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The Rise of Virtual Reality in Online Courses: Ethical Issues and Policy Recommendations

Clement Longondjo Etambakonga

Abstract

While ethical issues related to the adoption of Virtual Reality (VR) technology is analyzed across sectors from construction, architecture, retail, engineering, healthcare, less attention is paid to the ethical concerns in online courses. Using an inductive qualitative content analysis and observation in the business schools, this chapter aims to shed light on the ethical issues that may occur as results of use of VR technology in online courses. The findings indicate that the use of VR technology in online courses raises several technical and social/ethical issues. These issues comprise concerns related to record of personal data, which could be deployed in ways that threaten personal privacy, private neglect of users' own real bodies and actual physical environments, and other moral and social security risks related with the way VR confuses the distinction between face-to-face and virtual learning. As these ethical issues raise questions about public policy, the chapter makes several recommendations that elaborate a platform for further discussion. It is argued that there is a need for a wider vision that looks beyond the teaching technological issues to those linked to students and teachers' conducts, and institution policies.

Keywords: Virtual reality technology, online courses, ethical issues, public policy

1. Introduction

In the past two decades, more particularly since the spread of Covid19 pandemic that has forced worldwide shutdown of business schools, online education has increased remarkably and has involved increasing numbers of teachers lecturing at a distance for the first time. This resulted in tremendous compulsory use of Virtual Reality (VR) technology in online courses serving as the learning platform. VR is a computer-based technology that offers students with a highly collaborative and multi-sensory learning experience [1, 2]. It delivers real-time commitment and instantaneous feedback regarding student performance and challenge [3]. However, even though there has been increasing attention devoted to ethical issues related to the adoption of Virtual Reality (VR) across sectors from construction, architecture, retail, engineering, and healthcare, there has been less attention dedicated to ethical issues with the widespread use of VR in online learning. It is argued that during the Covid19 pandemic, the number of online courses in business schools is growing significantly which have several ethical issues [2, 4]. This chapter addresses ethical

issues faced by teachers and students in the business schools when using VR technology on online courses.

Using an inductive qualitative content analysis as one of the several qualitative methods currently available for analyzing data and interpreting its meaning [5], this chapter tries to answer the following ethical questions: Does the use VR technology in online courses guarantee privacy, security and confidentiality of the participants? Does a dependence on virtual reality technology in online teaching promote equity and diversity among students? What are ethical issues faced by students and teachers in their interaction using virtual reality technology in online courses? The structure of the chapter is as follows. The next section conceptualizes and defines virtual reality technology and briefly reviews various ethical issues related to the use of virtual reality technology. Section 3 discusses VR regarding online courses and the benefits of VR to online education are reviewed. Section 4 contains an ethical issues analysis faced by teachers and students and the last session discusses policy recommendations. The conclusion summarizes key ethical implications of use of VR in online courses, particularly those facing teachers and students.

2. Virtual reality technology

Virtual Reality (VR) has become a most important resource and facet of our present and future learning. The term VR was first used in 1974 Myron Krueger describing specific environment, an artificial reality display as video place [6]. Today, we are experiencing the most daunting and exhausting learning perspective settings with virtual reality. One of the most commonly uses of the term defines the virtual reality systems as systems that use head-mounted exhibitions, data gloves and data suits to replicate an immersive, highly interactive computer-generated, multi-sensory information environment, in which user becomes participant in real time. Generally, many scholars use virtual reality interchangeably with cyberspace and artificial reality. For example, Brey defines virtual reality as “a three-dimensional interactive computer-generated environment that incorporates a first-person perspective” [7, p 5]. Sandra Helsel defines virtual reality as a process that enables users to become participants in abstract spaces where the physical machine and physical viewer do not exist [8].

In this chapter, VR is considered a technology that persuades students and teachers that they are in real time that replace face-to-face through the use data established shaped by a computer. It covers the entire field, comprising artificial reality, internet, and a third person and telepresence, which according to Hilary McLellan, is the sensation of being present at a distant place from where one is truly located, with the capacity to control objects at that remote location. However, the key characteristics that emerge from the virtual reality definitions include the use of three-dimensional graphics, the interactivity and a first-person perspective [9]. While interactivity requires that the represented environment must enable for manipulation, which implies the modification of aspects of the environment in a fairly direct way, such interactivity entails three-dimensional graphics. For instance, a first-person perspective, involves that the environment is recognized and interacted with from a specific point, that indicates a degree of immersion in a world, rather than the experience of the world as an entity that can be monitored from the outside [7, 10, 11].

Even though, the immersion in imaginary space as a key element of VR is important and allows one to forget about the physical distance among participants, it however cannot exactly replace the warmest face-to-face education. Such

immersion is only limited by our imagination and how we choose to build the virtual world [12]. It is worth noting that VR technology offers several benefits, particularly in education by providing a safe, helpful and conducive environment for students to improve their learning process [12, 13]; but it poses serious issues ranging from potential mental issues, personal neglect of users' own actual bodies and its technology may be used to record personal data which may threaten personal privacy and risks the manipulation of users' beliefs, emotions, and behaviors [14, 15]. As moral obligation represents a constraint which not only mitigates a virtual world's experience, but which may prove antithetical to the medium's long-range social influence [14], therefore the focus of this chapter is on the ethical issues faced by multi-users of VR systems in online courses.

3. Virtual reality and online courses

The literature in VR is used by several different scholars with many meanings. Even though, VR was mainly used to play the most recent computer games, it is today a constantly advancing new computer technology, which offers great opportunities for the education sector. In education, it is used as a path for students and teachers to envision, control and interact with computers and tremendously complicated data [2]. By simulating learners and teachers in a face-to-face physical presence in the real environment, VR is an entirely immersive, engaging and interactive experience of another reality in which the participants feel completely absorbed in the environment by means of special human-computer interface equipment [11]. VR has the possibility to be a formidable new instrument in the teaching space. It provides the best instrument for learning by submerging learners and teachers in an environment as close to face-to-face. VR creates environments in which participants generate various social and disciplinary cultures, with unique communication patterns, norms, values, and interaction systems [16, 17], as variations in communication forms change classroom-based conceptions of teaching and online learning.

The online course systems are web-based packages for supplying, stalking, and managing courses over the cyberspace. Anderson and Simpson pointed out that online course entails the application of innovations in technology to direct, model and provide the learning substance, and to facilitate two-way communication between students and teacher [2]. It is increasingly agreed that online courses are a more useful and flexible method to taking courses that will lead to a degree. Virtual learning contains elements such as chat rooms, whiteboards, discussion forums and quizzes that enable students and teachers to communicate online and share the whole course content likely to achieve the learning goals. For instance, John C. Thomas and Rory Stuart list seven roles for online education using virtual reality including, investigating existing places and things that students would not otherwise have access to, explore real things that, without changes of scale in size and time, could not otherwise be well explored, create places and things with altered qualities, interact with people who are in distant locations through global clubs with a shared interest, or collaborations on projects between students from different parts of the world, interact with real people in non-realistic ways, create and manipulate abstract conceptual representatives, like data structures and mathematical functions and interact with virtual beings, such as representations of historical figures and agents who are representatives of different philosophies and viewpoints participating in simulated negotiations [18, p. 209].

For many of benefits, business schools are resorting to VR to deliver education online. The use of VR in education offers several benefits ranging from students

learning experience through computer-based interaction to the development of student's information and communication technology skills [7, 19]. It has been argued that the use of VR increases students' engagement in online learning by interacting them in multiple ways [20]. The use of VR in education will continue to increase student's level technological expertise in a world [21], in a world where all activities tend to be digitalized. However, despite several benefits provided by the use of VR in online learning, teaching and learning at a distance raises several ethical issues, which are even complex than those encountered by face-to-face teachers and students [2]. Zembylas & Vrasidas pointed out that online settings create sites that are 'supportive of hybrid identities, complex discourses, and multiple relations among learners.' [22, p.61]. The use VR systems in online education may raise several ethical issues that go beyond the nature and applications applied to technology to the burden of some social groups and unethical behaviors faced by learners and teachers.

4. Ethical issues in online teaching

The introduction of virtual reality (VR) technology in online courses has raised several ethical issues. My focus of this section is the consideration of rights of students and teachers in regard to the dangers they are exposed to in online learning environments that introduce new and/or intensify existing ethical issues as they interact. These moral issues occur in part because electronic environments allow new kinds of behaviors that are simple to perform in electronic environments, which may entail new ethical rules [23]. As VR online relies upon the internet that is wrought with potential risks, what might we have to worry about once more business schools adopt the technology in their online courses. The purpose of this chapter is not to furnish responses to all ethical issues related to online courses using VR, but to raise further inquiries for shaping solutions to the ethical issues I consider, based on Kidder's advice to resolve our ethical concerns through energetic self-reflection. Relying on an inductive qualitative content analysis of archival data and observation related to the ethical issues faced by students and teachers using VR technology in online courses, I have identified ten key types of ethical issues, which are briefly discussed below:

4.1 Privacy and confidentiality

The issue of privacy and confidentiality raises questions about what kind of data is recorded and stored? Who gives permission to store the data? The use of VR technologies in online courses may be used to record, store and even share personal data which could be used in ways that jeopardize personal privacy and present a risk linked to misuse of users' behaviors, values and emotions [2]. Privacy is essential in keeping precious conditions of ethical humanhood. O'Brolcháin et colleagues note that people, if they are to that expand themselves and explore their opinions, or again behaving in certain manners need a degree of privacy [24]. However, reduced privacy influences the development of individual ethical personalities. In VR online courses, both students and teachers will no longer have any private space to make errors and explore distinct aspects of themselves as they are immersed in a digital environment [23]. In the European Union for instance, individual rights are protected by the general data protection regulation that ensure personal data protection to guarantee privacy. It is worth noting that VR technology, in particular online learning raises new privacy issues or exacerbates existing ones [2]. However, these issues are likely to be applied in the business schools that are currently using online

education, in which many of their activities are recorded electronically including staff meetings, classroom, students group projects and many other online activities.

4.2 Safety and security

The issue of safety and security raises a question about how to ensure transfer of the correct data to the right address? As any connected device that uses internet, VR technology in online teaching does not ensure essential security mechanisms for data storage and sharing and communications between VR devices, servers might be sent unencrypted. Like smart phones that can secretly collect any kind of information from everywhere, if VR earphones become universal, everyday devices, then someone might be able to track what you are watching at any time [25]. However, what occurs if someone hacks VR earphones and introduces a visual attack that could cause harmful real-world reactions? There could be several ways hackers put personal information into harm's way if needed.

4.3 Informed consent

The issue of informed consent raises a question about whether other people publish information about/pictures of me? Regarding the information gathered as teachers interact with students to build up a meaningful personal experience, the following questions could be raised for the informed consent: At what point does a teacher's interest in knowing more about a student in order to make a significant connection to learning interfere on the student's personal right to privacy? Do teachers need to seek for consent to watch students' online interactions, to review and reassess their online contributions and to 'eavesdrop' on their 'conversations'? [2]. The VR in online learning environment offers greater opportunities for teachers to know about students and to have much of that knowledge recorded always [24]. Many students who interact on online virtual environments during the courses, which becomes the norm, sometimes forget that they can be observed. But informed consent and being able to control the use of personal information is definitely a person's right [2]. When students register at a business school, there is a need to seek permission to gather and use student's personal data as part of the application process to provide the organization with numerical data about the nature of the student group.

4.4 Equality, equity and diversity

The issue of equity and diversity raise questions about whether the use of VR in online courses promote equality, equity and diversity for students? Can VR in online courses ensure education for all? Can social, cultural and academic values be successfully transmitted using VR in online learning? As VR in online courses requires internet connection and computers which limit access to many social groups (i.e., poor people) - social exclusion of people who cannot afford to buy a computer or get connected to the internet. Lack of information and communication technology equipment among low-income people, exclude them to online course systems. However, Wedemeyer stated that "Instruction should be available any place where there are students—or even only one student—whether or not there are teachers at the same place at the same time" [26, p.36]. This statement underlines the ethical aspect of equality of access for all on online learning using VR as a moral obligation. There are moral issues of culture in online course using VR, including the of imbalances arising from dominant cultural morals represented in teaching materials and methods [27], and possible miscommunication among participants in online

discussions arising from cultural differences [28]. Additionally, most online courses in business schools are designed in English, non-English speakers can be excluded.

4.5 Autonomy

The issue of autonomy in online learning using VR raises questions such as are VR in the online education environment conducive for learning freedom or do they threaten to undermine it? Autonomy as self-control plays a key role in ethics as it is about to obey only yourself –to be able to deliberate and make decisions without being influenced by external sources [24]. To be autonomous, individuals will need access to appropriate information from relevant sources without constraints and to be able to choose for themselves according to their own ideas and values in order to make decisions. However, VR technology in online learning acts as a gatekeeper of information, which causes a risk to the informational condition of autonomy. The institution has control over information posted, can also control how people perceive and understand the world of learning. Additionally, VR technology in online courses raises serious concerns related to personal neglect of users' own real bodies and real physical environments [29].

4.6 Copyright and plagiarism

The issue of copyright and plagiarism raises questions such as how to protect copyrighted data, students and teachers' contributions and materials used for teaching, from being exchanged illegally? It is increasingly known that the prohibited copying of copyrighted media (e.g. texts, music works, movies and software programs) is prevalent throughout in education [2]. Additionally, many students and teachers who engage in such misconduct practices do not think themselves to be doing something that is obviously morally wrong. This is certainly true for college students. As Glass and Wood have reported that a large majority of students do not recognize the illegal copying of software as unethical [30]. Moreover, plagiarism is widespread in many business schools, where it is one of the biggest forms of academic dishonesty. Copying the ideas or work of another person without citing the source, including books, extracts of articles, tables, diagrams and material from the internet or other electronic sources is common among students. Unauthorized or inappropriate use of computers, calculators and other forms of technology in coursework, assignments, Brey reported that assignments handed in by students may turn out to be copied from other students or to be taken over, in part or in whole, from existing published works [23]. VR in online courses tools such as computers and the internet only add to the way that students have at their possession to perpetrate plagiarism.

4.7 Ownership of data

The issue of ownership of data raises the question about who owns the data published on social networking sites? Does a teacher or a student keeps the ownership of his own data, or he/she loses it in the moment he/she accepts the business school's terms and conditions? Are foundational rights of individual subjects recognized in VR technology in the online learning environment, and what it takes to protect them against obstructions? These few questions among many others arise against the background of disputed relations of ownership between an owner and his/her property. VR technology operates through gathering and processing of huge data. Ownership of data, access and control are critical moral issues in the sharing of VR in online courses data [31]. In many business school policies, data generated and posted to VR learning environments are owned by the institutions.

4.8 Online bullying and hacking

Online bullying and hacking raise the question about how individuals can be protected online against personal attacks and stalking? Billions of students are bullied everyday worldwide, as many students think that bullying is a tradition of passage in a student's life. This includes harassment and intimidation that takes place online using pictures or words and is difficult to control. It takes several forms of exclusion, threats, aggression to public humiliation mainly among the students at the universities and business schools, these are morally wrong. VR in online courses could be used as a platform for online bullying or harassment, racists could also use it as platform for bullying behaviors in the shadow of anonymity. Additionally, hacking involves interfering on someone's personal computer through distant access, purposely changing files to which one has not been granted access, liberating computer viruses, stealing passwords or files, exposing personal information, and stealing electronic money [32]. Teachers and students at VR in online courses may get involved in hacking for a range of reasons - they may just be unaware that they are breaking into a computer system, they may just be curious, they may be out to harm someone, they may want to benefit themselves, or they may have entirely different reasons [23].

4.9 Control and surveillance

The issue of control and surveillance raises question about how to control the exchange between students and teachers or among students in virtual environments? How to ensure surveillance of students in online courses? In one side, virtual technology allows anonymous communications because of the use of internet from harassment to fraud which are difficult to track and appear difficult to solve. On the other side, surveillance of students in all online courses is an issue. Actually, in online courses using virtual technology, teachers are to track students' participation, the number of responses they post and what they read, when they read it. Virtual courses provide teacher with a permanent record, which are often used to give us information about a student's performance, however, such surveillance is hidden, and concern and action on the part of those being observed is driven by uncertainty [24].

4.10 Freedom of speech versus hate messages

The issue of freedom of speech versus hate speech raises questions about what are the limits of what can be published? Who decides what is acceptable? Even though, in most countries some degree of freedom of speech is ensured in the constitution, but there are limitations for hate speech, defamation, and obscenity. In business schools, there may be various electronic ways of exchanging messages between students and teacher or among students and/or with external people to the organization, which are important collaborative virtual settings. As in face-to-face interaction, these VR forms of interaction can be used to send threatening, obscene, provocative or harassing messages [24]. These may include discriminatory, sexist, or/and racist messages, used to tease fellow students or teachers based on their socio-cultural affiliations. However, such messages are usually not considered to be acceptable in an academic setting, as educators strive to ensure that the classroom functions as a safe, non-hostile environment for students and teachers in virtual courses as do face-to-face classes [24]. **Table 1** below summarizes ethical issues related to the use of VR technology in online courses and the questions they raised

Ethical issues	Questions they raised
Privacy and confidentiality	No access of third parties. What kind of data is stored? Who gives permission to store/retrieve the data?
Safety/ security	How to ensure transfer of the correct data to the right address?
Informed Consent	Can other people publish information about/pictures of me?
Equality, equity and diversity	The equity and diversity raise questions such as does the use of VR in online courses promote equality, equity and diversity for students? Can VR in online courses ensure education for all? Can social, cultural and academic values be successfully transmitted using VR in online learning?
Copyright and plagiarism	How to protect copyrighted data, students and teachers' contributions and materials used for teaching e.g. music and movies, from being exchanged illegally?
Autonomy	Are VR environments in online education conducive for learning freedom or do they threaten to undermine it?
Ownership of data	Who owns the data published on social networking sites?
Online bullying and hacking	How can individuals be protected online against personal attacks and stalking?
Control and surveillance	how to control the exchange between students and teachers or among students in virtual environments?
Freedom of speech versus hate speech	What are the limits of what can be published? Who decides what is acceptable?

Table 1.
Summary of Ethical Issues and Questions they raised.

5. Policy recommendations

Given the limited number of ethical issues discussed in this chapter in regard to the increasing moral issues related to the use of VR technology in online learning, the following set of recommendations provided here serve as a regulating starting point, a framework for future debates:

- There is a necessity to increase communication and discussion among information and communication technology professionals, businesses, business schools and governments to get things right and address moral issues around VR technology in online learning.
- For instance, in addressing security issues, the business schools should investigate the track record of the producer and the devices to protect against the hackers.
- As there are many new VR technologies, software and devices for online learning, universities, students/teachers' behavior, and the regulation should need to change to keep up with any new changes of VR in online learning.
- Business schools should have policies that address all identified ethical issues to ensure safer, an inclusive and responsible learning environment.
- A VR in online education trainings should be run to all users including teachers and students to increase their technological skills such as the tools to support activities, the key tasks to accomplish and the learning environment, these skills need to be further assessed before using VR technology.

- There is a need for a qualified and available technical team with appropriate resources needed to respond to the needs of teachers and students during online courses using VR.
- VR technology users should be aware of all ethical issues related the use of VR in online courses and the potential solutions on how to address them.
- VR technology users should be aware that as compared to the watching of traditional movies, the effect of VR immersion settings and the related danger of users suffering mental health trauma will gradually increase.
- VR technology users should be aware of new threats concerning surveillance and data protection during the use of VR in online courses.

6. Conclusion

Since the spread of the Covid19 pandemic, teaching students in distance has become a must for many business schools. There are many ethical issues related to the use of VR technology, particularly in online learning; however, this chapter has considered and discussed only ten of them. The study suggests that, even though online courses using VR technology offer several benefits, they pose several social and technical issues. Some of the issues that have been discussed here range from privacy and security of the users to the social/ethical issues, and recommendations have been made as a starting point to stimulate future discussion. It is argued that there is a need for a wider vision that looks beyond the teaching technological issues to those linked to students and teachers' conducts and institutions' policies. Further research is needed to understand the extent of the quality of learning, class interactions, social and ethical values in VR online learning as compared to face-to- face educational settings. Recommendations for future discussion have been provided above.

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