Miller School Students Identifying Eye Conditions in the Metaverse

The Bascom Palmer Eye Institute recently started offering medical students the opportunity to learn about ophthalmology in virtual reality.

Leaders at Bascom Palmer hope to develop even more innovative methods for training ophthalmologists and other health care professionals.

Second-year medical student Normila Barthelemy had never donned a virtual reality headset or entered the metaverse. Until recently.

As part of her neurology rotation at the Bascom Palmer Eye Institute, Barthelemy, or her avatar, entered a virtual replica of their auditorium as part of the Miller School of Medicine’s first class in virtual reality. After teleporting to her seat, Barthelemy listened intently as Chris Alabiad, M.D., introduced her and a few classmates to the slit lamp, a vital tool for diagnostic eye examinations.

Later that week, Barthelemy and her classmates gave a presentation in the virtual auditorium about different ocular...
conditions. And while it took her time to get used to navigating the room in virtual reality, Barthelemy said she relished the experience.

“It was really fun, pretty easy to use and it felt very real,” admitted Barthelemy, who attended the class as part of a larger neurology unit. “It felt much more personalized than video conferencing tools because I was walking around the auditorium with other people. After a while, it didn’t seem virtual because it was so interactive. It seemed very much like reality.”

She is not the only one energized about learning in virtual reality. Leaders at Bascom Palmer attended the first class and hope to expand on it, to develop even more innovative methods for training ophthalmologists and other health care professionals.

“We are thrilled to be able to move into this space,” Eduardo Alfonso, M.D., director of Bascom Palmer and chair of the Department of Ophthalmology, told the students in the first VR class. “We have to continuously be looking at what changes we can adopt to do what we do in a better way. You are all at the cusp of seeing the incredible opportunity we have to put education in a venue where we will all benefit tremendously, so we can dedicate the time we have to do things that will better humankind.”

Giselle Ricur, M.D.

Giselle Ricur, M.D., executive director of virtual eye care at Bascom Palmer, agreed.
“This is part of a paradigm shift in medical education, as well as in health care, and it will enable us to be better doctors and health care professionals in the future,” she said.

Pilot Courses Utilizing VR

A team of faculty and students at Bascom Palmer and in the University’s UMverse Initiative – an evolution of its XR Initiative – have been working on developing the class and a virtual version of the slit lamp throughout the past year as part of the UMverse virtual learning initiative – a series of pilot courses utilizing virtual reality to enhance different disciplines.

On the Coral Gables campus, Bryson Rudolph, a software engineer for the Institute of Data Science and Technology and the UMverse Initiative, along with students from the School of Architecture and the School of Communication, helped create the Bascom Palmer class using LiDAR technology and 3D cameras. They scanned the actual auditorium, as well as exam rooms at Bascom Palmer, and created cloud models of them. They then used interactive software to create the slit lamp. In order to ensure that the virtual tool possessed all the functionalities of a real slit lamp, they collaborated closely with Joshua Reyes, a fourth-year medical student and research fellow in virtual eye care, and Dr. Alabiad, a clinical professor of ophthalmology who teaches the class.

“It's a difficult exam to master, so we thought if you could practice in a VR simulator, then when these students actually do an exam on a patient, it would be much easier for them to be familiar with the slit lamp,” said Dr. Alabiad, who is also
Kim Grinfeder, director of the UMverse Initiative and chair of the Department of Interactive Media in the School of Communication, said he is glad that the Miller School is starting to integrate extended reality.

“This is a strong example of how we can use immersive technologies in medicine,” he said. “I hope to see more classes like it in the future because their vision aligns perfectly with our goal to expand educational access to individuals not only in the United States but globally.”

Improving the Virtual Slit Lamp

Rudolph is still working with Dr. Ricur, Dr. Alabiad and Reyes to improve the virtual slit lamp so students can interact more fully with it, but he said they have already made solid progress. Students were able to walk around the slit lamp in class recently and examine the different knobs, lights and lenses up close.

“To be able to create these virtual class spaces and a slit lamp with Bascom Palmer Eye Institute, which is the top eye hospital in the United States, is an honor,” said Rudolph, who focuses on creating human-centered extended reality applications.

Reyes is now serving as a teaching assistant for the third rotation of the class and said that with each new group of students, they seem to get even more engaged in the class presentations. Dr. Alabiad said that shows there are also other benefits to the novel course.
“In addition to teaching them ophthalmology through this class, the students have also learned how to teach others in VR, which are skills that will extend well beyond the field of ophthalmology,” he added.

Meanwhile, Barthelemy hopes that she will soon be able to don a headset and work on a virtual reality cadaver in her anatomy classes to hone her knowledge of organs and tissues in the human body.

“If we could use this technology to practice our suturing and surgery skills, it would be extremely helpful,” she said.