

Blevins and Woodward VR Open Access Presentation
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INTRODUCTION

I worked on this project relating to virtual reality and Open Access with my colleague, Nakia J Woodward, who is also a librarian here at the Quillen College of Medicine Library.

TYPES OF VIRTUAL REALITY

The first thing we're going to discuss is the different types of virtual reality. When we're looking at different types of virtual reality, we generally split them into three different categories. The first of the categories would be non-immersive, then we have semi-immersive, and, finally, we have fully immersive virtual reality environments. Non-immersive is the least interactive type of virtual reality; therefore, non-immersive virtual reality would include things like traditional video games - games where the user is completely separate from the physical experience of the game. In a traditional video game, you're usually sitting and looking at a screen. There is a different environment or game on the screen that you are not personally involved in, you're separate from, and you're interacting with it from a separate environment. Therefore, it is not immersive even though it is interactive. The second type, semi-immersive, includes hardware and software programs that allow the user to view and interact with 3D Graphics even though the viewer is not within the virtual reality environment themselves. This would include things like virtual anatomy dissection tables or videos where you are able to move a model around in a 3D environment. We see this a lot at our medical school, again, in terms of anatomy and dissection, but you also see this a lot in art environments where you can interact with different pieces of art. There are also some virtual reality type games that function in this way. Now, our final type of VR that I think most of us consider to be virtual reality nowadays would be fully immersive. These are hardware and software programs that are fully surrounding an individual within a virtual environment. This would be things like virtual reality headsets and the related software that goes along with these headsets. This is where the user can fully immerse him or herself within a virtual environment and interact with that environment.

OPEN ACCESS

Another important component of this presentation is open access as it relates to virtual reality. When we discuss open access in virtual reality, we are not discussing open source code. We are thinking more along the lines of open access publications. For example, we are going to look into free software rather than programs that one can edit in terms of open source code. I wanted to make a distinction regarding open access versus open source because there are open source materials within virtual reality, but today we're going to predominantly look at unpaid or free resources that can be used with virtual reality equipment.

USING VR IN EDUCATIONAL ENVIRONMENTS

You'll recall that we discussed the three different types of virtual reality in terms of different immersion levels. I did mention that we are going to be discussing mostly the full immersion of virtual reality programs and how you can use those with students and other users. We are also going to discuss the different ways that you can use fully immersive virtual reality environments. Those three different ways that I wanted to focus on today are instruction, immersive education, and

games and relaxation. Of course, there are many different other ways that you can use virtual reality and educational environments; however, these are the three areas that we wanted to focus on today. First of all, in relation to instruction, our instructors specifically use our virtual reality programs to screen record lectures for their classes. They come into the library, utilize our virtual reality equipment, and record lectures which they embed into their courses. This allows the students to have both a visual representation of whatever material they're working with as well as their instructor's salient points relating to the class. We'll talk a bit more about this on further slides. Relating to immersive education, we use VR for students to reserve time with virtual reality headsets. We use the VR for the students to fully immerse themselves within the equipment and the software. A specific example of this that we'll discuss later would be our virtual reality anatomy labs so students can work with anatomy labs in terms of actual dissection of cadavers and then they can also come over to the library and work with virtual dissection. The final way that we use virtual reality at our library is relating to games and relaxation. This sometimes can be overlooked in an educational environment because there are so many academic ways to use virtual reality, but we have found that our students also really enjoy using virtual reality for some specific games and relaxation apps that we have download. I will discuss these specific games on further sections.

IMPLEMENTATION AND EXAMPLES

Here I will be discussing implementation of virtual reality activities within our Medical Library. Many of our examples will relate to medical software and medical audiences; however, other aspects such as gamification can be used with any type of audience. In order to discuss our first implemented example relating to instruction and virtual reality, I wanted to first mention our types of virtual reality equipment and how we utilize it here at the Quillen College of Medicine Library. We have access to virtual reality headsets that travel to different classrooms from the library. The first is an HTC Vive headset and the other is an Oculus Rift headset. We initially purchased two different types of headsets in order to understand which one we had a preference for. Most of our audiences seem to prefer the HTC Vive; however, this may vary depending on your institution and your faculty and student preferences. We also have an Alienware laptop with a high-level graphics card as well as portable sensors so that we may take our virtual reality equipment and environment into different classrooms from the library. Essentially, we have the virtual reality room setup at our library, but we also have the capability to transport it into the classroom should we need to do so.

INSTRUCTION

That being said, our first implemented example relating to instruction involves our anatomy faculty and the program 3D organon VR. 3D Organon VR is a paid program that we will discuss a bit more later in this presentation. Our anatomy faculty use that program (3D Organon VR) to come into the library, get set up with the virtual reality equipment, and record their screen, just as I'm speaking to you right now and recording my screen. They form specific lectures on specific parts of the body. For example, we've had lectures on parts of the brain, such as the Circle of Willis, parts of the spinal cord, and the pelvic floor. These parts have been targeted by our anatomy faculty because they are some areas that may be difficult for students to learn about and some areas that students may have historically struggled with on testing. This allows our faculty to specifically target our students and their needs in their instruction with models that the students can clearly see and understand. We have had a lot of feedback that the virtual reality models are clearer than a lot of the dissection models that students have to work with. While it may be good for students to utilize cadavers as well in order to see actual real physical representations of organs, it is also good for the students to have a clear representation of the body where they can see different labeled features in real-time. 3D organon VR also allows students to take apart and put back together those aspects of the body.

IMMERSIVE EDUCATION

Another way to use Virtual Reality with an educational environment is to use it to create an immersive experience for students. For example, on the previous slide we discussed instructors using the 3D Organon program in order to create lectures for their students. In this case we had the students come in after they have looked at the lectures created by their professors and actually use the VR equipment in order to interact with different models and parts of the anatomy that were discussed by their professors. Students usually reserved VR equipment in groups. This way you can have one student within the VR immersive environment pulling apart different aspects of anatomy, naming and understanding them, and other students watching this experience and, therefore, learning from the student who was working with the VR equipment. In order to facilitate this we do have a monitor attached to the VR equipment so you're able to see what the person who is in the VR headset sees. This enables that environment to be shown not only to the one with headset on, but also to other viewers in the room. Some paid examples of software to help facilitate this includes, of course, 3D organon VR, which we used. There are also options, such as Virtual Medicine and VR Human Anatomy Pro, which are other anatomy programs. There's also Amelia VR Psychology. Amelia VR Psychology simulates experiences like phobias with public speaking, phobias of tight spaces or fears of flying, and those sorts of things. It simulates a patient experience. Some other free examples include dementia simulations which allowed the provider to actually experience what a patient with dementia may be feeling. Macular degeneration simulations, which allow our students to view the world through the lens of one with macular degeneration, and the Brain AR app. I've noticed a lot of free Anatomy apps are focused on specific parts of the body rather than the body as a whole, so if you're interested in free VR Anatomy apps you may look for one's focused on specific parts of the body, for example the brain AR app, which, of course, is focused only on the brain and does not include VR for the rest of the body.

GAMES AND RELAXATION

The final way that we have explored implementing virtual reality in our library relates to gaming and relaxation. There are a few different ways one can use gaming within the educational environment. One way that I really enjoyed was using gaming as a way to build collaboration and to increase better communication between students. For example, we purchased a game called Keep Talking and Nobody Explodes. It requires students to defuse a virtual bomb by describing facets of the bomb to one another. Basically, one student can see the bomb and other students cannot see it, so in order to make sure that the bomb is diffused, students have to be able to pull together the different bits of information that they have in order to create a full picture and to work collaboratively to diffuse this fake virtual bomb. It's a fun way to reinforce the importance of clear communication and working collaboratively with others.

Some other examples that we have are related to relaxation. Now, relaxation can be viewed in a few different ways. For example, we have games like Beat Saber which is literally a video game relating to music where you have to hit certain objects on the beat of the music. It's purely a fun game where students enjoy getting together and playing and interacting with each other casually. Some other examples are guided meditation virtual reality where, if an individual needs a break from the day, they can come in and use our virtual reality equipment and move into more of a meditative environment. There are some free examples that we have seen such as Shift Together, which simulates a driving experience where students can put on music and sit on a simulated highway and just watch the environment go by. Other things that students have used for relaxation or for fun would be Google Earth virtual reality where students can visit and view the architecture and environments in different parts of the world. This all relates to what works best for your individual

environment in your individual library, but we wanted to give you a few examples of how gaming and relaxation can be used with virtual reality in libraries as well.