

Challenging education in virtual worlds

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We are called not to solve the problems of others, but rather to create for them problem spaces within which they can realise their full potential as happy, healthy human beings. It is neither giving a poor man, or your own son, a fish, nor is it teaching him to fish. It is the act of creating a river environment in which the man, your son, would find so much joy in the act of fishing that he would teach it to himself. That is a tough assignment indeed.

(Castronova, 2007, p194)

Digital technology is rapidly transforming the society in which we live, but the use of virtual worlds as spaces for educational activities is a recent development, very much in its infancy. The ground rules and practices of learning and teaching in virtual environments are being created and negotiated as educators and researchers develop what has become a new frontier for education. As this exploration is taking place, virtual worlds are becoming increasingly firmly established, and are now immensely popular as sites for recreational and social activities. The current economic scale of some of these worlds is already on a level with that of nations. By the time of the next election in the USA, over 100 million Americans are predicted to have their own avatars and a personal presence in a virtual world (Castronova, 2008). This book seeks to examine some controversial issues in this area, presenting discussions from those whose experiences of moving between the virtual and the physical will be useful for readers seeking to understand and develop this area further.

What value do virtual worlds offer for education? Only a couple of years ago, few but the brave and foolhardy would have suggested they offered any. A survey of further and higher educational establishments in the UK (Kirriemuir, 2007) showed that few had made any use whatsoever of virtual worlds. A related study, published two years later (Kirriemuir, 2009), showed a major change, reporting that there was only one UK university where no evidence could be found of virtual world activity. But has anything truly changed, or is this just a passing fad, a short-lived stampede towards the latest fashion in social media? This is the key controversial issue dealt with by each author in this book. The responses range from Jonathan Rix's view, expressed in Chapter 6, that the benefits of these environments have been both misused and misrepresented, to Peter Twining's demonstration that a reflective use of virtual worlds can help us both to imagine and to implement fundamental changes to our education system.

Embedded within this controversy are others, some of which are all too familiar from the tabloid media. 'Under-7s "should be banned from playing computer games or risk damaging

their brains” was a headline in the UK’s Daily Mail (Poulter, 2008). This was followed more recently by The Sun’s report, headed ‘Paedo cartoons to be banned’, that abusers ‘live out fantasies in online “3D worlds” such as Second Life, where users socialise in so-called virtual communities’ (Hartley, 2008). Online safety and the regulation of online behaviour are important issues for today’s educators, and for the learners whose access is consequently often restricted or controlled. Access is also a contested issue for learners defined as disabled, who may experience virtual worlds as excluding or as enabling, and for those who do not have the resources to access such environments.

A deeper controversy is related to the value of that access. If virtual worlds are just a passing fad, with no maturity or staying power, then there is little to be gained by working to make them safe and accessible environments for learners. These environments involve play and dressing-up – pre-school activities which are typically excluded from the education of teenagers and adults unless they are formalised as physical education or drama. To teach and learn within these environments requires training and resources, but it might be argued that there is little to be gained by investing in these if nothing is learned that is applicable in day-to-day life, if it is difficult to organise or assess any learning that does take place, or if the skills and content covered in-world can be learned just as effectively in a conventional classroom.

The authors of the chapters in this book engage with all these controversies, as they look beyond the physical world and explore what virtual worlds could mean for education. They show that the development of education in this context a two-way process. Education in virtual worlds is not solely an adjunct to education in the actual world – nor is it merely a reflection of that education. Castronova looked at the increasing social and economic importance of virtual environments and wrote of emigration from one world to the next, arguing that ‘When people move from one country to another, both countries change’ (Castronova, 2007, p14). When this view is applied to movement between real and virtual worlds, it initially appears as a form of science fiction associated with the movement between real world and matrix or metaverse in influential novels such as *Snow Crash* (Stephenson, 1992) and *Neuromancer* (Gibson, 1984). Nevertheless, we argue that Castronova does not go far enough. Countries, however politically and culturally different, resemble each other in many respects. Their underlying physics is the same. By contrast the actual and the virtual worlds are fundamentally different – they are different modalities with different properties and different affordances. When these modalities meet, they can intertwine and reshape each other, in the same way that the possibilities of words and music are expanded and transformed within song. The authors in this book show that the interplay of the virtual and the actual has the potential to transform education in all the worlds we inhabit.

What are virtual worlds?

The words used to describe and denote the virtual and the actual are still developing and currently include a set of complex acronyms. Multi-user virtual environments are described as MUVES and are related to multi-user dungeons (MUDs), massively multiplayer online role-playing games are reduced to MMPORGs or a variant form of this acronym, the popular World of Warcraft becomes WoW and SecondLife™ is unofficially referred to as SL. Boellstorff examines the current terminology in detail in his book 'Coming of Age in Second Life' (2008), in which he treats the words 'virtual', 'online' and 'cyber' as synonyms. At the same time, he identifies other categories used by different authors but not by him: synthetic world, persistent world, artificial world, digital world, mirror world, possible world, virtual community, virtual environment and metaverse. He also chooses to refer to 'the actual world' instead of 'real life' because 'it's clear that virtual worlds are real places of human culture' (Boellstorff, 2009). In the current book, authors use a variety of synonyms for conventional educational settings, including: the real world, the actual world, the physical world, our day-to-day life and our face-to-face environment. Between these and the virtual world lie mediated environments such as emails, blogs, virtual learning environments, wikis, computer games and online chat – all of which may be considered both 'real' and 'virtual', depending on the context.

This book takes virtual worlds to be

collaborative online environments which people normally access using a computer interface and where they can interact with others. These environments 'share three distinctive features: the illusion of three-dimensional space, avatars which serve as the visual representation of users and interactive chat which allows users to communicate with each other synchronously'

(Sheehy, Ferguson, & Clough, 2007)

Such environments can be accessed from many different locations and they persist when users are not online because they are not confined to the computers of individual users. This definition excludes the imagined worlds of dreams, art, literature and theology – while recognizing that all of these impact upon the worlds we inhabit.

Throughout this book, the concept of a clear split between 'real' and 'virtual' worlds is critiqued as being too simplistic. Virtual worlds are increasingly mainstream. In the last week of January in 2008, Blizzard reported that their World of Warcraft game had ten million paid subscribers, and noted that it 'currently has a (paying) population about half the size of Australia' (Schramm, 2008). At the same time, the virtual world of Club Penguin was inhabited by 750,000 children from Britain alone after a recent takeover by Disney in a deal 'that could be worth as much as \$700 million' (Richards, 2008). The viewing figures for The Disney Channel in the UK were very comparable – 820,000 people spent an average of six

minutes each watching the channel that week (BARB, 2008). To say that the virtual world is inherently less a real part of life than the television is disingenuous, both in terms of its being an activity of daily life and in terms of its importance for the individuals who visit or inhabit it.

For adults and children alike, virtual friends and colleagues are part of a valued social network, which is constructed and developed across worlds and across media.

The Second Life community is not confined to activity on the SL Grid and in Teen Second Life. Residents share ideas and comments through websites, wikis and blogs. Some of these sites are ephemeral, while others persist. Second Life photographs are shared through image-sharing sites such as Flickr; where the Second Life group has posted over 160,000 pictures. Talented film makers such as Robbie Dingo share videos created in world (known as machinima) through social networking sites such as YouTube. Torley Linden's photographs and video tutorials, distinctive due to Torley's repeated use of the watermelon colours pink and green, are both popular and ubiquitous. The New World Notes blog by Wagner James Au has provided consistent and detailed coverage of Second Life and Au has built on the material in the blog to produce a book on Second Life

(Ferguson, Harrison, & Weinbren, 2010)

Virtual world skills can no longer be regarded as unimportant or unnecessary. Instead, they form part of a way of being that will be increasingly important to learners in their current and future lives. This is because the barriers between real and virtual are becoming progressively more permeable. Millions of real-world dollars are generated in virtual worlds every day and hence these worlds have a significant impact upon 'real lives' and mainstream economies. This permeability can also be observed as virtual technologies cross over into the real world through augmentation and revolutionise 'industrial age' teaching practices.

There are hundreds of virtual worlds available: for games consoles, for mobile devices, for different operating systems and for different regions. Despite this, 'Second Life remains the virtual world of choice for learning, teaching and research in UK academia.' (Kirriemuir, 2009, p1), a reality that is reflected in the research reported here. However, the focus of this book is not on Second Life, but on the impact of virtual worlds on education. The controversies relating to access, to safety, to relevance, to value and to education as a whole impact on all of us, whichever world we work or learn in.

It is also important to remember that access to Second Life is restricted by age. The SL Grid™ is accessible only by those who declare themselves to be 18 and over, while Teen Second Life™ is restricted to young people aged 13-17, and approved educators. Children at primary and secondary school therefore have no access to these environments, while further education colleges have to divide their attention between two related, but different, worlds. While learners' first experience of being required to use a virtual world is likely to take place

at college or university – their first experience of education in virtual worlds is more likely to have been embedded within play. The skills necessary to socialise, work and learn in a virtual world are developed voluntarily and pleasurably in games environments.

This is explicitly recognised by companies that run successful virtual worlds for children of primary school age. Moshi Monsters, for example, offers children the chance to ‘Adopt your own pet monster! Chat with new friends! Play games and puzzles!’ At the same time, its information for parents presents the same experience in a different way

Education is right at the heart of the Moshi Monsters experience.... Successfully nurturing a Moshi Monster is no mean feat. It takes a variety of skills that your child can develop over time. Your child will need to think creatively, hypothesize, strategize, manage scarce resources, collaborate with friends, and nurture a wide variety of other skills that could extend positively into their everyday lives.

(Moshi Monsters, 2009)

On a similar note, the ‘Parents’ section of Club Penguin states that

On Club Penguin, children practice reading, develop keyboarding skills and participate in creative role playing. By accumulating and spending virtual coins earned through game play kids practice math and learn about money management. The cooperative nature of the Club Penguin environment, along with initiatives such as our secret agent and tour guide programs, also help children develop important social skills while gaining a deeper understanding of their role as members of a community.

(Club Penguin, 2009)

Although the penguins and igloos of its virtual world appear far removed from a conventional learning environment, Club Penguin is presented as a site where children can learn and develop skills and subject knowledge. In this way it interacts with education by looking beyond the physical form education takes in the real world and instead reproducing its underlying values and perceived purpose.

This reproduction of values is one of four ways in which virtual worlds interact with education, and with other real-world concerns. This interaction is achieved through:

1. Reproduction of the physical form
2. Reproduction of the values
3. Versioning
4. Counterpoint.

Reproduction of the physical form

Reproduction of the physical forms of education is often a staging post as institutions struggle to understand how to use a new environment for learning and teaching. In Second Life it is possible to build detailed scale models of university buildings, of lecture theatres and of

classrooms. 'It was probably inevitable that in the early days of SL, people would reproduce the buildings and classrooms they were familiar with in RL' (Salmon, 2009, p529). In some cases, this is a considered approach. Leeds Metropolitan University reported recreating their 'RL building to provide an initial bridge for new users (to stop them feeling too scared by this strange new world and to give them a sense of ownership)' (Kirriemuir, 2007, p19). However, the approach has disadvantages as students fail to negotiate small corridors and sharp bends with their avatars, are unable to open doors to access classrooms, and see little point in entering an exciting new environment in order to sit in rows to look at a board. As a result

The practice of solely creating an exact reproduction of the university campus in Second Life is now somewhat rare. Most institution-wide, in-world campuses make fuller use of available virtual world resources, for example providing teaching facilities for departments and courses, and exhibition spaces for student work.

(Kirriemuir, 2009, p1)

Reproduction of the underlying values

Reproduction of the underlying values is concerned with the purposes of education and with what learners and teachers are trying to achieve. This approach varies depending on the underlying pedagogy – it may make use of the affordances of a virtual world to promote the construction and development of knowledge or to support the transfer of skills and information. At its simplest level it may involve playing maths and spelling games in world, and receiving small rewards in return for sessions of drill and repetition. Another approach is to focus on the development of skills that are appropriate to the environment, such as programming, digital photography and machinima making (producing films in world).

'The use of Second Life for visualising and manipulating difficult and complex objects has been championed by several academics in the UK' (Kirriemuir, 2009, p14). This modeling supports examples of artefacts such as different types of motor, bacterial genomes and three-dimensional mathematical objects. These environments can be designed to provide learners with active support, with abstract rules and concepts made explicit through symbol support. Learners have the opportunity to explore environments and activities that would be difficult, risky or impossible to access in real life (Standen, Brown, & Cromby, 2001), creating scenarios, role-playing within them, recording and replaying what happens and then working through them again. In these worlds, soldiers can safely experience the potentially lethal tension of carrying out checkpoint duty in Iraq, and oil rig workers can work to perfect their safety procedures (Caspian Learning, 2009).

Versioning

Versioned education involves learning or developing the skills necessary to function in a virtual world and make sense of that environment. Some learning is essential in order to be able to leave the log-in page; individuals need to be able to identify a particular avatar as a representation of themselves on their screen and to move and operate it. Some of these skills are transferable from virtual world to virtual world, without any obvious actual-world counterpart. Learners with experience of virtual worlds or related types of computer game will arrive in a new world and immediately search for movement controls and camera controls, they will expect to have an inventory, backpack or equivalent, to be able to customize their own avatar and be able to interact with other avatars. More complex, world-specific skills and knowledge are developed over time, through training, discussion, experience, taught sessions and cut-scenes.

Training in using the medium is essential. It only takes a few minutes to sign on and create an avatar. Learning to move, navigate, view and communicate in a 3-D MUVE takes longer. 'Newbies' (novices) among the avatars are easily recognised by their jerky movements and bad landings, their tendency to bump into virtual walls and other avatars, and their hesitant speech text. Once students and tutors have mastered these skills, their avatars can lead interesting and instructive lives, and social ones. Scripting (programming) skills must be acquired to create islands, landscapes (terraforms, in the jargon), buildings and objects.

(Salmon & Hawkridge, 2009, p409)

In these worlds, knowledge is acquired over time – experienced players of World of Warcraft have access to and make effective use of an array of screens, menus and tools that are bewildering to a novice. In addition, they will know a considerable amount about the geography, history, language, economy and culture of their world, and be able to make fast, informed judgements of others they meet there. The same will be true, although in a more limited way, of a child playing Club Penguin. To a newcomer, the two-dimensional penguin avatars in this virtual world look remarkably similar, make use of a limited vocabulary and are difficult to distinguish. Long-term players, on the other hand, will have developed knowledge that helps them judge the experience and status of other penguins – which is partly achieved by evaluation of the colour, number and condition of their puffles. Experienced players will have learned what a puffle is (a small, furry pet); they will also have learned which can be bought with in-world coins and which involve parents parting with cash, how and where in-world coins can be earned, at what point certain types of puffle became available or unavailable, where these pets can be taken, how many can be owned and how they should be cared for.

Counterpoint

Virtual worlds have the most radical impact on education through educational counterpoint. This involves the bringing together and combination of different modalities so that each can be understood and experienced in a new way and is available to be linked to create a new experience. The contrasts and interplay between virtual worlds and everyday reality serve to make the familiar strange, throwing into relief some of the ways in which education is utilised by individuals, groups and societies and providing an insight into the ways in which it is constituted. Virtual worlds hold a mirror up to reality, helping residents and visitors to understand what they regard as normal by observing what it could be, what it has been and what it is not (Ferguson, et al., 2010). One interpretation of this is that virtual worlds help us to become aware of and to strip away what is not essential, breaking down the old order.

Maybe what is needed is the creation not of universities but ruins, to create borderless spaces, much as the University of Bologna once was. Perhaps this is what social reform approaches offer over cognitive approaches to learning capabilities: the opportunity to strip universities of their architected and disciplinary walls and to interrupt established practices and the power inherent in those practices.

(Savin-Baden, 2008, p159)

An alternative view focuses on examining our assumptions about both education and virtual worlds, and building creatively and constructively upon our findings. This approach prompts us to consider why learning is necessary, how it takes place and how it is assessed. It also sets education in the context of happiness, play, fun and delight.

Au, a long-term observer of Second Life, describes the concept of 'mirrored flourishing: the belief that positive contributions to Second Life can and should have a positive impact on Residents in their real lives and vice versa' (2008, p xix). In cases of mirrored flourishing, 'an avatar's valuable contributions in-world lead directly to the betterment of his or her real life, as well' (Au, 2008, p49). Educational counterpoint goes beyond this – it allows a rethinking and a reshaping that lead to the creation of something new in both the real and the virtual worlds. This relates to Boelstorff's recognition that 'in virtual worlds we are not quite human – our humanity is thrown off balance, considered anew, and reconfigured through transformed possibilities for place-making, subjectivity and community' (Boellstorff, 2008, p5).

Some educators are consciously making use of the opportunities and possibilities of educational counterpoint, recognizing that virtual worlds

allow you to do things which it would be difficult or impossible to do in the physical world – both literally and pragmatically. Pragmatically, it would be more difficult and expensive to set up a new learning community in the physical world than in a virtual world. Literally, there are things you can do in virtual worlds that are not possible in the physical world, such as flying like a bird.

(Twining, 2009, p498)

Reflecting on in-world experiences supports the recognition of new possibilities, and the new challenges that accompany them.

While social interactions have always been at the heart of the learning process, the new tools allow tutors to become 'choreographers' of experiences, Learning through experience can be a structured undertaking and planning for learning in this way requires imagination and creativity on the part of the practitioner, as well as developing a different set of teaching skills with less emphasis upon curriculum and more upon arranging learning experiences, meta-reflection, peer assessment and group work. The learner as an active engager within these choreographed experiences therefore takes on greater autonomy but also needs a different sort of support, which in some senses may be more intensive on the part of the tutor.

(de Freitas & Neumann, 2009, p351)

These explorations of virtual worlds lead educators such as Twining, de Freitas and Neumann to move the dialogue of learning beyond the settings of home, school, college or university, and towards fun, writing of it in terms of possibilities, flight, music, dance, imagination and creativity. Designers of virtual worlds and online games follow a different trajectory, approaching learning as something essential for, and integral to, fun.

In 'A Theory of Fun for Game Design', Koster describes games as fundamental and powerful learning tools that help us to develop skills and to make sense of underlying patterns within our environment in a setting where risk is limited. He argues that childhood 'is an ongoing quest for learning' (2005, p196) and defines a good game as "one that teaches everything it has to offer before the player stops playing." That's what games are in the end. Teachers. Fun is just another word for learning' (p46). His arguments correspond with those of Gee, who set out to investigate how good video games are designed so that their structure, their rules and their controls can be learned quickly and easily even though the games themselves may be time-consuming and challenging. His conclusion was that 'the theory of learning good video game is close to what I believe are the best theories of learning in cognitive science' (Gee, 2003, p7) and he describes as 'magical' the fact that in good video games, as in good classrooms, learners are not always overtly aware how much they are learning, how difficult that learning is – or even that they are learning at all.

Castronova is clear that 'virtual worlds are societies where fun matters' (2007, p43) and that this online fun is changing reality. He predicts that 'as the lines between public policy and game design blur, public policy will begin to focus more directly on human happiness, even fun, than it does now. Ultimately, games will force fun onto the public agenda' (Castronova, 2007, p xvii). The chapters in this book are framed by this controversial view, that education in virtual worlds has the potential to change our understanding of education in all worlds.

Overview

Rather than investigating whether virtual worlds can help to deliver a worthwhile educational curriculum, researchers are increasingly recognising and examining the learning that already takes place within games (Galarneau, 2007). **Chapter 1** approaches virtual worlds from the perspective of the game designer. Seamans is clear that good games cannot be designed in the form of ‘chocolate-covered broccoli’ (Habgood, 2007, p2), concealing a worthy educational heart beneath a thin veneer of delight. The fundamental criterion of all virtual game design is that players are there to have fun. The role of learning in these settings is to promote and sustain the fun, not vice versa. At the same time, he reminds us that most learning does not take place in schools and colleges, but is rooted in practice and experience. Virtual worlds draw upon a highly successful method of education – learning through fun, enjoyment, feedback and challenge.

‘The States of Play’ goes on to examine the social origins of educational virtual learning, noting that the affordances that learners and educators value arose from the interaction of commercial and social trends. Although some educators would deny or distance themselves from these origins, this chapter argues not only that these roots are important but also that they can inform and revolutionise our understanding of how we teach and learn in the 21st century. To understand this influence, an awareness of the history and convention of the virtual worlds genre is important, as is an understanding of the impact of virtual economies within and between the virtual and real worlds. This awareness suggests that it is not possible to keep virtual worlds inside the computer or within separate boxes marked ‘play’, ‘learning’ or even ‘work’. Virtual worlds are sufficiently mature to impact substantially upon everyday reality.

This intersection of the real and the virtual is vividly demonstrated in the area of identity. Identity construction is far more malleable in virtual worlds, in terms of presentation and action, than in the actual world. The experience and consequences of this are introduced in **Chapter 2** and are picked up again in subsequent chapters. Peachey shows that the four ways in which the virtual interacts with the actual in respect of education – reproduction of the physical, reproduction of the values, versioning and counterpoint – are also important when it comes to identity. In Second Life, it is possible to reproduce your physical body, remodeling an avatar’s body and adding photographically accurate clothing, hair and even skin. An alternative is to give the avatar valued properties or characteristics that encapsulate a selected real-world identity – perhaps as a musician, an artist, a tall person, a wheelchair user or a prankster. A versioned avatar can present a completely different identity – one you only express in world. Most virtual worlds impose versioning to a greater or lesser extent by the provision of a set of default avatars that can only be customized to a certain extent. A fourth

option is the in-world identity that acts as a counterpoint to real-world identity, with each informing and influencing the development of the other.

'Me, myself and my avatar: who are we when we learn and teach in virtual worlds?' demonstrates that building an in-world identity goes far beyond dressing-up and role-play. Instead, it is one of the most apparent and persistent ways in which the virtual and the actual call each other into question. This theme is taken up in Chapters 7 and 8; showing that when there is no clear way of distinguishing teachers from learners, the boundary between the two groups becomes more porous, shifting according to situation and needs.

Peachey points to the advantages of avatars for online learners. She argues that visual representation of the self in the virtual world has added significant richness to the experience of distance learning, supporting the creation of groups and a social constructivist approach to learning. At the same time, she stresses that it is important to bear in mind the vulnerabilities associated with identity management, the stigma attached to appearing as an uncoordinated 'newbie', and the child protection issues that arise when it is not clear who is sheltering behind, or taking temporary control of, a seemingly innocent avatar.

Chapter 3 develops this area, addressing a controversy that has had major implications for education in virtual worlds – the issue of child safety and protection. Concerns about these issues have not only restricted access to these environments for young people both inside and outside school, they have also restricted their access to other important media, including social networking (SN) sites and the wider Internet.

Despite a desire from some teachers to explore the benefits of Web 2.0 for creative and social learning, they report being constrained by a need to show a duty of care that avoids worst-case risk to children, to restrict access to SN sites.

[...]

children are engaging with a wide range of social, creative and engaging Web activities at home and this is producing a growing divide between such Web-confident children and those who are restricted to using the Web at school to retrieve specific information from pre-approved websites.

(Sharples, Graber, Harrison, & Logan, 2008, pp70 and 83)

Concerns about child safety and protection are restricting the ability of learners to access resources and learning environments, and are also restricting teachers' ability to make full use of these environments and resources. Virtual worlds, and the online environment more generally, are treated as dangerous places that are often too risky for children. What is more, decisions about access are often taken out of the hands of learners, of teachers and even of the school as a whole because blanket policies are put in place by local education authorities or imposed by automatic content filters.

‘The business of child protection in educational virtual worlds’ considers how we can manage in-world learning when real-world fears and concerns impact upon it so heavily. ‘If students are not given the confidence to make the right choices in school then how will they be able to exercise their judgement in the home?’ (Green & Hannon, 2007, p58). Equally, if schools are able to take children abseiling, rock climbing and white-water rafting, why is exploration of virtual worlds so difficult to arrange? School education is intended to prepare children for life and an increasing amount of life now takes place in online and virtual environments. Once again, exploring new ways of dealing with the issues involves going beyond the physical world model. We need ways of teaching essential real-world and virtual-world skills alongside content-based learning.

Chapter 4 takes a specific example of subject-based teaching and learning in Second Life, showing that subject-based skills, knowledge-age skills and virtual-world skills are inextricably intertwined and that both are important, relevant and must be learnt. The chapter’s focus on one course supports an exploration of some of the challenges and problems that arise when learning and teaching in virtual worlds, particularly when the real-world demands of assignments, assessment and timetabling collide with the benefits and constraints of in-world activity.

‘Learning together and alone in virtual worlds’ demonstrates that neither teachers nor learners make an automatic or easy transition to the in-world environment – both benefit from experience, training and guidelines. The power relations and restrictions imposed by formal assessment restrict what is possible. Robertson and Cargill-Kipar, experienced game designers and educators, reflect on the difficulty of combining these two roles, noting that ‘MMOG game designers are extremely good at designing tasks for which successful completion requires the co-operation of many players in different roles. The task the students performed in the multimedia module was not optimally designed for online cooperation.’ The competing demands of the real and the virtual have to be balanced, and the chapter ends with some guidelines that can be used to support consideration of the issues involved.

Chapter 5 looks at contrasting examples of teaching and learning in Second Life. A persistent controversy related to learning in virtual worlds is concerned with whether it is a pale imitation of classroom learning, lacking reality. Studies of face-to-face education have suggested that, in order to be meaningful, learning should be active, authentic, constructive, cooperative and intentional. It is not immediately clear that the experience of students sitting alone in front of computers can possess these characteristics.

‘Virtual worlds are authentic sites for learning’ examines a range of cases, looking at the interplay between virtual and real-world models. It finds, as its title suggests, that meaningful learning is possible online and that real-world skills can be explored and developed in virtual

worlds – but that use of appropriate technology is not enough in itself; other conditions have to be in place for meaningful learning to take place, as they do in the real world. In this case, the focus is not on subject-based education as it was in the previous chapter, but on the use and development of ‘knowledge-age skills’.

Chapter 6 sounds a cautionary note in this respect, showing that the terms ‘knowledge-age skills’ and ‘21st-century skills’ are themselves controversial. In the past it has been argued that education in virtual worlds is valuable because it promotes knowledge-age skills, without always clarifying what these skills are and the ways in which they differ from other skills. ‘21st-century skills... all dressed up in the technology of the Knowledge Age?’ looks at the agenda behind these terms and argues that they cannot be taken at face value. These often ill-defined skills and values are not necessarily ones that educators intend to promote and encourage, but are driven by economic agendas relating to the creation of a workforce and the availability of information communication technology.

World of Warcraft is not the first world that springs to mind when considering education in virtual worlds but, as discussed above, it is in the nature of a successful game that it supports the teaching, learning and development of new skills. The real-world application of the skills developed in WoW has recently been widely reported. ‘To be an effective World of Warcraft guildmaster one needs to be adept at many skills: attracting, evaluating and recruiting new members; creating apprenticeship programmes; orchestrating group strategy; and managing disputes’ (Green & Hannon, 2007, p23). As Chapter 6 shows, this is not the only way of viewing these skills. World of Warcraft can also be seen as

training a generation of good corporate citizens not only to consume well and to pay their dues, but also to climb the corporate ladder, to lead projects, to achieve sales goals, to earn and save, to work hard for better possessions, to play the markets, to win respect from their peers and their customers, to direct and encourage and cajole their underlings to outperform, and to become better employees and perhaps, eventually, effective future CEOs. Playing World of Warcraft serves as a form of corporate training.

[...]

One of the first acts of play during World of Warcraft training [the ‘Lazy Peon’ quest] is performing an act of violence on behalf of management, clubbing a worker over the skull with a blackjack to set him back to work.... The implicit message to the World of Warcraft player is quite clear. The World of Warcraft is a world in which work is valued as an end in its own right.

(Rettberg, 2008, p20)

Rix argues that many proponents of knowledge-age skills are engaging in a discourse that appears to be new but is little more than a repackaging of the old. This discourse calls for change and for response to change, but its underlying intention appears to be to maintain the status quo or, at least, to make sure that the United States and United Kingdom maintain their

dominant market positions. The chapter concludes with a call for our education system to encourage a reflective critique of the new, a challenge which is taken up in **Chapter 7**.

‘When educational worlds collide’ is based on ongoing work dealing with the controversial issue of how our educational system can, and should, be redesigned. Pilot projects found that people’s expectations of education were all severely constrained by the overpowering culture of formal education, which is a central element of ‘developed’ society today. When asked to visualise the future of education, respondents’ visions were rarely more than reworked versions of education at school or home. In order to move beyond this, the schome team (not school, not home – schome) decided to use the virtual world of Second Life to provide people with lived experiences of radically different approaches to education. This was a conscious attempt to develop an educational counterpoint between learning in real and virtual worlds. Because the Schome Park Programme developed by the schome team has taken this approach and, in doing so, has tackled a series of controversial issues, its work is dealt with or touched upon in many chapters of this book. (The many Schome participants quoted or mentioned in the book are assigned consistent pseudonyms by authors, so the same pseudonym always refers to the contributions of the same individual. In some cases, ‘staff’ have chosen to identify themselves or their avatar.) Here Twining draws the threads together, showing how the interplay between different worlds impacts upon learning and teaching in terms of roles, relationships, curriculums, discipline, theoretical stance, motivation, focus and perspective.

Of course, the role of the educational researcher is itself controversial – the image of out-of-touch researchers cloistered in their ivory towers is, on occasion, all too well founded. **Chapter 8** therefore returns to the Schome Park Programme to present another perspective, that of the learner. The conclusions reported in Chapter 7 are re-examined in the light of 2000 forum postings, a sample of those written by teenaged participants on the project. These active participants amplify the arguments presented in the previous chapter and, in so doing, show the extent to which the issues, concerns and resources of the real and the virtual world impact on education in both settings.

Chapter 9 builds on these ideas and considers how the future of education could develop as real and virtual worlds continue to impact upon each other. In the past there have been doubts about the accessibility of virtual worlds for some groups of learners. ‘Inclusive education and virtual worlds’ shows that it is possible both to promote inclusion in these environments and also to champion a sustained educational counterpoint between the worlds. Sheehy argues that virtual worlds have the potential to deliver significant aspects of the inclusion agenda if teachers working within them are willing to apply inclusive pedagogies. This is likely to mean that teachers in the future will be embodied in a variety of ways, that there will be a series of

changes to curriculum delivery and content, and that there will be a revolution in the ways in which learning is accessed.

Conclusion

Together, the chapters in this book suggest that the demarcation of roles of educators and learner is being redefined as new spaces are created, and that the four forms of interaction between education in real and virtual worlds offer the potential for more changes to develop in the future. The distinction between different worlds is becoming less and less clear as our reality expands to include the virtual. In the near future there is evidence that virtually augmented aspects within the 'real world' will become more common. At the same time, learners will begin to access and create knowledge through persistent avatar identities that can move between different environments. These developments potentially herald the start of a three-dimensional Internet. The generation which is now developing its skills within virtual worlds includes those who decide the nature of education in this new space.

The chapters within this book highlight issues that will influence these decisions and inform choices about how and where we learn in future. If members of this new generation have been empowered by the educational counterpoint of the real and the virtual, they will bring to their decision making a consciousness of what it means to live and learn in real and virtual worlds, an awareness of how an inclusive education can be put into practice, experience of continued movement through the permeable barrier between learning and teaching, and an understanding of what Raph Koster meant when he declared that 'Fun is just another word for learning'.

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