Handbook of Research on the Societal Impact of Digital Media

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Chapter 12
Virtual Worlds and Online Videogames for Children and Young People:
Promises and Challenges

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ABSTRACT

Online virtual worlds and games provide opportunities for new kinds of interaction, and new forms of play and learning, and they are becoming a common feature in the lives of many children and young people. This chapter explores the issues that this sort of virtual play raises for researchers and educators, and the main themes that have emerged through empirical investigation. I focus on children and young people within the age range covered by compulsory schooling, providing illustrative examples of virtual environments that promote play and learning as a way of underlining some key areas of interest. Drawing on work from a range of theoretical and disciplinary perspectives the chapter emphasises how these environments have much in common with other imagined worlds and suggests that looking at the ways in which the virtual is embedded in everyday contexts for meaning making provides an important direction for future research.

1. WHAT IS A SUCCINCT OVERVIEW OF THE RESEARCH?

Virtual worlds and video games are high profile and popular forms of entertainment in the new global mediascape. They attract large numbers of children and young people, and this has led to interest in some quarters and concern in others as we grapple with the promises and challenges of

new kinds of virtual play. Developers and entrepreneurs are designing increasingly sophisticated virtual environments, and so it seems timely to review the key findings that emerge from empirical and theoretical work, and to address those issues in meaning making and learning that are of interest to parents and educators. In what follows I contribute to this endeavour by looking critically at the specific promises and challenges of using

computer-generated virtual worlds and online videogames with children and young people for educational purposes. The research base in this area is still in its infancy, but we can now draw on studies of children in the early years, of teenagers and adults – studies located in a range of different settings and jurisdictions. This body of work outlines the kinds of understandings that virtual play can foster, and points to how it is integrated into everyday lives, as well as how it might be absorbed into more formal educational practice. However, first hand experience of virtual worlds and videogames is alien to many parents and educators and the media reaction to immersive online play is often one of moral panic (Gillen & Merchant, 2013). As a result it is necessary to be clear about what constitutes or defines these environments, and to explore some of the popular myths and misconceptions that have attached to these new forms of play. I begin with a focus on these issues.

'This Insubstantial Pageant': Understanding Virtual Worlds

In Shakespeare's *Tempest*, the magician Prospero refers to the play itself as an 'insubstantial pageant' and in a much-quoted speech draws out parallels between theatre and life itself. The dramatic performance, and the imaginary world that is conjured up by it, is seen as an insubstantial pageant, a cast of characters involved in a sequence of events that we temporarily believe in. A play could be seen as a prototypical virtual world. As an event it is real enough, it takes place in space and time with all the material supports of a theatre or similar venue; members of the audience are embodied and present, but yet the world they are transported into is constructed in their individual imaginations, and filtered through their own particular lived experiences.

Drama, in common with other art forms, has the potential to entertain and enrich our lives as well as to educate and enlighten us, even to the extent of challenging or changing our world view.

Of course it may not always do this - it may not touch everyone equally, and there is evidently enough 'good' and 'bad' drama performance to create lucrative livelihoods for critics! Nonetheless the enduring popularity of drama and other narrative media such as books, films and videogames reminds us of the significance of imagined worlds in our lives. I want to argue that virtual worlds and video games, rather than being radically new and hard to comprehend, are simply a recent manifestation of this same phenomenon. Although their realisation *is* new – in the sense that virtual worlds are created from pixels and mediated through screens - the desire to engage in world building, and the cognitive processes involved in meaning making are inherently similar to those at work in constructing other imagined worlds (Gillen & Merchant, 2013).

But for all this similarity, virtual worlds and videogames have introduced a new dimension. We now no longer simply consume the text, we 'play' or create it as we go along (Mackey, 2002). It is as if we had taken on a role in the drama and can then dictate the course of events, seeing things from our character's point of view, or indeed from multiple points of view. In short our actions can influence what we see on the screen. In this way virtual worlds and videogames have many similarities to each other, both being computer-mediated environments in which players have at least some degree of agency. This agency, dictated of course by opportunities and constraints imposed by the game design, is often achieved by adopting a character, or avatar, that can be moved around the screen and can interact with other characters or objects. Although it is possible to engage with virtual worlds and videogames offline, their current popularity can be largely attributed to the fact that online connectivity provides opportunities for play and interaction with others who are not in the same location, as well as those who are.

The technical literature on virtual play draws a distinction between Massively Multiplayer Online Games (MMOGs) and Multi-User Virtual Environments (MUVEs). MMOGs include

the hugely popular *World of Warcraft* with its 7 million active accounts (Satista, 2014) as well as newcomers like *Clash of the Clans,* currently strong in the rapidly expanding mobile games market. The most popular MUVEs are usually referred to as virtual worlds (*Second Life* and *Active Worlds* are popular examples), and they are distinguished from videogames by the simple fact that they "have no prescribed structuring of activity and allow varying degrees of creative freedom" (White & Le Cornu, 2010, p. 184). So, although games may develop in virtual world environments, they are not part of the basic architecture. In this way, virtual worlds place a greater overt emphasis on sociality, the building of community, and the co-construction of the environment itself (as in *Minecraft*).

Morningstar and Farmer who designed one of the first virtual worlds, Lucasfilm's *Habitat*, imagined the growth of a virtual world community in which:

… users can communicate, play games, go on adventures, fall in love, get married, get divorced, start businesses, found religions, wage wars, protest against them, and experiment with self-government. (Morningstar & Farmer, [1991] 2008, p.1.)

In *Habitat*, users were shown on-screen as a simple figure or avatar. This idea of an avatar that represents or in some accounts 'is' the user, strongly associates with both MUVEs and MMOGs. With technological development both avatar design and on-screen movement have become ever more sophisticated, enabling players to develop both life-like and fantastic representations (see Figure 1) and movement.

In *Second Life*, for example, it is possible to create a wide range of avatars using human and animal forms (see Boellstorff, 2008). Body shapes, skin tones and attire can be exchanged or bought at any time. Some 'residents' spend a lot of time developing and modifying their avatar's appearance, although this isn't exactly a pre-requisite for participation. By way of contrast, another popular virtual world, *Club Penguin,* focuses on different features, and all users are represented in the same way, by the same basic avatar – a penguin - although as we shall see later, this can be 'personalised'

Figure 1. A meeting in Second Life showing a range of avatars

too. In MMOGs avatar representation is usually linked to the game genre. So, in *World of Warcraft* dwarves, elves and orcs tie in with the fantasy-adventure theme, whereas the videogame family *Grand Theft Auto* uses a contemporary American look for its playable characters' escapades in Liberty City (Merchant, 2014).

In a similar way, the screen environment of virtual worlds varies considerably from the flat cartoon-like scenes in *Club Penguin* to the elaborate three-dimensional universe of *Second Life.* In *Second Life* residents have constructed complex environments that replicate houses, huts, public buildings and shopping malls as well as more fanciful settings. As the technology has developed, so the possibilities have increased, and these various virtual environments have created their own niche audiences, often on a global scale, spawning a significant fan-base usually connected in both on- and off-line communities (Steinkue-hler, 2007). It is not untypical, then, for virtual world and gaming activity to involve side-by-side collaboration with friends, either informally or in after-school clubs, as well as online (see Burnett & Bailey, 2014).

Despite their obvious popularity and attraction, both virtual worlds and online video games have provoked negative reactions from mainstream media (Gillen & Merchant, 2013). On the one hand their immersive quality has generated the fear that large numbers of children and young people are spending endless hours online, squandering money on upgrades and accessories, and on the other that they are becoming morally degenerate through over-exposure to sex and violence. There is little evidence to support any of these claims, but they do build on isolated cases, and play into a more generalised moral panic in which narratives about the Internet and new technology as a 'corrosive' force in society predominate (see Palmer, 2006 for example). Although there are clear safety and security issues associated with any online activity (Livingstone, 2009), there is little to indicate that the virtual environments

under consideration are any more risky than other sites. Internet addiction, just like TV addiction before it, seems to be more of a reaction to new media than an actual condition. Furthermore, video gaming and virtual world play, once seen as solitary, anti-social and isolated pursuits, turn out to be highly social, collaborative activities (Schott & Kambouri, 2006).

The idea that virtual environments are simply about banal and passive entertainment has been challenged by a number of academic researchers. The work of Gee (2003) has been particularly influential in arguing that popular videogames are often built on sound learning principles and promote sophisticated reasoning and problem solving. This has undoubtedly contributed to the growth in educational research on virtual play, as well as the rising popularity of 'gamification', in which game principles are applied to drive formal or informal learning (Abrams & Walsh, 2014). As video gaming comes of age, there is a growing impulse to recognise their textual pos-sibilities, sometimes as a way of supporting more familiar curricular goals such as those associated with the English curriculum (Beavis, 2014) and at others as a new art form requiring new methods of analysis. In the latter case the emergence of literary videogames, which use game mechan-ics and digital media to drive the narrative are a striking example of a new hybrid textual form (Enslinn, 2014).

To summarise then, I have argued that vid-eogames and virtual worlds, rather than being radically new, are best seen as the most recent technologies for creating imagined worlds. Their distinctiveness lies in their dependence on the screen and in their potential for engaging par-ticipants in shaping the text, by modifying the environment, interacting with others and dictating the course of events. In this respect, the centrality of avatars in virtual play is worthy of note, and further exploration. Although videogames and virtual worlds have much in common, the em-phasis on an underlying game narrative and a set

of objectives or challenges is what distinguishes the former from the latter. However, it remains the case that players often use game environments simply to 'hang out'; and conversely virtual world residents may introduce game elements into their environments. The boundary between MUVEs and MMOGs is then fuzzy, to say the least. Finally, I have suggested that concerns about addiction, over-exposure to sex and violence, and social isolation are rooted in moral panics – reactions to what appear to be new and unfamiliar practices.

Empirical research on these online environments crosses disciplinary boundaries and yet there is no comprehensive and systematic literature review currently available. Despite this researchers have looked at specific themes such as the literature on the use of video games for learning (e.g.: Mitchell & Savill-Smith, 2004), that on possible links between aggression and video games (e.g.: Bensley & Van Eenwyk, 2001), and the use of virtual worlds in education (e.g.: Kim, Lee & Thomas, 2012). Arguably the current state of research is one of diversity rather than depth. But yet there are a number of emerging themes in virtual world and video game research that relate to the focus of this chapter. These concern the social dimensions of virtual play – who is playing and who they are playing with; what they are playing and learning and how their learning might be related to other areas of activity; and how we might better understand the nature of virtual play itself.

The Social Dimensions of Virtual Play

Popular perceptions of gaming and virtual world play as a solitary activity have been largely discredited through empirical research. For example, Tuukkanen et al. (2010) observed how young people are socially active in virtual worlds, and Schott & Kambouri (2003) in their ethnography of gamers argue for a focus on the 'social envelope' of gam-

ing, showing how even player-to-game interactions often take place in front of a real-time audience of peers. Furthermore, the increasing popularity of virtual worlds and games has led some to think of them as 'new play spaces' (Kafai, 2010, p.4) and given the global spread of virtual play (Apperley, 2014) it is easy to imagine that their appeal is a universal phenomenon. Surprisingly though, there is a shortage of detailed demographic evidence for this, although there are plenty of headline-grabbing statistics. Organisations like the US-based Pew Internet Project provide regular, impressionistic updates on a whole range of related issues. For instance, in an influential report on video games, Pew's researchers claimed that:

Video gaming is pervasive in the lives of American teens—young teens and older teens, girls and boys, and teens from across the socioeconomic spectrum. Opportunities for gaming are everywhere, and teens are playing video games frequently. When asked, half of all teens reported playing a video game "yesterday." Those who play daily typically play for an hour or more. (Lenhart, et. al., 2008, p.1.)

Whilst this undoubtedly helps us to think about the growing significance of video gaming, it also restricts our view to a particular time and place. Given the rapid changes that sweep through popular digital culture, it is difficult to know if this is still the case, or whether and how factors such as the rise of social networking and the take up of mobile technology have impacted on this. In their critical review of this and similar work, Warschauer & Matuchniak (2010) encourage us to take a closer look at how race, gender, and socio-economic status pattern access and use of technology. The implication being that we would be well advised to be somewhat cautious in relation to claims about the widespread popularity of virtual play - it is significant in different ways to different segments of the population.

One pressing area of concern is the apparent gendered nature of virtual play, although there is some evidence to suggest that this is changing. For instance, video game players are no longer predominantly male teenagers (Casell & Jenkins, 1998) – in a recent report the average age of an American video game player was estimated as 31, with nearly half of the gamers being female (Entertainment Software Association, 2014). However, it is still generally accepted that girls gaming habits and practices are different to boys, they prefer different kinds of games and that boys play more frequently and for longer periods of time (Hayes, 2013). Given that some sources suggest that 75% of game developers are male this is perhaps not surprising. There is some resistance to this, particularly with the growing interest in text-based games using software like *Twine* which has provided an important space for women designers.

Research on specific genres and populations highlights key variations in virtual play. For example, Stein et al. (2012) in a survey of over a thousand sports gamers between the ages of 18 and 31 found that they were predominantly white and male; Bertozzi (2012; 2014) has carefully charted the significance of first person shooter and other predation games in the lives of young women, noting their increased popularity and their potential for empowerment; whereas Marsh's (2013) study of young children's play in a virtual world which is discussed in the next section adds to this complex and diverse picture. These sorts of studies point to the patterning of interest and activity and contribute to a nuanced understanding of an increasingly popular pursuit.

The rise of virtual play is consistently reported in larger studies. A recent survey of children and young people between the ages of 5 and 15 in the UK shows the growing popularity of online games (OfCom, 20013) whilst the Interactive Games and Entertainment Association in Australia claims that 93% of homes in their study have a device for playing computer games, and that 73% of parents talk about games with their children (IGEA 2014). Yet, in another initiative, Livingstone et al. (2011), who surveyed children and their parents in 25 countries in Europe, point to a less-dramatic take up. Admittedly their work is broader in focus – but they do profile children's engagement in virtual play and note that this was represented in only 23% of their sample.

Making international comparisons is, of course, fraught with difficulty and perhaps quibbling over percentages is not particularly helpful in this instance. However, what does seem clear is that online gaming is *increasing* in popularity, although perhaps *unevenly* across different populations. Put together with industry figures for the number of subscriptions for MUVEs, virtual play seems to be part of the everyday life of many children and young people. Having said this we cannot assume that this is the case for *all* children or even that it is experienced in the same way and to the same frequency by those who do engage. For this reason, the accounts, that follow are predominantly qualitative, and focus on the situated practices associated with video games and virtual worlds.

What Are They Playing and What Are They Learning?

As scholars begin to acknowledge the heterogeneous nature of virtual play, researchers are illuminating the range of learning that takes place in and around these environments. Whilst early work followed Gee's (2003) ideas about the learning principles enshrined in 'good' games, more recent studies highlight specific kinds of learning that emerge from game play. Following Carpenter (2009), who identified the parallels between social networks and social learning environments, researchers have focused on such diverse topics as civic participation and learning about citizenship (Tuukkanen et al., 2010), the development of epistemic games (Boots & Strobel, 2014), the use of virtual worlds in higher education (Beck

& Perkins, 2014; Kirriemuir, 2010), and virtual play in the development of elementary school literacy (Merchant, 2009). In short, attention has shifted from an interest in what is learnt in and about games to describing the kinds of learning that might be achieved through playing them. As a result it is not uncommon to find discussions of the role of game play in promoting anything from health awareness to legal studies, from sports science to STEM subjects.

Although the notion of learning transfer has exercised the best minds in psychology and education, the relationship between what we might call virtual learning and everyday life has, as a result, become a key area of interest. Whilst research on sports gaming may not address formal learning, it serves to highlight how such activity is interwoven with on-going interest, other forms of play and fandom (Stein et al. 2012). So whilst there is no single template to describe how virtual play relates to other aspects of gamers' lives (see Lange, 2011), current thinking has begun to problematise the virtual/real binary (Merchant et al., 2014). As Lemke observes in his commentary on research on *Whyville*:

Too often we hear it argued that what players learn in virtual spaces is worthless because it has no application in the "real" world – a world, these critics seem to assume, where what is real to us excludes our experience of the virtual. (Lemke, 2010, p. 151)

Perspectives of this sort are encouraging researchers to think about how virtual spaces are embedded in people's lives and how we can develop more sophisticated understandings of virtual play and, in turn, the sorts of research methods that are going to most productive in this endeavour.

How Might We Better Understand Virtual Play?

As we have seen, a number of influential studies have focused on the detailed description of specific, situated practices. Schott & Kambouri's (2003)

emphasis on the 'social envelope' of gaming is one such approach, whereas the micro-ethnographic focus on events, human and non-human actors offered by Giddings (2009) is an alternative. Leander & McKim (2003) grapple with the central issue of how learners move between and across online and offline contexts, and their 'connective ethnography' offers some important ways of conceptualising this movement.

Elsewhere it has been suggested that researchers ignore game design at their peril (Sheridan & Rowsell, 2010), and that our understanding of virtual worlds and online games must take account of what sorts of play, agency and identity performance is prompted, possible, or proscribed by their design. This has led to research on game design (e.g.: Thorhague, 2013), on game-related practices such as modding (Gee & Hayes, 2011) and the use of cheats. Further work has followed the idea of design principles for serious games and this is reflected in the work of Annetta (2010) and Boots & Strobel (2014).

2. WHAT ARE THE CURRENT ISSUES IN THE FIELD RAISED BY THESE STUDIES?

Most of the research referred to here is influenced either directly or indirectly by ideas about 'new literacies' (Lankshear & Knobel, 2006) and 'media literacies' (Buckingham, 2003). Together they represent a perspective on the meaning making practices involved in the consumption, production and distribution of new media and the habits of mind that have grown up around them. Given the multimodal nature of new media (Kress, 2003) there has been plenty of debate about how this re-defines the term literacy, the implications for education, and even conjecture about the future of alphabetic print literacy (Merchant, 2007). These issues are not of immediate concern, but yet they do serve as background to what follows.

New literacy practices have certainly diversified over the last ten years and often academic research has struggled to keep pace. Despite this, virtual play *has* attracted considerable attention, partly because of its apparent 'newness', but also because the environments in which it takes place seem to capture the attention and imagination of large numbers of children and young people. As indicated above, Gee's (2003) work has been a major influence, and although this focuses on the world of video gaming, much of it is equally applicable to virtual worlds. The sophistication of his body of work is such that it speaks to other new literacy practices, too, if not to education as a whole. The fact that not all children and young people are avid gamers does not disturb Gee's basic argument, although the suggestion that gaming can be more rewarding than school is provocative to say the least.

I do not attempt a detailed summary of Gee's ideas here, but focus instead on two central claims that are made in his work. They are most clearly articulated in the book *What Video Games Have to Teach us about Learning and Literacy* (2003), and are as follows: 1) video games can be powerful learning environments because they are based on a sophisticated understanding of how we learn; and 2) the learning principles involved in video game design can be applied to other environments such as schools. Of these two claims, it is probably the first that has attracted the most attention, if only because it is a very positive statement about a popular practice that is often, as we have seen, demonized in public debate. My concern here with exploring the use of online videogames and virtual worlds resonates with this first claim – that is, that they can both be powerful learning environments (see Dede et al., 2006), although I do consider the second claim later on.

In the discipline of education, the notion that new technologies require new literacies is widely debated (eg: Lankshear& Knobel, 2006; Merchant, 2007) and often draws on observations and studies of situated insider practices in everyday contexts. There is less work that traces these practices as they cross into the official domains of education, or explores how they might be translated or adapted to address specifically educational purposes. The ambitions of texts like Carr et al.'s (2006) work on computer games and my own on virtual worlds (Merchant, 2009; 2010) move in this direction, and invite further sustained empirical investigation. More detailed accounts, however, remain the province of insider researchers, such as Boellstorff (2008), Pearce & Artemesia (2010) and Nardi (2010), who have become participants in the virtual environments they study.

The meaning making practices associated with computer gameplay and virtual worlds constitute a distinct subset of the research on new literacies. Steinkuehler (2006; 2007) makes a contribution to our understanding of this with her exploration of the 'constellation of literacy practices' that are involved in and associated with gaming, whereas Marsh's (2008) work on *Club Penguin*, Gillen's (2009) study of *Teen Second Life*, and my own explorations of *Active Worlds* (Merchant, 2009) investigate the diverse literacy practices that constitute and accompany virtual play. These, and other similar studies, show that young people find these virtual environments compelling, and that they engage in sophisticated multimedia practices that often spill out into different aspects of their life including real world play, traditional forms of writing and other online activity (Burnett & Merchant, 2014). The implications of this work for formal education are considerable, particularly if the growth trends of the 'metaverse' continue (see fig. 2). Educators may need to take these new experiences of literacy into account if only to acknowledge their role in learners' lives. But they may also want to incorporate some gaming and some virtual world play into school life, and in this respect the claims made by Gee (2003) about the learning that takes place in gaming are important.

Figure 2. A screenshot from Club Penguin showing the arctic environment and penguin avatars

In another strand of research and scholarship, the media theorist Henry Jenkins has developed the idea that technological innovation, coupled with wider societal trends, has led to the emergence of what he calls 'participatory culture'. An influential publication, often referred to as The White Paper, offers the following definition: a participatory culture is "one in which members believe their contributions matter, and feel some degree of social connection with one another." (Jenkins et al., 2006, p.3). The argument made is that the shift from individual expression to collaborative community involvement characterises both youth engagement with new media and the skills that will be necessary for future economic success and civic engagement. Virtual world and video game research, such as that undertaken by Black, 2010; Marsh, 2010; Steinkuehler, 2011; and Ochsner & Martin, 2013, has described and illustrated the mechanics of this participation and how it works in establishing communities:

1. With relatively low barriers to artistic and civic engagement
2. With strong support for creating and sharing one's creations with others
3. With some type of informal mentorship whereby what is known by the most experienced is passed along to novices
4. Where members believe their contribution matters
5. Where members feel some degree of social connection with one another (at least they care what other people think about what they have created). (Jenkins, et al., 2006, p.7)

If Jenkins' thesis about participatory culture is right then developing such practices and the habits of mind, skills and competences that are involved become an essential part of what have been described as C21st literacies (Burnett et al., 2014). Gameplay in virtual environments and the constellation of literacy practices involved are an arena for the development of this kind of partici-

pation. The importance of making pedagogical connections with virtual play then becomes significant. The burning questions for educators will be about *what* kinds of digital work to develop and *how* to go about it. Squire identifies this in his study of video games in the classroom when he outlines the challenge for educators in terms of "how we can use games more effectively as educational tools" (Squire, 2005, n.p).

In my own work I have drawn attention to some of the obstacles to embedding virtual world gameplay in the classroom (Merchant, 2009, 2010) making similar points to those advanced by O'Brien & Scharber, who argue that:

A major pothole in digital literacies is that the institutionalized structures of schools are often incompatible with the purposes and enactments of digital literacies. Many digital literacies practices defy the traditional scheduling or organizational routines of schools. (O'Brien & Scharber, 2008, p.67)

In some respects the same argument surfaces again in Squire's collection of case studies of educational games (Squire, 2012). He seems to suggest that despite all their benefits for learning, their most natural home is in after-school clubs and other non-formal settings. However, Squire does offer the sort of detail that has, to date, been missing from the field. For instance, he is clear that there *are* specific features and properties that can be used to describe and define 'educational games', he provides a useful model to account for game-based learning, and outlines a learning trajectory.

In what follows I consider three rather different virtual environments that demonstrate some of the key characteristics of virtual world and video game play. They are chosen in order to illustrate what has gone before and to highlight specific issues – but not because they are in any sense representative. What is sometimes referred to as the 'metaverse', the totality of virtual environments, is both sizeable

and varied, and shows an increased tendency to reach out into niche markets (KZero, 2013). The three environments I explore highlight facets of this expanding metaverse. I begin by looking at a virtual world that is specifically aimed at young children. *Club Penguin,* which is owned by the Disney Corporation, is widely considered to be the most popular virtual world in the under-10 age range. This is followed by an exploration of *Skillville*, a rather different type of virtual environment - one that employs the principles of gamification to develop economic awareness in teenagers. I conclude by reflecting on the virtual world *Barnsborough*, created locally, in the UK, with colleagues using the *Active Worlds* platform. This virtual world was designed for classrooms, and specifically aimed to develop literacy with elementary school students.

The work of Pearce and Artemisia (2010) provides a useful lens to look at these examples through. Pearce argues that we should pay attention to the ways in which virtual environments are designed - the implication being that design both enables and constrains what is possible. Of course, in some environments users *become* designers as they build, modify and variously contribute to that environment as well as how it is used and described – but this could simply be seen as an extension of the design principle, since even in environments like *Second Life* and *Minecraft,* in which building is highly prized, players are limited to the in-world tools that are available. Pearce suggests that virtual environments are emergent in nature, in that the cultures that grow up in and around them are continuously forming and re-forming, often on a global or transnational scale. Finally, Pearce develops the idea of 'communities of play'. She argues that such communities have a long and important history, but that they have adapted and in some senses been transformed through online interaction. Whilst acknowledging that these communities arise in a variety of contexts, for the purpose of this chapter, I follow Pearce in using the term to

describe groups in which digital and networked media such as MUVEs and MMOGs support play and play-related activities and interactions.

Penguin Adventures: Young Children in Virtual Worlds

The virtual world, *Club Penguin,* is aimed at 6-14 year olds and provides a safe, ad-free environment in which children can "play games, have fun and interact" (Club Penguin, n.d.). Joining the world involves adopting and naming a penguin, inhabiting an igloo, and exploring the arctic environment. With something in the region of 170 million registered accounts, *Club Penguin* has members spread across 190 countries (KZero, 2013). The majority of these accounts are free, although paid membership gives access to additional features allowing members to purchase virtual clothing, furniture, and pets called "puffles" using an in-game currency. Unlike *Second Life, Club Penguin* does not simulate a three dimensional world (as Figure 2 shows), but yet it is designed to represent movement, and uses different screens to create a varied environment for penguin-avatars.

As Marsh observes, the fact that the design uses icons and symbols, rather than written text makes it easy for very young children to navigate:

Symbols, such as arrows, are used throughout the world to guide penguins and every page contains icons that link to a map of the world, the newspaper Club Penguin Times and a 'Moderator,' who can be contacted if penguins wish to complain about the behaviour of others in the world. The navigation bar at the bottom of the screen contains icons that enable children to chat with other penguins, to use emoticons, to throw snowballs, to contact other penguins in order to request that they become friends, and to navigate to their avatar's home, their igloo. (Marsh, 2013, p.79.)

Because of *Club Penguin*'s focus on young children it prides itself on its safety procedures – and these are wide-ranging, including the above-mentioned moderator contact, chat vocabulary restrictions, and identity protection protocols. Moderators are active and online all the time (although not necessarily visible) and have the power to ban, mute or expel users from *Club Penguin*. So although it is possible to join *Club Penguin* as an adult, all activity is carefully monitored. Inappropriate behaviour is not tolerated - the environment is designed with the principles of online safety in mind.

Up to this point I have referred to *Club Penguin* as a virtual world, but in-world games and activities are released at regular intervals, and by virtue of this, the world is sometimes described as a MMOG. Clearly it boasts a large play community and incorporates gaming elements, and certainly the way in which games are refreshed, and news updates appear in *Club Penguin Times*, work together to convey the sense of emergence. Although its basic design lacks a game structure – there is no over-arching purpose or trajectory, it could well be that the events that are staged support its emergent nature and may have contributed to its popularity. Marsh's (2013) study of 5-11 year old members of *Club Penguin* outlines key features of the learning that occurs in the world. Through games and interaction she suggests that children develop the new literacies associated with participatory culture and that these enable children to productively engage with the online environment, 'to make friends, to express themselves and to engage in pleasurable interactions with a variety of multimodal texts on a regular basis.' (Marsh, 2013, p.84).

Despite all this, *Club Penguin* is not without its critics. Some have argued that, as another arm of the Disney empire, it is further evidence of the disneyfication of childhood (see Giroux, 2001), in

which a consumerist ideology is promulgated and continually recycled. For instance, as in *Second Life*, the use of an in-world currency implicitly values the accumulation of wealth, which enables members to buy clothing and enhance their avatar's home. Another related, but more subtle critique of *Club Penguin* centres on the use of the so-called 'freemium' model, in which the service is initially made free of charge, but requires a subscription for additional functionality and virtual goods. Because *Club Penguin* is aimed at children it has been suggested that this revenue is dependent on pester power – once 'hooked', children will put pressure on adults to buy them a subscription. Nonetheless, these criticisms aside, *Club Penguin* still enjoys huge popularity and clearly provides a focus for a new form of digital play which appears to have a range of benefits (Marsh, 2010; 2013).

Pedagogic Innovation: Gamification and Economic Awareness

Earlier in this chapter, we saw how Gee claims that the learning principles embedded in video game design could be applied in or transferred to other contexts (Gee, 2003). This idea has been taken up by the 'gamification' movement which argues that applying 'game mechanics' to a range of different contexts improves user-engagement and can stimulate behaviour change and conceptual learning (Hamari, et al., 2014). In the following example, gamification is used to solve a specific educational problem - the teaching of economic awareness in schools in Belgium. Economic awareness, and specifically financial literacy, is a required part of cross-curricular study in this context (Flemish Ministry of Education and Training, 2010). However, schools find it almost impossible to meet these expectations for two reasons. Firstly, because the curriculum is already overcrowded there is little time to include another dimension, and secondly, because most teachers feel that they are not properly qualified to teach financial literacy (Palmaers, 2014).

Skillville was developed by the EdICT group at Limburg Catholic University and provides a virtual environment for Belgian schools and their students, to address this particular challenge. The EdICT group, with support from KBC, one of Belgium's largest banks, designed *Skillville* using the principles of game mechanics. *Skillville* demands little from teachers and is predicated on the idea that students will learn from online engagement, peer interaction and reflection on their real world experience. The design team drew on current literature on game mechanics (see Table 1, below) in building *Skillville*.

Aimed at students between the ages of 12 and 18, *Skillville* is based on activities and events related to the players' ages. For example, they receive weekly 'pocket money', apply for a student job when they are 16 - or a real job, with taxable pay, when they are 18. Although everyday financial management is important in *Skillville*, other factors come into play, too. For example, players might lose their wallet, or crash their scooter, thus incurring unexpected costs. They also have to manage their health, and make 'sensible' choices when shopping for food. In this way real-life elements are integrated into the game. Score bars, leader boards and challenges are also built in to the game design in order to motivate the students.

Figure 3 shows the *Skillville* home screen. On the bottom left is the player's avatar and clickable icons for various functions. Rotating clockwise from the left of the screen there is:

- An exit button: to leave *Skillville.*
- The budget controller: to register incoming and outgoing transactions.
- *Skillville* Bank: to transfer money between bank accounts and the wallet.
- *Skillville* Shop: to buy foods, electronics, and other virtual goods.
- My purchases: to provide an overview of all items purchased.

Table 1. Example of game mechanics

Fast Feedback	• Encourage users to continue or adjust their activities • Congratulate users for reaching goals • Encourage the next step to a milestone
Transparency	• Show users exactly where they stand in relation to others • Use individual and team profiles to show progress in real-time and historically • Use leader boards to show ranking and other metrics
Goals	• Have clear short and long term goals • Use challenges to give users a purpose for interaction • Underline what is possible and what is valued
Badges	Use badges as an indicator of accomplishment of a skill
Levelling	• Provide levels to indicate achievements and progression • Use levels to identify status within a community • Use levels to introduce new missions and challenges
On-Boarding	• Provide easy entry-level play • Encourage users to learn by playing
Competition	• Raise the stakes for accomplishing a goal by showing users how they compare to others, as individuals or in teams. • Encourage competition with time-based, team and individualized leader boards. (Where do I rank? How can I overtake my closest competitor?)
Collaboration	• Connect users as a team to accomplish larger tasks • Encourage knowledge-sharing
Community	Build community in such as way that it gives meaning to other game mechanics (badges, leader board etc.)
Points	• Save scores to recognise status and accumulate to purchase real or virtual goods • Earn points through activities, sharing, contributing

(Adapted from Bunchball, 2014)

Figure 3. Screenshot of Skillville showing, financial management data and avatar functions
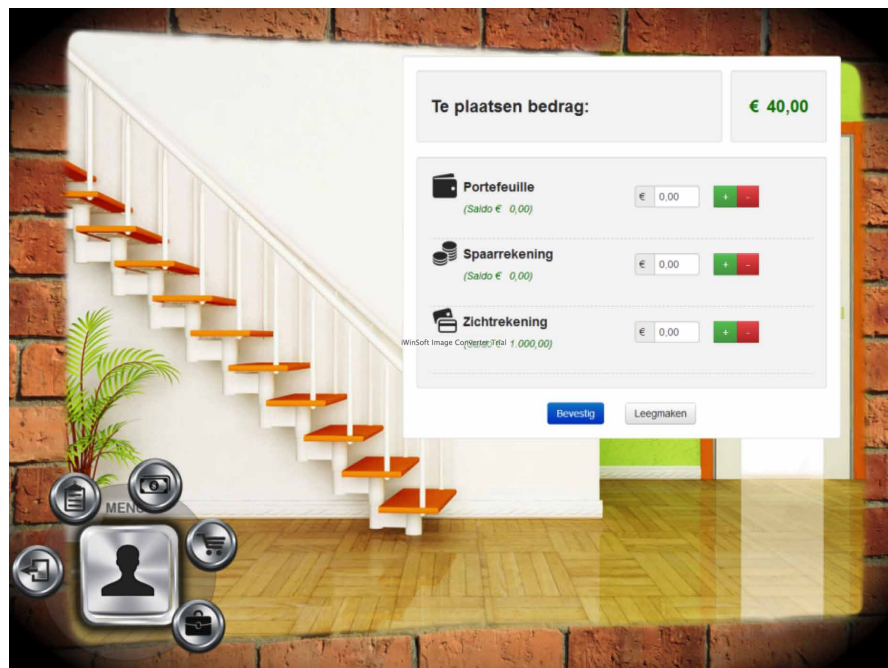
In addition to this, players can access the *Skillville* Library which contains web resources, and reference documents as well as *Skillville* Training for resources for assessing and developing life-skills.

Central to *Skillville* is the way in which it has been designed to develop age-appropriate financial literacy, and we have seen how it uses game mechanics to achieve this. But developing a community of play remains in the hands of the school students who are using it. In common with many other educational resources, creating a context that supports the game's underpinning values and a community that gives meaning to the game mechanics is a considerable challenge. This contrasts with successful commercial games that already have an established play community that newcomers are apprenticed to, and which is supported by a network of communication systems both in the virtual world itself, and in the constellation of literacy practices that surround it (Steinkuehler, 2007).

Crossing Boundaries: Virtual Worlds in the Classroom

The final example is based on my own work on the use of the three dimensional virtual world *Barnsborough* with elementary school children. Like *Skillville*, *Barnsborough* was designed by a group of educators working in collaboration with private sector developers. It was built with *Active Worlds* software, and can be navigated from a standard keyboard by directing the movement of onscreen avatars. As Figure 4 shows, this virtual world simulates a contemporary urban environment. A number of literacies are designed into the environment including: tool tips, available by mousing-over objects, environmental texts, such as shop signs, graffiti, logos, posters, and advertisements, and hyperlinks, such as webpages, phone messages, and music clips. Off the shelf avatars, each with a unique point of view in the world, can be used by children to communicate with each other through a 'chat' function, which is displayed in instant-message format beneath the main display, with recent utterances also appearing in speech balloons above their heads.

Figure 4. An annotated screenshot of Barnsborough showing some of its features.
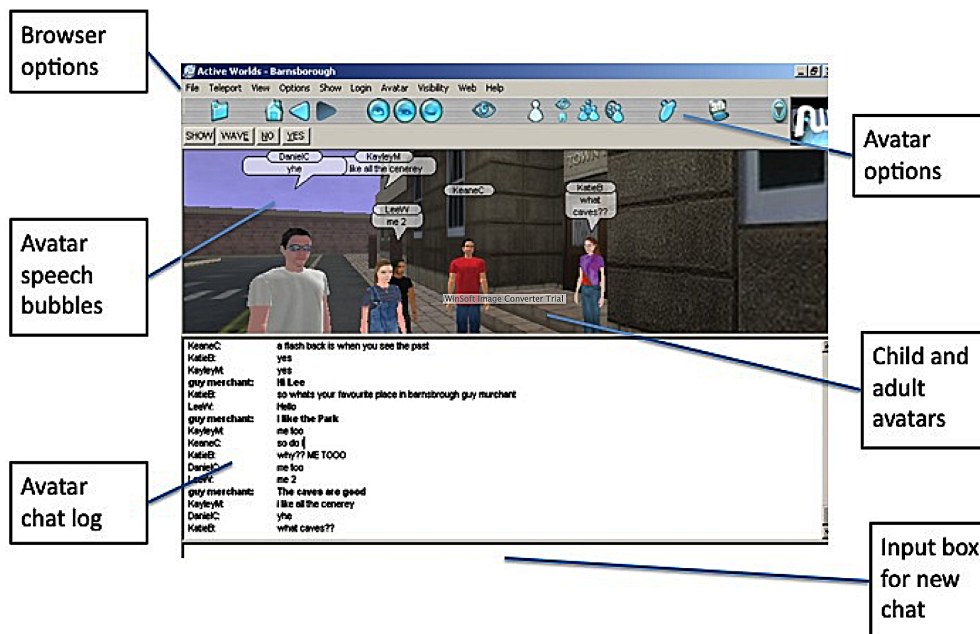
In a succession of classroom-based projects (Merchant, 2009, Merchant, 2010 & Burnett & Merchant, 2014) teachers introduced *Barnsborough* by suggesting that it had been hurriedly and mysteriously abandoned by its previous inhabitants. The broad objective for children was to solve this mystery by collecting evidence available in the world in a number of media and textual forms. The texts located in the virtual world provided child-avatars with a number of possible accounts and solutions to the problem of why *Barnsborough* had been abandoned, which included a major biohazard, an alien abduction, and a political or big business disaster.

In some ways our work in *Barnsborough* succeeded in demonstrating how new literacies could be embedded in the classroom – children were engaged in problem-solving in a virtual environment, meeting and communicating with onscreen avatars, and interacting through synchronous small-group chat. It also provided good illustrations of the collaborative potential of virtual play with children often working in teams or temporary groupings to explore the environment. It was noted that they became immersed in the world in ways that are sometimes observed in drama activities and gaming (Carroll, 2002; Merchant, 2009). Not only did children find *Barnsborough* enjoyable, teachers were enthusiastic, too. Yet it was also clear that the teachers' enthusiasm for *Barnsborough* was tempered by other factors – factors that were not directly concerned with the concept of new literacies or the use of a virtual world per se. The first of these was to do with the fall-out from curriculum reform, and the associated innovation fatigue; the second was about curriculum 'fit'; and the third about access to hardware. These are explored below.

Successive waves of reforms have buffeted the English school system in recent years, and teachers have borne the brunt of this, writing schemes of work to comply with new curriculum requirements, adapting to new modes and criteria for assessment, and being subject to ever more exacting systems of accountability. The climate has not been particularly favourable for other innovations, and clearly something as different as virtual world gameplay raises all sorts of challenges. Despite this, creative teachers are hard to discourage, and in successive *Barnsborough* projects there have been no shortage of volunteers. But immersive gameplay takes time, its benefits are hard to measure, and teachers are often left with the question of how to justify the time spent in virtual play in what has become a highly structured curriculum. Finally, even though there has been considerable investment in school computing in England and Wales, virtual world work was often beset by intermittent hardware problems. Keeping class sets of desktop or laptop computers serviceable poses a considerable institutional challenge, particularly in times of economic uncertainty.

As with *Skillville* it was difficult to establish a strong community of play in *Barnsborough*. Where this did occur it was often manufactured by the teacher - through class discussion and related writing projects, but often because of the constraints of the school timetable this was time-limited. It seems then that Pearce's notion of the emergent quality of a virtual play culture is particularly difficult to replicate in the school environment. Current organisational structures and institutional practices in schools do seem incompatible with the rhythms and characteristics of virtual play, and this is probably why some of the more productive educational research now takes place in after-school clubs and other settings (see, for example Hollett & Ehret, 2014; Wohlwend, 2013)

3. WHAT ARE THE GAPS IN THE EXTANT RESEARCH AND DIRECTIONS FOR FUTURE RESEARCH?

As we have seen, video games and virtual worlds occupy an important place in the lives of many children and young people. Imaginary realms are

culturally significant in that they educate and entertain us, and have the capacity to enrich our lives. In this sense these virtual environments provide a context for the development of new communities of play (Pearce & Artemisia, 2010) – communities that may be co-present, dispersed or a hybrid of both. The alleged dangers of virtual play are predominantly based on moral panics that have little empirical validity. Throughout this chapter it has been argued that these virtual spaces provide opportunities for the sorts of active engagement, production and interaction that are hallmarks of an emerging participatory culture (Jenkins et al., 2006). At their best they nurture communicative experiences that are important in contemporary life, and provide an arena for problem-solving and higher order thinking skills (Squire, 2012). However, not all videogames do this, and like some virtual worlds, they *may* simply entertain their players. At their worst they provide unhelpful models of consumerism or gender (Carrington & Hodgetts, 2010). As a result both parents and educators will want to know the conditions and characteristics that can make engagement in virtual environments productive for those in their care. Unfortunately, there is little overall evidence to go on here, and certainly insufficient to make judgements about specific games or worlds.

In the previous section I looked at three examples of virtual environments to highlight some of the pressing issues in this field. Based on this it might be concluded that popular, commercial games and virtual worlds have more potential than their educational equivalents. In the world of media entertainment the level of investment allows for a degree of design sophistication, product development and customer care that are beyond the reach of most educational environments. However, they are forced to compete in the open market and because of this their aims and values may not necessarily be primarily educational. In contrast, online environments that promote virtual play with a specific educational purpose, particularly when they are targeted at

schools, have the potential to engage the young in powerful learning, but they often find it difficult to grow authentic communities of play and struggle to find a place in standard educational routines. Identifying what is educational in virtual play remains a priority, and models for how such play can cross the boundaries between formal and non-formal, on- and off-line contexts is needed if our understanding is to develop further.

Researchers need to generate more in-depth studies of virtual play, and particularly those that focus on how this is situated in the day to day lives of children and young people. A particular gap concerns young children. As we have seen, the work of Marsh (2002; 2010) on *Club Penguin* begins to chart the territory, but this is a rapidly expanding market and there is certainly more scope for the rich description of young children's virtual play. Children of all ages can now access virtual worlds, and their activity is far from passive. As Burnett & Bailey's (2014) work on *Minecraft* shows, making in-world content involves a complex of technical skill and creativity that connects screen-based activity with real world interaction. Understanding more about how design and content creation skills develop is another important area. In the world of gaming, Burn (2009) makes an important contribution, and studies of game making, such as that produced by Buckingham, Burn & Pelletier (2011) need to be built upon so that we can identify possible learning trajectories.

If virtual play is to be seen as a new kind of digital capital (Merchant, 2007) – as a way of developing foundational literacies for social and cultural participation, then it is important to know how this capital is currently distributed. Following from the work of Warschauer & Matuchniak (2010), careful analysis of how access and use is patterned can complement more situated studies of communities of play to build up a picture of how practices vary in and between social groups. It may then be necessary to take steps to ensure that digital technology does not perpetuate or magnify existing social inequities.

4. WHAT ARE THE RECOMMENDATIONS/ IMPLICATIONS FOR EDUCATION, CIVIC ENGAGEMENT (GLOBAL AND LOCAL), SOCIAL PRACTICE, AND POLICY?

In this chapter I have tried to illustrate the diversity of virtual environments, focusing on those that fall into the rather loose categories of MUVEs and MMOGs. This diversity is, of course, strongly determined by the design affordances of different worlds, and these affordances construct and constrain the ways in which meanings are made, as well as the parameters for action and interaction. For example, the interactive dimension of virtual worlds, such as *Barnsborough,* contrasts with the highly individualised avatar work of *Skillville*. But even though *Barnsborough* allows for plenty of user interaction, opportunities for modifying the world, uploading content, or building (as in *Minecraft*) are not available. There are also contrasting aesthetics across these virtual spaces. The cartoon-like designs of *Club Penguin* differ sharply from the representational qualities of *Second Life*. Such diversity confounds attempts to see virtual worlds or video games as a singular phenomenon. This all goes to illustrate some of the difficulties that attach to the work of building robust categories in an area that is developing so rapidly and unpredictably. It also supports the view that life online is as diverse as life offline, if indeed the two can be held separate in the first place. Perhaps it could be argued that the essence of meaning making remains relatively stable - at least from a cognitive perspective - but the rapid multiplication and diversification of textual spaces produces new forms and these certainly warrant more sophisticated description.

Virtual worlds and video games are part of a digital culture that is in a constant state of flux. *BarbieGirls* and *Teen Second Life* no longer exist, *World of Warcraft* membership is in decline, while more successful games, like *Grand Theft Auto,* continue to thrive. Acknowledging the ephemeral nature of these virtual environments seems to be a necessary condition for researching this field. Part of this can be attributed to rapid changes in technology, but part, I suspect, is due to the restless nature of popular taste in a fluid cultural climate. Shifts in the political economy are influential too, since they determine developers' appetite to invest in innovation. In the entertainment industry a new product must sell, and in the increasingly marketised world of education a new product must be shown to 'make a difference' – more often than not in the narrowly defined measures of high stakes testing. But despite all this, when we consider the skills that will be important for education and civic engagement in the future, there is little doubt that they will involve the sorts of literacies that are developed in and through virtual play.

In their landmark text, Lankshear & Knobel (2006) describe these literacies as new communicative practices and new mindsets, and show how they underpin a wide range of activity that crosses the boundaries of formal/informal learning, of work/play and of on/offline. Characterised by fluid movement across different spaces, new literacies involve actions and interactions that interweave with activity in the physical environment, creating a rich tapestry of meanings (see Martin et al., 2013). So although the boundary between online and offline activity has been described as a porous membrane (Castronova, 2005), I suggest that there is even more fluidity than the membrane metaphor implies – perhaps a state of affairs that is, in essence, little different from the way in which we navigate our way through the rich textual spaces of the contemporary urban environment, as a largely continuous experience. All this suggests a kind of educational experience which is far removed from that currently provided by the Anglophone school systems of North America, the UK and Australasia, in which literacy is predominantly conceived of in terms of the logic of alphabetic print.

In the opening section of this chapter I reflected on the cultural significance of imagined worlds, and the ways in which they entertain, enrich and educate us. The role of the imagination, and the capacity for creative engagement offered by new media, has been described in detail by Willett, Robinson, & Marsh (2008). By looking more specifically at virtual interactions we can see how imagination, learning and learner identities can be shaped through playful, and often self-motivated, activity. This is perhaps best illustrated through the descriptions of informal and less-bounded practices, such as those that constellate around virtual worlds and gaming 'in the wild' (Beavis, 2013). But it does seem that innovative educators are able to draw on these practices in classrooms, although they may experience some conflict with entrenched routines and structures (Merchant, 2010; Beavis, 2013). The extent to which new habits of mind imply new school pedagogies certainly warrants further investigation (see Squire, 2005). In general, though, it seems to be the case that more tightly defined conceptions of learning, coupled with more extensive controls – often as a response to discourses of risk – continue to characterize educational initiatives that incorporate virtual play. To counter this, I suggest that we need to re-state the value of play in learning, and to acknowledge its inherently social nature. But of course, education also has a role in developing learners' critical faculties and this requires careful consideration, too. I explore these three themes below, before looking in more depth at what schools systems might address.

Recognising the Importance of Play

I have argued that on- and off-line play is important in developing the sorts of understandings of multimodal texts that are central to participatory culture (Jenkins et al., 2006). Whether virtual play involves an element of production, such as planning and design, or whether it is simply undertaken as a participant, the game-like quality remains an important feature. Underscoring this is a restatement of the relationship between play and learning. As Vygotsky (1987) suggested, opportunities for creative and imaginative exploration are important, not only for our psychological wellbeing, but also in providing opportunities to reflect upon or critique other aspects of our lives; these opportunities are an important and often undervalued part of learning.

Identity play such as that involved in developing the appearance and activity of one's avatar, or building and furnishing a virtual home are significant aspects of the imaginative act of world making. In some environments, such as *Club Penguin*, dressing a character and acquiring possessions or attributes can become part of developing a sort of narrative history. The avatars that stand for us, but are not us, are representations that may not quite have a life of their own, or exist independently, but yet they quickly develop characteristics and recognizable routines and collect around them a history of use that patterns interactions with others.

Often, virtual play has an immersive quality in which players are drawn into their imaginary worlds in what Coleridge once described as the 'willing suspension of disbelief', and this has many similarities to the traditional forms of play observed in young children. But at the same time we have seen how this virtual play spills out into, and enriches more familiar kinds of play (see Willet et al., 2013). But it is not simply the case of considering young children's play since, as Pearce & Artemesia (2009) point out, play is not just the province of childhood. Adolescents and adults are deeply involved in communities of play, too. In fact it could be argued that some of our most powerful learning experiences grow out of these social affiliations.

The Social Nature of Virtual Play

It has long been thought that social interaction and learning are inextricably linked. The social dimension of virtual play could well increase

learning opportunities, and in some cases it clearly enables collaborative problem solving and strategizing. Challenges such as those set up in *Barnsborough*, or the invitation to organize a raid in *World of Warcraft* (see Martin, et al. 2013), or simply the need to collect or trade objects invariably depends upon collaboration and interaction. Such challenges can be complex and demanding. In fact, the level of challenge may be something akin to what Gee describes as being pleasantly frustrating.

Learning works best when new challenges are pleasantly frustrating in the sense of being felt by learners to be at the outer edge of, but within, their 'regime of competence'. That is, these challenges feel hard, but 'doable'. (Gee, 2005, p. 10)

In many of the studies described in this chapter, challenges become 'doable' only through the collective action of networked individuals. In short, the virtual spaces I have described work to mediate social interaction, and to extend real-world connections and they are united by the ways in which new literacies are being used to create, develop and populate virtual spaces. I suggest then, that sophisticated uses of video games and virtual worlds are by nature social as individuals become embedded in communities of play.

Developing a Critical Perspective

For all the possibilities and learning benefits they may offer, virtual environments are not, however, value-free. As with any designed space they are informed by a worldview in which particular identity positions are favoured (and others not), and particular representations are made available (Holland, Lachicotte, Skinner, & Cain, 2001). This is not to say that individuals, such as the children and young people in the studies reported here, do not have agency – in fact I argue strongly that they do – but we must recognize that this agency is acted out along or against, the grain of a set of

norms and values. When considering commercial or institutional environments, it is important, then, to acknowledge the pedagogical dimension, whether that is explicit or hidden. In this sense I follow Giroux and Pollock in suggesting that it is crucially important not lose sight of

... how learning occurs by providing the ideas and narratives that shape how people see the world and themselves... (Giroux & Pollock, 2010, p.5)

This is certainly true for video games and virtual worlds in which these ideas and narratives are often foregrounded, providing significant and powerful opportunities for critique. Although such work may seem pressing when we look at gendered consumerism in *Barbie Girls*, (Carrington & Hodgetts, 2010), or more straightforward when we consider educational projects such as *Barnsborough* or *Skillville*, the underlying concern is the same. Individuals enact their identities in and through their interactions with each other; but these identity performances are strongly shaped by the contexts that they operate within.

This raises the question of whether there is space for critical practice in virtual play and other social media. It may be the case that the sort of approach described by Burnett & Merchant (2011) constitutes a way forward. Here we argued that existing paradigms of critical literacy and critical media literacy are restricted in their ability to engage with the fluid and densely interwoven spaces of social media. In its place we proposed a practice-based model that focuses on the interplay between purposes, contexts, and resources. This conception of social media practice is based on a view of how identities are formed and performed, and how these are in turn embedded in social networks and has important implications for both parents and educators. Whether this model offers a way forward is as yet untested, but the centrality of encouraging a critical perspective remains. Parents and educators have a moral duty to encourage safe, ethical and advantageous practice, and children and young people have a right to expect their guidance.

Table 2. A Charter for Literacy Education

Dimensions of Literacy in Experience and Action	Qualities of Empowering Literacy Education
Literacies as multiple	Empowering literacy education involves recognition of the *linguistic, social and cultural resources* learners bring to the classroom, whilst encouraging them to diversify the range of communicative practices in which they participate.
Multiple modes and media	Empowering literacy education involves understanding how socially recognisable meanings are produced through the orchestration of semiotic resources.
Provisionality	Empowering literacy education involves a range of activity that includes improvisation and experimentation as well as the production of polished texts.
Multiple authorship	Empowering literacy education values collaboration in text making and is emancipatory in the way is facilitates access to others' texts and ideas.
Objects, bodies and affect	Empowering literacy education involves recognition of the *affective, embodied* and *material* dimensions of meaning making.
Social	Empowering literacy education involves engaging with others in a variety of different ways.
Socially-situated	Empowering literacy education involves exploring how you position yourself and how you are positioned by others through texts.
Unruly	Empowering literacy education occurs within *safe, supportive spaces* that promote experimentation.
Changing	Empowering literacy education involves developing an understanding of the changing nature of meaning making.

(From Burnett et al., 2014)

Back to School: Policy Development

In recent years, there have been a number of influential proposals from educators and researchers working in the field of new literacies aimed at generating curricular and pedagogical designs that incorporate new communicative practices (e.g. Cope & Kalantzis, 1999; Jenkins et al, 2006; Lankshear & Knobel, 2010). Burnett et al. (2014) add to this work by using research-based notions of literacy to inform ongoing national and transnational debates about 21st Century skills. They have generated a set of foundational principles – described as a charter - that sit well with the sorts of understandings developed through video games and virtual worlds (see Table 2).

When we look at the dimensions and qualities listed in the charter in the light of what this chapter has to say about video game and virtual world research there is a clear overlap. A pedagogy and school curriculum that is built on the qualities identified here as 'empowering' could well embrace virtual play, as well as other social media, addressing some of the promises and challenges that have been explored. In the meantime, we are dependent on the hard work and enthusiasm of lone innovators within the education system, as well as the creative work done outside of formal schooling. It is, of course, vitally important that we continue to document and celebrate this, because it helps to build a body of evidence that demonstrates how we can build on the positive features of these virtual environments to create meaningful and motivating educational experiences for all children and young people.

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KEY TERMS AND DEFINITIONS

Avatar: The on screen image or character used to represent an individual player in a virtual world or online game.

Gamification: The use of video game principles or designs in the structuring of a learning experience (see Abrams & Walsh, 2014).

MMOG: Abbreviation of 'massively multiplayer online game' referring to a persistent Internet-based game played by large numbers.

MUVE: Abbreviation of 'multi-user virtual virtual environment' referring to a persistent internet-based virtual world characterised by community and world-building activity (see virtual world).

New Literacies: Communicative practices associated with new digital media, often described as new mindsets (see Lankshear & Knobel, 2006; 2010).

Online Video Game: A digitally-mediated game that depends on its players being online.

Predation Game: A video game that involves activity related to chasing, capturing other players or game-based characters.

Social Envelope: A term used by Schott & Kambouri (2003) to describe the social activity that takes place in and around a video game.

Sports Game: A video game based on actions and activities associated with the world of sport.

Virtual Play: Onscreen activity that takes place in a videogame or virtual world (see Pearce & Artemesia, 2010).

Virtual World: An internet based MUVE that has no prescribed structuring of activity (see White & LeCornu, 2010).