

Immersive Virtual Reality, Presence and Engagement: What is the pedagogic value of immersive virtual worlds?

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Abstract. This proposal for research sets out the purported generational and technological issues that might influence engagement with education in virtual reality. It examines the pedagogical questions that might emerge in the course of this research with particular reference to that of communal constructivist theory and information and communications technology pedagogy in online learning. The chosen route for this study is that of ethnography, as involvement in virtual reality research requires participation, observation and immersion in the scenarios to fully comprehend the potential educational advantages and shortcomings of the environment.

Keywords: Virtual world, second life, virtual environment, computer mediated communication, higher education, communal constructivism, interactive learning environment, digital native, net generation

1 Introduction

With the exponential development in technology hardware, applications and software, it has become incumbent on educational institutions to engage fully with Technology Enhanced Education (TEL) [1]. Three dimensional (3D) virtual worlds have been among the most controversial and contentious of these technologies. Despite this, they have been increasingly adopted as the preferred means of delivering distance education. [2], [3], [4]. Virtual worlds have been regarded as a tool for providing the possibility of in depth student engagement with the collaborative ability to construct ideas and virtual objects within the virtual environment and engage with the complex ideas in a kinaesthetic manner [5] [6].

A virtual world environment can be defined by the following characteristics: it exists beyond the login of the user, it has multiple users able to engage in interactive synchronous chat within an environment that is both immersive and gives a strong sense of presence [2], [5]. While there may be differing definitions of what is a virtual world, the general consensus is of a persistent online reality that allows people to interact and collaborate through the use of avatars [5], [7]. The user is able to change existing content but as a corollary this content can in turn evolve whether he is there or not, just as in the physical world the environment is impacted by a multitude of factors. Other online environments in higher education, such as BlackBoard, share many of these characteristics but the most significant difference is the 3D environ-

ment and the presence of embodied avatars allowing synchronous discussion and a strong feeling of presence within the virtual environment [8]. Virtual worlds also provide opportunities for synchronous interaction in a designed space with objects and conditions created by the designer. Current e-learning tools are unable to provide the sense of total immersion within the on-screen virtual reality made possible by the use of virtual worlds.

2 The Primary Research Questions

It is this embodiment and presence in virtual space that will be the subject of this research proposal and how the presence of three generations of users inworld affects the performance of students and staff and resultant pedagogies. The proposed research areas are as follows:

- To research and understand by participant observation how a virtual world, Second Life, might facilitate immersion and how this will enhance student engagement in the educational context of the MA in Virtual Worlds.
- To attempt categorization of attributes that facilitate this immersion and equally, the constraints that prevent with particular reference to the possible differing perspectives of academic staff and their students.
- To participate in and critically analyse an immersive educational activity or series of activities within the MA in Virtual Worlds at the University of the West of England (UWE).
- To identify the properties and assets needed to sustain immersive experiences in virtual worlds, particularly technology requirements, and to investigate whether generational technological issues hinder understanding of teaching and learning in virtual worlds.
- To work towards formulating a policy for approaching the design of immersive educational activities in virtual worlds and to develop an understanding of the experience of virtual immersion with reference to age and technical proficiency.

3 The Generational Technological Issues in Academia

Currently, according to Jones, Ramenau, Cross and Healing [9] there is a new generation of students entering our higher education institutions. Known either as the Net generation [10], Digital Natives [11] and Millenials [12] these students arrive with a set of skills that are more appropriate to the information age than are being taught by the existing staff. Although it is possible that these claims are not valid, they have introduced an atmosphere of panic among academic staff who are largely not of the generation introduced by these authors. Significantly the idea of generational expertise is reinforcing the idea that older members of staff are not capable of teaching them in the desired format. It is the intention of this research to examine and possibly repudiate these claims.

The JISC report 'Information Behaviour of the Researcher of the Future [13] suggests that the readily available information on Google is preferable to a visit to the physical library. Botterbusch and Talab [14] propose a further definition - Generation "V" (Generation Virtual) which has grown up with an online presence that allows filesharing, social networking and multiuser virtual environments, graduating from Club Penguin to the next stage in adult virtual realities. Thus, higher education must rethink how they deliver knowledge.

At the University of the West of England, (UWE) much of this has already been achieved. However, the introduction of a UWE island in Second Life has raised new issues, both with the academic staff and the students who participate inworld. Most academics who work in higher education did not do so through a desire to work with the latest technology, nor do they want to engage with the rapidly changing interface of information retrieval and education in virtual worlds. Instead, they face not only the unavoidable advance of technology into their personal and professional lives but also the presence in their classrooms of students who engage with information retrieval and social networking in online virtual environments. It is these academics who write about the Internet Generation and its transformative potential, create and regulate the media technologies consumed by these young people but view them in normative, moral terms as 'other' [15]. Students are observed through a lens of historically situated perspective, and this sense of 'otherness' drives the apprehension often apparent in the engagement by academic staff in virtual worlds.

This research will, therefore, also consider the changes introduced by technology in academic teaching and learning and how these advances are necessarily reshaping the recognised teaching processes, and in turn changing the role of the university Technology Enhanced Learning (TEL) leaders. Traditionally, the key roles of university academics are teaching and research. Each of these roles is being substantially changed by technology. There has been a paradigm shift in the way that faculty members are expected to engage with teaching, learning and research that is completely different from the ways in which they themselves were taught [13]. Added to this is the exponential increase and adoption of virtual worlds in education.

4 Methodology

The enhanced scope for analytical and global research enabled by the Internet means that academic researchers have been able to engage with a range of perspectives and in a manner that has never before been viable ([16]. There have been of particular import for this study, ethnographic accounts of specific virtual places [17], [18], [19], [20], [21]. This interpretative flexibility based on social constructivism is in turn based on a wider epistemology that reacted against logical empiricist methodology and its application to the social sciences. The phenomenology of the social world described by Alfred Schutz [22] and the philosophical rationality of George Herbert Mead [23] produced social constructivism with its claim that scientific knowledge is always the result of a situated perspective or world view. Social reality is created through an iterative process with man as both the producer and product of the social.

[24]. The complexity of social worlds even in virtual realities, cannot be defined entirely by any underlying means of communication. Proponents of the Social Identity Model of Deindividuation Effects (SIDE) [25], [26] demonstrated that on-line behaviour could be even more social than real world collaboration.

4.1 Ethnography and Technology as Methodology

One common feature of conventional ethnography is that the ethnographer becomes involved in the setting, and develops a deep understanding of the practices of that setting. Hammersley and Atkinson [27] discuss this, stating that only with this profound immersion can an understanding of the society be attained. New communication technologies are not only a medium for transference of information, but also instrumental in creating new social spaces in which people network and form virtual communities. This virtual world is parallel to the actual real life world and in turn creates differing social and cultural phenomena. Sociologists, anthropologists and are exploring the everyday realities of those whose social interactions are mediated by and through the Internet.

Bryn Holmes, Brendan Tangney, Ann FitzGibbon, Tim Savage and Siobhan Mehan [28] argue that social constructivism cannot fully capture all the possibilities that networked learning offers and they suggest that 'communal constructivism' is a better explanatory framework. This is illustrated by the ability of students in a communal constructivist learning environment to collaboratively create their own knowledge, as well as constructing knowledge for a wider audience. Communal constructivist thought encourages collaboration between tutors, academic colleagues and students in knowledge construction thereby enabling collaborative development of the areas of study. Communal constructivism also endorses methods of assessment that supports richer and more in depth learning such as e-portfolio work, reflected in the assessment in the MA Virtual Worlds, in which learning gains are reflected on over longer periods of time. The MA in Virtual Worlds will generate its own virtual environment, community, culture and normative behaviours, but there will be reference to participants' physical world situations as this affects the manner in which the students participate in the course. Unlike Boellstorff [20] who, in his ethnographic study of Second Life, maintains that it is important to observe the virtual world inhabitants as they are seen to develop appropriate research methods, this study will examine both the physical and the virtual and physical embodiments. Communal constructivism, as proposed by Leask, Ramos and Younie [29] could therefore be described as a facilitator of new pedagogical methodologies, rather than as modernised learning theory. This research will be more focused than recent ethnographic studies, taking as its model the work of Mead with the isolated group of Trobriand islanders. The students and staff on the MA are the equivalent of these islanders allowing in-depth study of pedagogic values within the virtual environment.

5 Methods

The methods used will include participant observations, participant online jour-

nals/blogs, descriptions and interviews. This will necessitate embracing the virtual world environment and culture and mastering the inworld tools and technologies. This phase of the research has already taken place as I have participated as a student on the MA, fully engaging with the assessment process. In addition, as a lecturer in TEL, I will be engaging with the environment as both researcher and member of faculty. This dual approach coupled with participant observation should highlight possible significant differences in immersion. In addition, it will be possible to observe colleagues new to the virtual environment.

6 Synopsis

In Thomas Kuhn's book 'The Structure of Scientific Revolutions' [30] he postulates that a paradigm shift or change in worldview cannot take place until society is ready. Thus the Copernican scientific revolution was the transition from a Ptolomaic cosmology required a scientific revolution or change in worldview.

Kuhn's model of scientific change differs puts an enhanced emphasis on the individual scientists, thus introducing human vagaries into the logical or philosophical scientific process. Hence it should follow that a worldview or paradigm shift within SecondLife will follow human interests and actions. As Manguel states [31]:

All technology has a human measure; it is impossible to remove the human strand even from the most inhuman of technological devices. They are our creation, however eloquently we try to deny them. (p9)

These anomalies cause the current paradigm to be thrown into crisis and new ideas are investigated. The new paradigm gains its own adherents thereby creating an intellectual disagreement between the supporters of the new paradigm and the intransigent followers of the accepted paradigm. This would seem to reflect the current crisis in Education within our schools and universities - the intransigent followers of 'naturalistic' education versus the invading technologies. The pedagogies in place largely reflect the worldview as seen from the twentieth century and although many of the viewpoints are still valid, the information era and technology continues to change at an unforeseen pace. If educators fail to keep up, they are in danger of failing to prepare their students for the society in which they live. Max Planck stated that [32]:

...a new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it. (p22)

Education institutions have to decide whether this is an appropriate worldview for the future or whether they should engage with the new technologies for the benefit of the students they teach.

The prevailing worldview of technology however, is also one of such unpredictability that it may mean that both academics and students have to both teach and learn with the understanding that what is learned at the beginning of a three year undergraduate degree may be rendered redundant by the final year.

7 Conclusion

This research should enable better and more insightful teaching and learning in the online environment, with particular reference to online postgraduate and undergraduate teaching. Academic institutions are using different types of Computer Mediated Communication (CMC) to improve the teaching and learning process. Several studies have discussed the benefits of using such systems in the learning process [33], [34]; [35], [36], [37] such as anytime, anywhere features, and multiple ways of communication. However, the increasing interest in the potential of using metaverse platforms in education has created excitement and in some cases apprehension among academic staff and students. The purpose of this ethnographic study should allow a unique insight into pedagogic collaboration within a bounded virtual environment. The intention is to record and analyse data through student involvement as well as the perspective of teaching students in a CVE. There have been studies of students and teachers by researchers but not one that demonstrates immersion and presence from both perspectives. This study aims to illustrate how ethnographic research within set boundaries (the UWE SL island) can go some way towards improving both the learning and teaching process in an environment often perceived as not just innovative, but alien and unfamiliar.

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