

Could VR Replace Traditional Classroom Learning?

VR Med Ed b-roll

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It was just early last year that Dr. Matthew Bramlet, Director of the Advanced Imaging and Modeling program at Jump Simulation and his team of engineers developed software capable of translating digital formats of medical scans into Virtual Reality for medical decision making, pre-surgical planning and patient education. The idea was to eliminate the need to 3D print a physical model and reduce the time it takes to view a complete image. It was also Dr. Bramlet's belief that VR would enable clinicians to explore and experience the anatomy in ways they've never been able to before.

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...into it."

"We had some people that blew it up to the size of a cave and would walk through and orient themselves to the anatomy and then have that moment where everything sort of clicked into place in their mind," said Dr. Bramlet who is also a pediatric cardiologist at the OSF HealthCare Children's Hospital of Illinois. "Others would keep it down to the size they were looking for and cut through it with cut planes. Since it wasn't a physical model, there were infinite opportunities for them to look into it."

In watching these clinicians interact with the 3D anatomy models within VR, he noticed they were all instinctively narrating what they were seeing within the virtual space and sharing discoveries along the way. That's when the AIM team realized they had created a new form of medical education which Dr. Bramlet has named, *Enduvo* (en-DOO-voh). The software is a platform that allows clinical educators to build lectures in virtual reality, using nothing more than 3D anatomic models, video clips and diagrams. He calls it, "PowerPoint for VR."

VR Med Ed Bramlet 2

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...VR lecture."

"There's no coding involved. You just drag and drop the files you would normally add into a PowerPoint presentation into this virtual room. Then you go into this room, move your stuff around and then you press record and teach by interacting with the models and the diagrams. When you're done, you stop recording and you've just built a VR lecture."

Dr. Bramlet says a handful of faculty studying this software at the University of Illinois College of Medicine Peoria (UICOMP) have been able to condense their anatomy lectures from an hour to as low as 15 minutes using patient-specific 3D models to manipulate and explain. That's in lieu of having to use several PowerPoint slides to display different points of anatomy. Bramlet says the digital media format also allows professors to distribute the immersive learning opportunity in a flipped classroom model where students could potentially study material in the VR space ahead of an actual lecture.

It's all of this work that got UICOMP interested in doing more formal research around the use of VR for medical education and as a result, produced the Dean's Innovative Curriculum Awards. This program grants funding to professors making use of technology or ideas that have originated at Jump, a part of OSF Innovation, to create new curriculum. Two faculty members received grants last year to further study whether *Enduvo* (en-DOO-voh) can be applied in the classroom and used with a wide range of individuals. Dr. David Dominguese (doh-MEENG-eh), a Research Assistant Professor of Anatomy at UICOMP was one of the first recipients of the award.

VR Med Ed-Dominguese 2 :23 ...and teaching.

“One thing for sure is that there is always that wow factor,” said Dr. Dominguese (doh-MEENG-ez). “Students and faculty and others like the technology for certain things, but we also want to see if that wow factor translates to better learning and better teaching.”

Dr. Dominguese says his work is taking place in the newly constructed VR and anatomy lab at UICOMP and includes building content around the anatomy of the knee and shoulder and studying the attitudes, perceptions and behaviors of students and faculty using the technology. 28 people have been participating in the study since February of this year.

Chase Smith, a first year medical student, is part of the study. He says the software includes a tutorial on how to navigate a lecture which he found pretty intuitive.

VR Med Ed-Smith 2 :20 ...your own.

“You just kind of find yourself moving ahead in the tutorials and just trying things yourself which I really appreciated,” said Smith. “It made it feel more like you were discovering something rather than being led some place; you were finding things out on your own.”

Smith says he sees VR as a great way to learn about human anatomy.

VR Med Ed-Smith 1 :13 ...a lecture.

“I’ve always been a visual learner and it makes it a 1000 times easier when I am able to see something and experience it myself rather than reading about it or hearing it in a lecture.”

The end result of the study on *Enduvo* (en-DOO-voh) will likely be research papers on the use of VR for teaching and learning and how the platform can be implemented in medical education. The information can then be shared with others across the world as there is very limited research on the effectiveness of VR in education. This would likely be the first-of-its-kind study on the topic.

VR Med Ed-Rusch :24 ...our community.

“As we look at our research and our potential to grow, one of the things that is our strength is education,” said Dr. Sara Rusch, Regional Dean of UICOMP. “The ability to use new (educational) tools and technologies helps grow the educational enterprise, builds our reputation as an excellent site to go to medical school or residency and therefore helps attract physicians. We also hope it better trains physicians who are going to stay here and practice medical care in our community.”

Rusch says proving the effectiveness of different technologies created here in Peoria could lead to helping move those ideas into startup companies which could grow the health care economy and the economy of the city. As for Dr. Bramlet, he is interested in seeing *Enduvo* make its way to universities around the world.

For now he’s working to implement his software not only in medical education, but for clinicians within OSF HealthCare. His current focus is helping others build their own content with the ultimate goal of transforming education for the better.

VR Med Ed Bramlet 3 :30 ...toward me.

“When I came to Children’s Hospital of Illinois back in 2009, this was my dream job and it surprised me that it was my dream job. And that dream has just changed a little bit every year,” said Bramlet. “It’s still been phenomenal. I would’ve never had these opportunities anywhere else and I’m very fortunate that I am able to pursue this here and hope to be able to do the best I can with the resources directed toward me.”