





LAYERS OF REALITY

Applications of VR & AR

by Cassidy Clevenger

For centuries now, the concepts of education and learning have remained fairly stagnant—students attend class in physical buildings, memorize concepts, and are tested on their memory and comprehension of the materials through either paper exams or essays; however, as technology has advanced, many private colleges and universities are quick to adopt helpful tools for student growth.

In just the last few years, the rate of technology advancement has increased exponentially, and we are living in what was once the world of tomorrow. Several institutions are taking full advantage of the opportunities new technologies, such as virtual reality and augmented reality, have to offer higher education.

Ever-expanding Forms of Reality

Discussions over the nature of what is real has been ongoing for centuries, leaps in our technological abilities have complicated notions of reality in ways both exciting and disorienting; without getting too metaphysical or philosophical, I'll just say that reality now has the capacity to be both fully synthetic, yet—for all intents and purposes—entirely real.

Virtual reality (VR) and augmented reality (AR) have reached a state of development where it is possible for the user to see, hear, and—in some cases—feel an experience that is fully artificially generated. The modified realities this technology brings to the classroom have real-world applications and long-term effects on students.

These innovative technologies have continued to expand, and though there are multiple facets to these alternative realities, most fall under one of two categories: VR or AR.

According to researchers Julie Dirksen, Dustin DiTommaso, and Cindy Plunkett with The eLearning Guild, VR simulates a fully interactive world, and this world can either be real or created.

On the other hand, AR is an overlay, such as video, photos, or sound, that goes over real-world content and places; these AR environments are not capable of interactions. When colleges make the decision to use the combined features of VR and AR, this is called *mixed reality*.

Telepresence or AR simulations

Examples of VR include features such as *Telepresence*, where the students enter a simulated environment and interact with generated avatars.

In a VR world, the students play an influential role in both their environments as well as the characters in the new world. This technology has prominent applications in clinical fields,

such as medicine or mental health programs.

Alternatively, AR includes features such as 360-degree videos or non-interactive simulations. One of the largest benefits of AR simulations is its speed; by running essentially limitless simulations, and controlling for all applicable factors, it is possible to rapidly amass an expansive data collection. This may be especially helpful for design or STEM students.

VR/AR Across the Disciplines

Private colleges and universities across the country are integrating VR into existing programs, and in some cases, developing new programs from whole cloth in order to provide their students with innovative, well-rounded educations. VR and AR are being used in everything from STEM to the arts to business.

In order for VR and AR to be truly immersive, programmers need artists. This is why some programs have constructed programs for students to exercise their abilities in both art and technology.

Savannah College of Art and Design (SCAD), for example, developed a BFA

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option in Immersive Reality. SCAD was the first university to ever use augmented reality in the creation of the first AR-driven college catalog produced and designed entirely by the university.

SCAD President and Founder Paula Wallace explains, “VR, AR, and MR—all studied in our immersive reality program—represent the greatest technological advances in a generation. What the Internet did to the world in the 1990s and 2000s, these new media will do in the next ten years. Every major company and brand in the world will be using some form of virtual reality within a decade, and SCAD is leading that societal transformation with its immersive reality degree. We’re making it possible for SCAD students to dream, experiment, innovate, and literally invent the next big thing.”

SCAD’s new building, The Shed, houses the immersive reality degree and the cutting-edge classrooms. Among other amenities, The Shed contains two fully equipped studio labs prototyping electronic and for robotics, a model shop for projects and teaching—where students can



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build 3D models from their original designs—advanced labs for VR and AR, and even a user-testing lab, including double-sided mirrors, to study user behavior on digital interfaces.

Drexel University's VR and Immersive Media program attracts students who are interested in combining technical and creative skills to produce interactive media, which can prepare them for the future of media consumption.

Applications in Theatre Arts are also popular. For example, Husson University utilized the power of AR to generate fully realized set designs on bare stages. Brave Williams, an assistant professor at the New England School of Communications, noted the importance of the cutting edge technology in a university press release; he stressed the necessity of embracing VR and AR technology in the theatre department and university in general.

According to Williams, along with a new College of Business, the school will also premiere an Interactive Experience (IEX) Center, which will house all immersive and interactive technology projects.

Also in the realm of business, Fordham University's Gabelli School of Business is using VR in their MBA program to develop teamwork and communication skills among the graduate students.

The program teaches lessons in communication and peer-support through interactive games, such as simulated plank walking and bomb diffusing. For the naysayer, these exercises may sound more geared to fun than educational benefits, but the values taught affect the student both cognitively and emotionally, which has been shown to improve long-term learning.

The Reality of the Future

VR is also becoming increasingly popular among top businesses, such as Verizon, LG, Intel, Bill and Melinda Gates Foundation, Athena Health, and LinkedIn, to name a few. Businesses are using VR and other associated training methods to improve skills such as customer service and design development across their organizations. Seeing the way successful companies are also engaging in the technology highlights the importance for colleges to train their students in VR/AR.

Akin to the way corporations are using VR, students can also learn practical skills that also require rigorous adroitness in an immersive platform without risking their safety. Many institutions are using VR learning in situations that may otherwise be too dangerous or costly for students to perform in the real world, such as nanoengineering, space exploration, or medical procedures.

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Fiber-optics and Fibers of Being

VR is essentially challenging the concept of what it means to be a part of a community and what it means to interact.

Basics of cognitive psychology teach that in order to learn and adapt behavior, one must experience a stimulus and response—there must be consequences from decisions, either in the form of punishment or reward. In other words, knowledge alone is not enough to change behavior. So while the research on VR and behavioral changes is a new field, the data thus far is promising in VR's efficacy to illicit change.

The Ultimate Empathy Engine

Researchers with The eLearning Guild noted that VR can impact behavior by enabling desired behavior, promoting empathy, allowing consequences to unfold, providing projected outcomes, giving feedback, and prompting emotional self-regulation.

Much like in classic behavioral psychology, VR provides a space for students to work through the stages of intervention, such as

problem assessment, intervention implementation, problem solving, addressing target behaviors, and experiencing outcomes.

These steps, when intermingled with the experience with VR, work to develop students' emotional and cognitive abilities via experience and empathy; many researchers in the field have begun calling VR "the ultimate empathy engine."

Medical Education Applications

According to *Enhancing Empathy: A Role for Virtual Reality?* VR can be used in medical schools to improve bedside manner and compassion, leading to more positive results compared to previous, more-traditional forms of training.

Northwestern University's Feinberg School of Medicine, for example, announced in 2018 their plan to begin assimilating augmented reality, such as VR and holographics, into their curriculum.

When discussing the use of VR, a clinician in Neurological Surgery and creator of Feinberg's neurosurgery virtual reality program, Dr. Michael Walsh, stated, "The possibilities are really extraordinary," and "it's clearly the wave of education in the future."

As Real as It Gets

Some may argue that technology is intertwined with humanity; since the invention of the wheel, something in the human spirit has desired further progress and innovation.

The rapid intensity of mankind's modern technological development and advancements may seem overwhelming at times, and some colleges may be hesitant to invest in something that could potentially be just another trend; however, the potential for quality learning that is possible through VR/AR is irrefutable.

These augmented realities have the capacity to improve education across virtually all disciplines, while also promoting the skills humanity has always valued, such as togetherness, communication, and compassion.



ABOUT THE AUTHOR: Cassidy Clevenger is a Samford University alum. She is currently in graduate school at Samford in the MSW program, while working as a staff writer for Flaherty Media.

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