon University
sralston@eou.edu



SARAH RALSTON (she/her) is an Associate Professor and instruction librarian at Eastern Oregon University in La Grande, Oregon. She teaches information literacy credit courses and First Year Experience courses. She also serves as liaison to the College of Science, Technology, Mathematics, and Health Sciences and the College of Business. She enjoys working with students, developing engaging and inclusive programming, and collaborating with colleagues across the university and around the state.

In January 2022, the Eastern Oregon University (EOU) Library officially launched its new Mobile Virtual Reality Lab and Virtual Reality Studio. Virtual reality at EOU was made possible in part by an American Rescue Plan Act (ARPA) grant from the Institute of Museum and Library Services through the Library Services and Technology Act, administered by the State Library of Oregon in summer 2021.

Virtual reality, or VR, simulates experiences with the aid of technology, most commonly specialized headsets that allow the user to see and feel like they are immersed in a virtual space. It can be used for gaming, entertainment, fitness, social interaction, and education. The call for grant applications came at a serendipitous time, just after I had read the article “Beyond the Lab: Virtual Reality for Undergraduate Anatomy and Physiology Students” (Phillips, Lynn, Yenser, & Wissinger, 2021). As the library liaison for the Sciences, I regularly work with many Anatomy and Physiology students and their professor. I suggested a collaboration and the project concept took off from there.

Background

In spring 2021 the campus community was anticipating a shift back to primarily on-campus classes after a year of mixed offerings. While we were only fully remote for one term—Spring 2020—students were taking classes in a variety of formats during the 2020–21 academic year, and only about half were in-person on campus.

In an undergraduate ethnographic research study of the EOU student experience during the pandemic, students reported feelings of extreme loneliness, social isolation, and other mental health challenges during this time (Thompson, 2022). These and other outcomes of social disruption were observed by teaching and library faculty in our classes and interactions with students. There was increased anxiety around being on campus and entering buildings, confusion about acceptable face coverings, stress about what to do with poor mask com-

pliance, and, for many students who were not interacting regularly with others in person, anxiety about talking to people they didn't know.

The university was planning on a mostly on-campus Fall term, though we continued to offer asynchronous online classes as we have for many years. At the library we were interested in re-engaging students with library programming and services, and trying to increase traffic in the building. Creating a welcoming, stress-free environment was our primary student outreach goal for the year.

Anatomy and Physiology students and their professor had found the remote learning experience challenging. Students had to purchase software licenses to access an online lab platform in addition to their already expensive textbook. The online lab simulations were not popular, and there was a lot of cheating. Students who had Chromebooks or who didn't have their own computers had to borrow one from a friend, or skip the labs altogether as the software doesn't run on all types of computers. Some students dropped out, failed out, or even changed majors because the remote format did not serve them well.

In consideration of all of this, the class was planned to run in-person for the 2021–22 academic year, though the modality for the labs was undetermined as safety measures were more difficult to implement in the lab setting. The professor and I thought that VR activities could potentially be one way for students to have an in-person, hands-on lab experience regardless of the modality in which the labs were offered.

Technology, Facilities, and Logistics

With the grant funds and the help of EOU's IT department, we purchased four HP G2 Reverb Windows Mixed Reality headsets and four Alienware laptops with the power to run VR applications. We also purchased an Oculus Rift-S headset, two Meta Quest 2 all-in-one headsets (formerly called Oculus Quest 2), and additional equipment and accessories.

We repurposed an office in a public area of the library as the VR Studio and equipped it with a large-screen TV, desk, and lounge chair for VR meditation. The room is about 10 feet by 10 feet and furniture is minimal, which allows for the necessary six-foot radius

of space to move about while wearing a VR headset (see Figure 1). A VR headset and laptop are installed in this room for VR appointments. We made slight adjustments to the furniture and equipment in two of our study rooms so they could be used for VR appointments when needed as well, and we store the other



Figure 1: A professor and a student experience a Civil War battlefield VR simulation in the EOU Library VR Studio.

headsets and equipment near our circulation desk. We improvised a classroom and empty office as needed. At our busiest, we had five VR appointments in different rooms in the library at the same time.

To make VR as easily accessible as possible, we created a simple appointment request system using a Google Form. Our daytime and nighttime circulation supervisors, along with another librarian, were trained on how to use the VR equipment. Students can make appointments any time the library is open. When an appointment request comes in, we reserve a room (the VR Studio or one of the VR-capable study rooms), the appropriate headset for the application the student wishes to use, and an Alienware laptop, if required. Laptops are not required to use the Meta Quest 2 all-in-one headsets. So far, a Google Calendar has satisfied our needs, but we might need a more sophisticated reservation system in the future. The headsets and laptops are cataloged so they can be checked out to students for use in the library, similar to physical course reserves. We ask students to fill out VR Use Agreement forms upon their first time checking out VR equipment and we keep these on file in case of damage or other problems.

The Anatomy and Physiology class is the largest class on campus, with up to 100 students enrolled in the Fall term. These students sign up for VR appointments in groups of two to four. One student can wear the headset while the others watch on the TV monitor, but often they take turns. The VR application the class uses is SharecareYOU VR, a human body simulation that allows students to examine internal organs and systems of the body in 3D. A user can explore inside certain organs, including the stomach, the heart, the eye, and the neuron environment of the brain. They can control certain functions like blood flow, eating, or breathing to see the effects these have on the organ.

The experience is completely immersive and objects appear three-dimensional. It allows students to take their time, try different things, and compare healthy states and pathologies of various organs or systems in a setting where they are in control. Students have described the experience as much more realistic than watching lecture slides or video simulations, and much more engaging.

The labs for the course did return to an in-person format, but human cadavers are not (and have never been) used in the labs. SharecareYOU VR allows students to investigate the inner workings of the human body in as realistic a way as possible in the absence of the real thing.

Students and Classes Experiencing VR

The first iteration of VR lab for Anatomy and Physiology was an extra credit assignment in which students were required to give feedback about using VR and what they learned. Many students admitted to me that their motivation was primarily the extra credit, but by the time they had finished, they were excited and ready to come back. Several booked additional appointments on their own to use the application to study for exams. The first attempt having been a success, in Spring term the professor built a VR assignment exploring the heart and the circulatory system into the class requirements. Again, some students came back on their own time to spend additional time in VR and to study for exams. We found that word of mouth was a key promotional tool. Students might seem fairly disinterested when they arrived for their first appointment, but almost always left excited and told their friends, resulting in more appointments apart from the class assignment.

Though the project began with the Anatomy and Physiology class, we have collaborated with faculty in History, Communications Studies, Psychology, and Health and Human Performance, as well as with campus departments, including the Office of Student Diversity and Inclusion, and Residence Life. Students have visited our VR Studio to meditate in VR, play games like Beat Saber for fun and stress relief, and to show their friends their hometowns in Google Earth VR.

We've taken the mobile lab to the residence halls and to classrooms, and we've collaborated with the Multicultural Center to offer a monthlong installation of the VR application "I Am A Man" during Black History Month (see Figure 2). "I Am A Man" uses archival audio recordings, TV footage, and print media to illustrate some of the events of the Memphis sanitation workers' strike in 1968. Students in a lab session of a History course chose between "I Am A Man" and the VR documentary "Traveling While Black," which describes the history of restricted and dangerous travel conditions for African Americans during the Jim Crow era in the South.

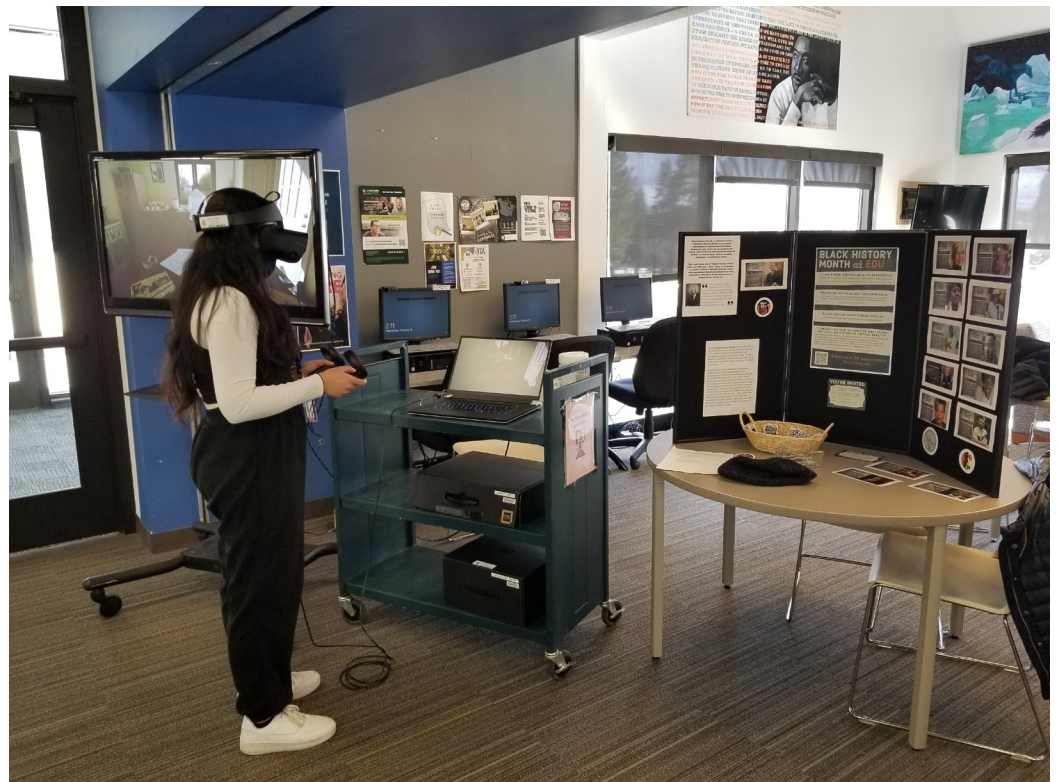


Figure 2: A student uses a VR application at the EOU Multicultural Center.

In another History course, students watched "The Civil War 1864: A Virtual Reality Experience" on YouTube 360 from the American Battlefields Trust. Students reported that these experiences were moving and powerful. Unlike watching a film, VR puts the observer in the scene, marching along with protestors, sitting in a restaurant booth across from someone telling a personal story, or looking around a Civil War battlefield hospital as if they were there.

Future Applications of VR at EOU

Additional collaborations in the works include a fitness application called VZFit on the Meta Quest 2 headset that connects to a Bluetooth-enabled bike trainer in the Exercise Science lab. Undergraduate and faculty researchers will be looking at how VR affects motivation to exercise. Another Health and Human Performance professor will be using SharecareYOU VR in her lab to help students learn muscle function. A Psychology professor who teaches neuroscience will use the application in a classroom demonstration to show parts of the brain that are otherwise difficult to illustrate with two-dimensional images. With the purchase of a 360-degree camera, we will also be exploring how we can create our own content such as lab safety training VR videos.

Challenges and Successes in the VR Lab

Alongside these successes there have also been plenty of challenges. Long waits for laptops delayed the start of the project to Winter term. University restrictions on software purchases and licensing caused frustration. Some VR applications only run on certain headsets, which forced us to acquire additional headsets that we had not planned on. Running VR uses battery power at a much faster rate than typical daily applications, and only alcohol-free sanitizing wipes can be used on headsets. Those interested in getting into the weeds of setting up a VR lab may learn more from Gillian Ellern and Laura Cruz' articles "Black, White, and Grey: The Wicked Problem of Virtual Reality in Libraries" (2021) and "Hardware is the Easy Part: The Gray Areas of Integrating VR in Libraries" (2021).

EOU is a small, regional, public university, and our library budget is modest. Because much of the budget is encumbered by subscriptions (databases, journal packages), we rarely have funding for technology or special projects without the aid of grant funding. ARPA funds through the State Library of Oregon were granted to projects addressing one or more focal areas, including connectivity, digital equity and inclusion, and needs arising from the pandemic, among others. This funding allowed us to purchase all the technology equipment and accessories, as well as a couple of VR games. In this way, we were able to provide innovative digital content to our rural college students without any charge to them. It also helped to build learning experiences that were superior to what had been offered during the prior, more restrictive year of the pandemic.

Now the only ongoing cost for the VR lab is the SharecareYOU subscription, which will be paid by the College of Science, Technology, Math, and Health Sciences.

Conclusion

For the library, this wasn't so much a pandemic-induced pivot as it was an opportunity to offer engaging, cutting-edge, free, and accessible learning experiences to our students. This was consistent with our goals of offering programming that brought students into the library and made them feel welcome. All of our outreach and programming activities share the goal of breaking down barriers between students and library use. With this project, we invite students to use the library in a new way. While some students may be nervous at the beginning of their VR session, their positive experiences with friendly staff and interesting technology help to show them that the library is not just a study hall, and that the staff are eager to help and interact with them.

Libraries are often testing grounds for emerging technologies, and housing this equipment in the library while making it mobile has made the technology accessible to all our campus-based students in a way that wouldn't be possible had it belonged to a particular department or college. I overheard student ambassadors talk about virtual reality at the library while giving campus tours, and overheard another student in the student union telling a friend how easy it is to make an appointment to try VR in the library. After a restrictive year in which we were challenged to figure out how to serve students and how to get them to return to the library, hearing students tell their friends about something exciting at the library feels like a big win.

References

- Ellern, G. D. & Cruz, L. (2021). Black, white, and grey: The wicked problem of virtual reality in libraries. *Information Technology and Libraries*, 40(4). <https://doi.org/10.6017/ital.v40i4.12915>
- Ellern, G. D. & Cruz, L. (2021). Hardware is the easy part: The gray areas of integrating VR in libraries. *Computers in Libraries Magazine*, 41(2). <https://tinyurl.com/ycktxw8s>
- Phillips, K., Lynn, V., Yenser, A., & Wissinger, C. (2021). Beyond the lab: Virtual reality for undergraduate Anatomy and Physiology students. *College & Research Libraries News*, 82(4), 186. <https://doi.org/10.5860/crln.82.4.186>
- Thompson, C. (2022). *Impacts of COVID-19 to on-campus students attending a rural university in the Pacific Northwest*. EOU Library. <https://library.eou.edu/researchpaperaward/della-robert-burgess-research-paper-award-winners/>

