

ETHICAL MATRIX: VIRTUAL REALITY

INTRODUCTION:

Virtual reality (VR) is a three-dimensional computer-generated environment in which realistic scenes and objects appear. This technology is meant to make its users believe that they are immersed in the environment before them. These worlds are perceived through devices known as VR headsets or helmets (e.g., the one Dr. Colin Holbrook has in his lab at UC Merced). VR has been used for many things such as video games, virtual tours, and various types of training (e.g., medical, military, education, sport). This is different from augmented reality, which aims to bring objects and scenarios into the real world like Pokémon Go or Harry Potter: Wizards Unite. For this assignment I will be focusing on the use of virtual reality in the medical field for training.

ETHICAL MATRIX:

Stakeholders	Wellbeing	Autonomy	Justice
Producer	Pro: Satisfaction in their contribution to the betterment of the medical field professionals Con: Not believing that the VR environments are suitable for medical training	Pro: Freedom to create any environment Con: Possible restrictions on what to make from medical officials (creative restrictions)	Pro: Able to provide the opportunity for medical training for all Con: Not being able to give tools to all learning institutions (cost of VR is too expensive)
Consumer	Pro: Increase in confidence in surgical abilities Con: Succeeding in virtual procedures and not in real-life procedures	Pro: Freedom to explore/create any scenario Con: Not creating realistically accurate scenarios	Pro: Savings lives by practicing beforehand Con: Not being prepared for all possible complications (anything within or outside the body can happen)

Community

Future Generations

Pro: Increased trust in the medical field and its professionals <hr/> Con: Possible decrease in trust in the medical field and its professionals (not enough human-to-human learning)	Pro: Being able to object from having medical students sitting in on their medical cases (they can get experience from VR instead) <hr/> Con: Dehumanize patients / unable to create provider-patient relationships	Pro: Not Being used as training dummies <hr/> Con: Not receiving the best medical care possible (only getting professionals that have mostly VR experience)
Pro: Increase Life expectancy <hr/> Con: Competition for future medical students to receive the best training	Pro: Freedom to choose route of action for medical procedures (have professional train in VR training before operating) <hr/> Con: Normalizing VR training... less options for real-life experienced professionals	Pro: Using VR as a supplementary tool in the learning process <hr/> Con: Decreasing ability to empathize with one another

EVALUATION

After evaluating the matrix that has been created, it seems as though it is ethical to utilize VR in medical field trainings. Despite its costliness and limited access, VR will be of great assistance to the medical field, VR consumers, and the community/ future generations. Its main pros are increased confidence and trust amongst medical professionals and the community and being able to have ample practice before being able to interact with a patient (avoiding losing lives over the smallest of variables. The usage of VR as supplemental training seems most appropriate as opposed to taking over for hands-on experience. There are many things that cannot be experienced in a VR scenario such as the texture and feel of slippery gloves, human skin, or even the possibly horrid smells that come with doing surgery on human bodies. In addition, it would be inappropriate or unbeneficial to practice patient-provider interactions in a simulation. There are technologies in the world that are working on making intelligent AI that people can build relationships with but would probably not transfer over very well to actual human interactions.