Situating pedagogies, positions and practices in immersive virtual worlds

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Abstract

Background: The literature on immersive virtual worlds and e-learning to date largely indicates that technology has led the pedagogy. Although rationales for implementing e-learning have included flexibility of provision and supporting diversity, none of these recommendations have helped to provide strong pedagogical location. Furthermore, there is little, if any, exploration of the kinds of e-learning spaces that are commonly adopted in higher education or the rationale for their use.

Purpose: This article explores the current arguments for the use of immersive virtual worlds in higher education and examines the impact the use of such environments is having upon teachers and teaching.

Design and methods: A comprehensive literature search and review was undertaken by a team of researchers in order to explore issues of pedagogy, staff role and digital literacies, and explore perspectives that might inform the higher education community about views on the use of immersive virtual worlds.

Conclusions: It is suggested that an exploration of digital literacies and the use of pedagogically informed models may offer higher education some purchase on the complex issues and implications of using such immersive virtual worlds for learning.

Key words: pedagogy; immersive virtual worlds; staff role; digital literacies

Introduction

This article will present an overview of the current research and literature relating to immersive worlds in higher education. It will argue that to date much of the literature is somewhat underdeveloped in terms of its pedagogical underpinning and that in order for development to occur in these environments there needs to be a stronger informing pedagogy. The review presented here begins by exploring the current

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arguments for the use of immersive virtual worlds (IVWs) and then examines the impact the use of such environments is having upon teachers and teaching. It is then argued that an exploration of digital literacies and the use of pedagogically informed models may offer higher education some purchase on the complex issues and implications of using such spaces for learning.

Background

Immersive virtual worlds hold the potential to be used in higher education in a range of disciplinary contexts, for a variety of educational purposes. The unique immersive 3D features offer possibilities for learning and interaction which may be distinct from both the face-to-face environment and the more established platforms for e-learning, such as virtual learning environments (VLEs). Immersive virtual worlds may also offer advantages over scenario-based, activity-led and problem-based approaches that occur in face-to-face contexts. For example, IVWs afford the possibility of exposing learners to a wide range of scenarios (more than they are likely to meet in a standard face-to-face programme) at a time and pace convenient to the learner, together with consistent feedback. Learners have the opportunity to make mistakes without real-world repercussions. Further, with the increasing use of distance programmes, IVWs provide online learning opportunities which are sufficiently immersive and collaborative outside the tutorial room, in ways that current VLE systems do not.

The most extensive research into student perspectives and experiences of online learning (for example Creanor *et al.* 2006; Conole *et al.* 2006) has largely indicated that technology has preceded the pedagogy (Cousin 2005). Despite this Sharpe *et al.* (2006) have pointed out that successful institutional rationales for, and

practices of, implementing e-learning have included flexibility of provision, supporting diversity, enhancing the campus experience, operating in a global context and efficiency. It could be argued that some of these recommendations lack pedagogical location in that they do not clearly reconsider differences in discipline-based pedagogy and the need to link these with both disciplinary and intuitional concerns relating to e-learning. Furthermore, it does appear that there is little, if any, exploration of the kinds of online learning spaces that are commonly adopted or the rationale for their use. For example, VLEs such as Blackboard *may* be used in ways that contain and control learning (Land 2006), whereas there is a current tendency to suggest IVWs should be used for the kinds of learning that focus on the deconstruction of knowledges and identity work (Bayne 2005; Savin-Baden forthcoming 2010).

The question of how, when and why particular locales are used requires further exploration. This is because the type of space and the way in which it is used (or not used) to manage knowledges and skilful practices will affect the kinds of learning opportunities offered to students. However, there are a number of studies that have specifically focused on the student's experience. Jones and Cooke (2006) used two case studies to explore students' online discussions to enhance understanding of how students learn. Students were positive overall about their online experience, even if they did encounter problems, such as fellow students not participating in discussion forums. Bayne (2005) studied how students and teachers experienced their identities online, and how these related to their embodied 'real life' identities. A common perspective amongst students emerged in which online modes of identity formation were viewed negatively, primarily as the true self being deceitfully threatened by the

online being. Bayne's research concluded that tutors' use of the online space to (re)construct themselves as authority figures was far less problematic and far less a cause of anxiety than the identity narratives provided by students. More recently Hemmi, Bayne and Land (2009) raised the difficulty of 'honesty' in such spaces, suggesting that alternative constructions of identity were possibly seen by some as morally wrong. However, before further discussion relating to role, identity and literacies is undertaken, the relationship between pedagogy and IVWs will be examined.

Pedagogy and the use of IVWs

The dilemma over the pedagogical location of IVWs is further exemplified by uncertainty over the pedagogical value of IVWs themselves; as exhibited by the e-learning community and the wider educational community. It has been widely acknowledged that these worlds do present educational potential in terms of role-playing, building and scripting items and fostering dialogic learning and social interaction (Savin-Baden 2008). Despite many cogent arguments and the varied possibilities for their use, there have been relatively few situated pedagogical rationales for the use of IVWs in higher education. Whilst in some cases learning theories have been adopted, pedagogical designs developed and IVW teaching trials piloted, these learning theories have generally fallen into one of two categories. These are (social) constructivist approaches to learning, which have predominantly utilised the 'building' functions of IVWs (Bronack, Riedl and Tashner 2006; Mayrath *et al*. 2007; Good, Howland and Thackray 2008), and situated learning perspectives, many of which utilise Kolb's experiential learning cycle and develop role-playing scenarios (Mayrath *et al*. 2007; Jamaludin, Chee and Ho 2009; Jarmon *et al*. 2009). It would be

helpful perhaps to situate or theorise learning in IVWs when turning to newer and emergent learning theories, such as the supercomplexity model (Barnett 2000), threshold concepts (Meyer and Land 2005; Land, Meyer and Smith 2008) or the conversational framework (Laurillard 2002). Whilst these learning theories may foster their own problems when applied to IVW learning, it is only by considering all aspects of learning that these worlds may encourage location and contextualisation within curricula design.

As the use of IVWs in education has advanced, trends have been recognised. Significantly, curriculum designers have noted the potential that IVWs offer in terms of providing a collaborative and social environment; particularly when used in conjunction with blended distance learning courses (Bronack, Riedl and Tashner 2006; Minocha and Roberts 2008; Kemp, Livingstone and Bloomfield 2009). In some cases this has led to a tendency to focus *only* on the social aspects of the IVW, using it solely as a 'virtual classroom'. Minocha and Roberts (2008) have further identified a wish to improve avatar expressions and responses within the IVW which, coupled with a Second Life campus which replicates their university campus, suggests that the main reason for using the IVW in this case is to transfer the course from the classroom to the 'virtual classroom'. Whilst the social opportunities that are seen to be fostered through IVWs have often been utilised to their full potential, in order to situate the use of IVWs pedagogically it is essential to look beyond its obvious social affordances and consider the pedagogical opportunities.

The project piloted by Mayrath *et al.* (2007) is indicative of this argument. Two projects were carried out in separate semesters with 18 students, the first of

which required students to study the architecture of their university campus and then build their ideal campus in Second Life, adopting a constructivist approach to learning. After receiving results which indicated that students felt that the Second Life activity was not relevant to the course (an English undergraduate class), Mayrath *et al* redesigned the second semester activity. This was changed from a robot-making activity to a role-playing activity based on a need to align the Second Life activity to course content, to communicate its relevance to the student participants and to reduce the need for Second Life facilitation training. The role-playing activity, which suggested an implicit shift to an experiential view of learning in IVWs, encouraged students to explore leadership by taking on the persona of a particular role model. This was interlinked with offline activities such as reflective essay writing and grounded within the context of the course, thus exercising the pedagogical affordances of IVW role-play. By experimenting with and theorising about IVW pedagogical design, Mayrath *et al.* shift away from utilising the environmental affordances of the IVW towards an understanding and rationalising their use of its pedagogical affordances. Therefore we suggest that it is essential to recognise that pedagogical design within IVWs is advancing, as educators become more aware of the environmental and pedagogical affordances that it can offer. Educators (such as Edirisingha *et al.* 2009) in online environments have recognised the need for the appropriation of e-learning frameworks such as Salmon's (2005) e-moderating framework, and there have been moves towards the development of a situated pedagogical rationale (Lim 2009; Warburton 2009). Despite this, learning environments within IVWs still require consideration and theorisation in order for curriculum designers to ensure a situated pedagogy and a rationale for their use.

However, there is still work to be done here, particularly with regard to the relationship between pedagogical design and teachers and teaching.

The impact of IVWs on teacher roles

The role of staff in higher education has changed since the growing use of Information and Communication Technology (ICT) to support developing knowledge and skilful practices (Kozma 2003). Today, university education without the use of VLEs, for example Blackboard or WebCT, is difficult to imagine (Livingstone *et al.* 2008). Yet the role of staff in higher education has changed increasingly with the advent of IVW use, such as Second Life and unsurprisingly, members of staff report confused understanding of their roles in IVW-based teaching (McVey 2008; Bayne 2005). Although teachers find informal support when facing the technical challenges of using IVWs (for example through wikis and mailing lists), there remains little to guide pedagogic structuring and this is exemplified in the literature. This would seem to be because there is a lack of understanding of the location and roles of staff when teaching in IVWs in higher education, particularly since most research is focused on how students perceive learning in educational IVWs (Creanor *et al.* 2006; Conole *et al.* 2006; Sharpe *et al.* 2006; Larsen *et al.* 2008). However, Rappa *et al.* (2009) do argue that the role of a teacher could be seen as a mediator or mentor to the students, and present a framework which suggests that the three dimensions – teacher, learner, and ICT – need to be synchronised. Yet, Rappa *et al.* (2009) admit that this framework remains too narrow since it does not reflect the capacities of IVWs to simulate real-world circumstances. Thus it would seem that teaching in IVWs needs a different framework to guide staff as mentors or mediators.

Furthermore, an often-forgotten aspect of education is highlighted by Gaimster (2008) who suggests that some students have an emotional dependency towards their

teachers. Moreover, Deepwell and Malik (2008) argue that students expect direction and leadership from staff, which some staff see as necessarily and easily transferred to teaching in IVWs. Yet, Larsen *et al*. (2008) argue that teachers should be seen as a 'community of learners'. To do so, Larsen *et al*. argue, staff members will have to develop four competences: knowledge about facilitation, ICT, coaching and collaboration with students. However, given the fact that all teachers need such expertise, it could be suggested that their argument adds little to the IVW debate.

Teaching in IVWs offers complex opportunities to develop knowledges and skilful practices. However, such complexity can be a great challenge for staff. Teachers see themselves in a possible dilemma between giving students expected and needed directions, and the space and freedom to create and develop knowledge and skills independently. Therefore the role of staff in IVWs would seem to be located between that of mentor and mediator. Clearly, there is a need for an effective underpinning pedagogy about how to deal with these dilemmas and complexities effectively. Yet what is perhaps more troublesome than the lack of pedagogical underpinning and difficulties over staff role is the lack of recognition of the need for an exploration of literacy practices in IVWs.

Engaging with digital literacies to inform learning in IVWs

Whilst there is certainly confusion over pedagogies and staff roles there is also uncertainty inherent in curricula integration and student literacies. Literacy practices within IVWs are diverse, requiring users to draw upon semiotic resources and strategies to engage with a range of modes for meaning-making (Steinkuehler 2007; Gillen 2009). Second Life facilitates (and often requires) users to utilise streaming

video and audio media, texted synchronous chat, Voice Over Internet Protocol, to manipulate physical appearances and create virtual objects, and a host of other web-based multi-modal resources. Much of the potential accorded to IVWs as a pedagogical space revolves around the leveraging of these modalities to diversify teaching facilities and strategies (Warburton 2009; Savin-Baden 2008). Yet there is little evident understanding of how IVW learning might require (or develop) new literacies, nor how these new literacies might impact upon other areas of teaching. In the domain of student literacies, IVWs lack not only pedagogical placement, but seemingly lack a level of debate conducive to its establishment.

The multi-modal nature of the immersive virtual world setting challenges us to address important questions about our pedagogic placement of literacies. In order to host learning successfully, the semiotic resources required to employ modes embedded in IVWs must be developed within some aspect of the education system. If we attempt to underpin our incorporation of IVW learning with the notion of 'native' competency (Prensky 2001a, 2001b) -the assumption that being born into a computer age necessary makes ease of use and familiarly with technology more of a possibility than those born before the advent of computers- then we are likely to be disappointed. Even accepting the cognitive model of a generational divide supporting youthful (technological) exuberance toward spaces such as Second Life[1], it is far from accurate to suggest that present and future cohorts in higher education will consist solely of the 'millennial' (Howe and Strauss 2000) demographic.

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[1] For a comprehensive deconstruction of the 'digital native' discourse, see Bayne and Ross (2007) or Bennett, Maton and Kervin (2008).

If we are not to build upon this discourse of *a priori* competency, then where do we intend to locate multi-modal literacies that may be required to enhance learning within IVWs? As Lea (2004) has reminded us, higher education consists primarily of written, rather than multi-modal, texts. We are thus unlikely to find the concurrent development of multi-modal literacies through our other higher education offerings without a significant pedagogical shift towards their incorporation. It would seem that IVWs must support and develop the literacies that are demanded for their effective functioning in isolation from, yet *within* the context of, the degree programme as a whole. The occasional IVW module is neither presently facilitated by, nor facilitates, a theoretical shift towards multi-modal literacy practices more widely. It may be, for student literacies, that there is a need to engage with a unique blend of semiotic resources which may not have been called upon before.

It is similarly unclear how we expect literacies that might develop from IVW learning to interact with other areas of the curriculum. Whilst literacy theorists have been mostly united in their rebuttal of the notion that writing/text has become outmoded (see Kahn and Kellner 2005; Merchant 2007; Steinkuehler 2007; Skaar 2009), this does not mean that text (in production and representation) has remained the same across new and old literacy spaces (see Merchant 2007; Gillen, 2009). Nor does it necessarily mean that multi-modal aspects of literacies will exert no influence upon perceptions, aspirations and practices in areas of teaching that do not utilise IVWs. The incongruence between the multi-modal nature of IVWs and the primarily textual canon of teaching and assessment presents us with a number of challenges as to how we might reconcile disparities in approaches to developing student literacies. Will the pedagogy of non-IVW learning modules allow for multi-modal literacies to

be expressed in teaching and assessment? Would it be academically beneficial to support a shift away from the dominance of academic writing?

Immersive virtual worlds occupy a space of uncertainty between the entrenched practice of writing and reading text and a multi-modality that necessitates new blends of semiotic resources, and strategies not previously employed in higher education. It would be short-sighted to suggest that students enter higher education with no experience, competency or interest in multi-modal resources made prominent by digital technology. Yet it would be similarly ill-advised to assume that cohorts of current and future students will possess (and desire) the literacies to engage with the teaching media that IVWs offer. Attempting to leverage multi-modal resources in isolated incidences, without locating them within the pedagogy of courses more generally, would seem to presuppose the discourse of *a priori* competency that we have earlier attempted to dispel. Immersive virtual worlds are thus difficult to locate within the larger domain of student literacies, and the resultant challenge, one of pedagogical placement of (new) literacies, should be a factor for consideration prior to engagement in IVW learning.

The following case study offers a possible pedagogical model, a location of staff roles and an application of digital literacies that might be adopted and adapted across other contexts:

Case study

The Problem-based Learning in Virtual Interactive Educational Worlds (PREVIEW) project was developed, implemented and evaluated for healthcare courses – Health and Social Care Management (Coventry University) and Paramedic (St George's University of London). It adopted the pedagogical approach of Model III problem-based learning (Savin-Baden 2000), whereby problem-based learning becomes a vehicle to bridge the gap between the know-how and know-that and between the different forms of disciplinary knowledge in the curriculum. The PREVIEW project was designed to take advantage of the new opportunities afforded by IVWs, and used the virtual environment Second Life. Particular potential benefits for using problem-based learning in a virtual world were seen to be the authenticity of a simulated real-world environment and the open-ended nature of in-world activity.

Eight scenarios were developed – four *avatar-driven scenarios* (ADS) and four *information-driven scenarios* (IDS). The IDS utilised multi-modal resources– for example, videos, audio, links to external websites, and notecards (an in-world note taking tool). The information in ADS was presented in a more interactive way, with the student communicating directly with a 'chatbot' (computer-driven avatar) that represented a key role in the scenario, such as a patient or a manager.

There were three main roles in the problem-based learning scenarios: the student, the tutor and the facilitator. For the problem-based learning student there are no specific 'right' answers but rather a multitude of outcomes for these scenarios. The role of the facilitator is to provide guidance in relation to the scenarios and the virtual

world in general. The tutor, after designing the themes of the scenarios before the implementation stage, then takes more of a 'backstage' role, such as dealing with assessment after the students have completed the scenarios.

The evaluation included testing scenarios and examining the student and tutor perspectives. An iterative process was used when evaluating the scenarios. Each scenario was tested by a group of students, and qualitative feedback was used to improve upon the scenarios before addressing another round of testing. Results suggested that the ADS were the preferred method of problem-based learning in Second Life, due to the level of immersiveness and authenticity – therefore the decision was made to use only ADS subsequently.

The main underlying issue that arose from the testing sessions was the concern of distance learners not being able to access the scenarios when necessary. Due to the nature of the Paramedic course scenarios, the students were able to run the scenarios themselves without the need for a facilitator. However, the Health and Social Care Management scenarios at present require a facilitator at all times, due to the complexity of the technologies being used in Second Life. As this is obviously not ideal for distance learners, a web application using MOODLE (an open-source VLE) is being developed. This will address a number of issues, in particular the concern that the distance learners do not have the computer capacity to run Second Life, and will not require the visual capacity that Second Life provides. It gives the ability to run the scenarios synchronously *or* asynchronously and thus can be used when a facilitator is unavailable to attend the scenario sessions.

The PREVIEW project has now been adapted to work with disciplines such as psychology, physiotherapy and nursing; and the paramedics scenarios made available to other higher education institutions as open source. The PREVIEW project is thus one possible foundation to further explorations of IVW learning.

Discussion

We suggest that PREVIEW offers a situated pedagogical rationale for PBL and a way that it might be placed in a curriculum, which begins to address some of the concerns raised in the literature. Further, it offers a template for the way in which staff might adapt to the integration of new learning strategies (embedded in new learning theories such as PBL and in new literacy practices) and new learning spaces. The teacher position becomes one of facilitator and indicates a shift away from positioning and locating staff as lecturers and purveyors of knowledge. What is also helpful is that the ADS precipitated a shift toward multi-modality and away from entrenched (and curricula integrated) literacy practices. However, the isolated nature of the PREVIEW project exemplifies the uncertainty in curricula integration. As yet it is unclear as to whether the shift towards multi-modality represents a greater move within academia that could be facilitated such as using PBL and technologies such as IVWs.

Although it is easy to characterise the initial forays of higher education practitioners into IVWs as under-theorised and technology-driven, it should be recalled that the energy and enthusiasm for these developments, as with many innovations in educational technology, has been driven by a small number of technically literate pioneers (for example Jarmon *et al*. 2009). Although observable theories from the education literature may not be widely invoked, innovators apply

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implicit theory - here as in all contexts of development - working in complex interplay with passion for change, and the particular features of context and situated practice. It is well-noted in the literature that the learning curve for new users in IVWs is steep. However, it should also be noted that the stakes have been very high indeed for the first wave of module leaders who have implemented IVWs in their educational provision (Kirriemuir 2009), and an inordinate degree of flexibility and effort has been required of these educators and students. Successes have emerged, lessons have been learned, and arguably the role of the practitioner-research community is now to gather and synthesise these staff and student experiences, in order to reflect them back to the field.

In terms of development of theory, pedagogies, roles and communicative practices, in some respects IVWs present what appear to be a unique set of challenges, but in fact it could be argued that these mirror the persistent questions around which higher education research and development constantly revolve. Specifically these might be characterised as: Why do things in this way? How do we do them to best effect? What will these practices require us to be / feel / do? However, the particular opportunities of IWVs undeniably represent a significant qualitative change in terms of the nature of the environment, as has been discussed in the literature. The most initially striking aspect of IVWs in the higher education context is the fact that they are primarily a visual semiotic resource, as discussed above. This is noteworthy in the context of the hitherto strongly (although not exclusively) text-dominated domain of higher education. The kinetic 3D nature of IVWs adds another dimension of both strangeness and possibility. Thirdly, the use of avatars introduces a set of possibilities surrounding identity work, meaning-making and self-representation, requiring and

creating a complex set of interlocking modes of communication. These features arguably bring into relief the need for scaffolding and effective orientation and guidance, but also the tensions which may arise as staff seek to maximise educational goals from within an outcomes-driven regime, and students explore the new boundaries of a space which is so rich with associations of freedom and self-reinvention.

Whether IVWs call for a new paradigm in terms of educational theory or for an adaptation of existing models is one question to explore. The question of 'why?' continually returns here – the rationale for using IVWs. Only through this can the further challenges and tensions surrounding the multiple staff and student role/s be addressed. It is tempting to conclude that here – as in the face-to-face and more established text-based online context - the teacher role is multiple, fluid, plural and contingent. However, unlike these contexts, the teacher must also engage in communicative practices and identity work which may arguably question the 'traditional' pedagogic relationship. How to manage this balance of innovation and support remains the challenge here, perhaps even more than in other educational contexts of practice.

A further radical aspect of IVWs surround the literacy and meaning-making practices which are called forth by their use. As discussed, engagement, communication and participation require some degree of comfort with a multimodal visual set of semiotic resources and practices, which may be familiar to some students, but not to all. In order to facilitate this, some development and orientation is clearly required. However, this raises the question of the extent to which the

environment and its component modalities might become the *object* of learning, as opposed to the context. From an academic literacies perspective, medium and content are inseparable, and writing is seen as the process and locus of disciplinary meaning-making, not a mere medium (e.g. Lea and Street 1998). Whether this model can be extended to a combination of textual, vocal, visual and kinetic practices is a complex question which requires detailed research and thought. A further related question is how the development of these practices might be valued / valuable beyond the context of their use in IVWs. Arguably, contemporary culture is becoming more visual and complex (Skaar 2009) in terms of modes of representation and meaning. Whether or not the use of these multimodal environments has anything to offer students beyond the life of the module remains to be seen.

What seems to be emerging currently are three broad contexts and modes of use: firstly for scenarios, simulations and role-plays where the semiotic resources offer a pedagogic context not available elsewhere. This is particularly apparent in the take-up of IVWs for problem-based learning and related approaches in which complex decisions must be taken in real time by professional teams required to apply theory to practice in complex and high-pressure situations. The second mode of use seems to be more affective in its focus, using the potential for co-presence and visibility in IVWs primarily for team work or team building, particularly in distance contexts where participants cannot easily form these relationships outside of textual medium. The third context of use seems to be where the environment and its affordances are not a medium but are explicitly the focus, as in computing, design, and architecture (Cargill-Kipar 2009). The question remains as to how the IVW

environment might be better utilised for a wider range of disciplinary learning activities.

Conclusion

This review has proposed three areas of thought and practice around the use of IVWs as ambiguous, insufficiently theorised, or in need of clarification and further critical consideration and research. These are the pedagogical rationales, goals and processes of higher education within IVWs, the roles, emergent practices and orientations required of teaching staff, and the position of the broad range of student meaning-making practices called forth by IVWs.

It is perhaps unsurprising that these three areas require further thought and development. Between them, in overlapping ways, they constitute the 'why, how and what' questions which might underpin the growth and develop of these new environments as educational spaces of practice and becoming. However - as with so many innovations in education - critical analysis and in-depth research are arising now as part of a second phase of development, in this case arguably riding in the slipstream of the first wave of technology-driven experimentation.

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