

# LIBER LUDENS: GAMES, PLAY AND LEARNING

Andrew Burn

UCL Institute of Education

## Please cite as:

Burn, A (2016) 'Liber Ludens: Games, Play and Learning'. In Andrews, A, Haythornthwaite, C, Fransman, J, and Kazmer, M (2015) *The Sage Handbook of e-learning Research*, 2<sup>nd</sup> edition. London: Sage.

The first two decades of the twenty-first century have seen widespread interest in the relationship between videogames and learning. The debates, research and practices associated with this interest have been largely dominated by the idea that digital games have the potential to transform learning: that they can function, in effect, as e-learning technologies infused by the motivational benefits conferred by their place in youth culture.

This chapter will briefly review some of these debates, though not exhaustively: it is not intended as a full literature review, but as a critical engagement with certain ideas selected as more productive for the future of media and literacy education in particular. As such, it will selectively seek influential or exemplary texts, authors and practices, aiming to challenge some of the claims made for games as a form of e-learning, and instead to make a case for the curricular incorporation of games as cultural forms in their own right, drawing on examples from research in literacy, media and arts education.

In its simplest form, the argument for digital games and e-learning is that games are a medium through which learning can take place, whether it be the acquisition of knowledge, skills or understanding. As with all e-learning arguments, the technology is secondary: it is a means to an end. It is also content-agnostic: it provides a vehicle into which any curriculum segment can be poured, whether it be art, history or chemistry.

The popular version of this argument is the notion of gamification. The origins of this idea lie in commercial, industrial and marketing practice, where the application of game structures, technologies and systems have sometimes been seen as remedied for processes that can be dull or de-motivating, especially in the context of training. The most notable critique, perhaps, of such practices is the condemnation issued by Ian Bogost (2011), who satirically terms the technologies in question 'exploitationware'.

The same logic has been applied to education, though often the pedagogic justification can be traced back (not entirely fairly, as we shall see) to the arguments of James Paul Gee about the lessons we can learn from games about learning (2003).

In relation to education, the following five critical points can be made. These are essentially polemical points directed against the discourse of gamification as I see it, rather than specific points directed against any individual educator or researcher. As such, they are simply proposed here, before moving on to more developed discussion of research in games and learning.

- First, gamification is an over-literal application of Gee's argument (2003) for deriving learning principles from games. I'll explore this in more detail in the next section.
- Second, gamification is a techno-centrist idea in most forms, fetishising the digital technology at the expense of cultural form and function.
- Third, it distracts educators from the value of games as cultural phenomena, deserving of study in their own right like other expressive and narrative forms such as literature, film, music, dance, drama and art.
- Fourth, as Bogost neatly summarizes, "Game developers and players have critiqued gamification on the grounds that it gets games wrong, mistaking incidental properties like points and levels for primary features like interactions with behavioral complexity" (2011).
- Fifth, it can often be a mystificatory notion, reifying games as a kind of pedagogic magic, sprinkling the fairy dust of 'fun' over boring curriculum content.

A more general point is that it constrains game and play to a kind of functionalism, perhaps the instrumental 'contrivances' to which Heidegger refers in his account of technology as *techne* (1954/1977). Such instrumentalism is at odds with the nature of play as proposed by, *inter alia*, Huizinga's classic account of play in human culture, one of the originary texts of today's game studies. Its emphasis on the freedom, irrationality, pointlessness, yet seriousness of play: its fictions, make-believe, ritual and dispensability, indicate how we might think about it as a cultural disposition in the otherwise serious world of education; and how we might engage with it as a cultural form, the substantive subject of this chapter.

Here, then, we have the first main characteristic of play: that it is free, is in fact freedom. A second characteristic is closely connected with this, namely, that play is not "ordinary" or "real" life. It is rather a stepping out of "real" life into a temporary sphere of activity with a disposition all of its own. Every child knows perfectly well that he is "only pretending", or that it was "only for fun" .

(Huizinga, 1944)

If the human species at play was termed *Homo Ludens* in Huizinga's thesis, then here we may narrow the focus to the play of young people, *Liber Ludens*. This chapter will review current claims for play and game in education, for ways in which play might both inform pedagogy and, perhaps more importantly, allow students to study, appreciate, critique and create the forms of digital play they encounter in their media cultures, and explore their relations to cognate cultural forms which spin stories, create imaginary worlds, and enable play with social roles and identities.

'Gamification' is, then, a limiting way to think about games in education. This chapter will propose four more productive ways, drawing on interpretations of research and practice over the first two decades of the twenty-first century.

## 1. THE LEARNING MACHINE: LEARNING THROUGH GAMES

The best-known exponent of this approach is James Paul Gee, whose book *What Videogames can Teach Us about Literacy and Learning* (2003) is employed by researchers, practitioners and software developers in support of a bewildering range of game-based learning ideas. In fact, however, Gee never argues that learning should literally be turned into a game. Rather, he derives a set of learning principles from a close study of commercial videogames, relating these to his own background of research in literacy, semiotics and multimodality. These principles include critical learning, active learning, the multimodal principle (that meaning is made in different and multiple communicative modes – cf Kress and van Leeuwen, 2001), and the materiality of knowledge. An obvious point to make is that, on the whole, these principles are not new, but are well-established principles of good pedagogy. Another point is that they are not specific to digital games. Indeed, many of the forms of productive behaviour Gee notices in game-play, such as problem-solving, just-in-time learning, collaboration, role-play are also features of educational drama in particular. This is no coincidence, since games and drama are closely-related cultural forms, as we shall see. However, the point to make here is that games do not have a monopoly on principles of effective learning, and indeed can be seen as the most recent manifestation in a long history of play-based learning stretching back to Plato's *Republic*, and featuring most prominently in the modern age in Rousseau's *Emile*. In Gee's defence, however, he doesn't argue that digital games do have exclusive rights on these principles; and there is no doubt that his use of games as exemplars of such principles has galvanised new and inventive attention to them in ways that would have been difficult to achieve otherwise. Nonetheless, this comes at the expense of often crass and reductive distortions of Gee's argument.

Gee is critiqued at length by Buckingham (2007), firstly for failing to engage with the substantial specialist academic literature in game studies, which has formulated well-developed notions of games as text, as structured systems of play, as technology, as sociocultural phenomena and so on. He goes on to criticise Gee for a celebratory stance towards games, for a problematic bracketing-off of representational content from underlying game structures, and for ignoring the commercial context in which games are developed, marketed and consumed. Finally, he associates his argument with what Sutton-Smith terms the rhetoric of progress, which sees play as inexorably developmental, in contrast to other rhetorics, such as the rhetoric of Fate, associated with risky, adult play; or of phantasmagoria, which represents imaginative, irrational play characteristic of much of children's playful invention (Sutton-Smith, 2001). More generally, in this book as a whole, Buckingham makes the point that media forms have repeatedly been hailed as transformational in education, from the use of audio-recording in language labs, through the advent of video in the classroom, to the wide-ranging claims about computers and learning. His general case is that none of the transformations claimed have actually materialised.

A more specific set of examples is provided by Simon Egenfeldt-Nielsen, a Danish researcher and game-designer (eg Egenfeldt-Nielsen, 2007). His early research looked at the use of a commercial strategy game to teach history in a Danish classroom. It concluded that the attempt was largely a failure: the game was poorly-matched to the curricular aims; the reward systems of the game did not reinforce the concepts or knowledge required by the curriculum; the game was too time-consuming and complex to integrate into lessons; the teacher was not familiar

enough with the game and its structures. Egenfeldt-Neilsen's solution was to develop a purpose-built game to support the curriculum. This game, *Global Conflicts: Palestine*, puts the player in the position of a journalist whose task is to cover the Arab-Israeli conflict, gathering evidence in the form of dialogues, photos and other information. This game succeeds where the commercial strategy game failed largely because it has a carefully-constructed constructivist pedagogy: the game mechanics are designed to foreground evidence-gathering, interpretation and evaluation as core objectives. The games are explicitly oriented to the curricula of social studies, history, geography and media studies. This work is rooted not in superficial conceptions of gamification, but in the so-called 'serious games' rationale (Egenfeldt-Neilsen's company is called *Serious Games Interactive*). The ideas, practice and research relating to 'serious games' have a long history, but can be summarised as games which model or simulate real-world situations, problems and issues in order to support investigation, analysis, and the development of solutions. The contexts in which the serious games principle is explicitly adopted include, amongst others, the military, healthcare, business, marketing, education and training. Research initiatives which have developed theory and practice in education include the *Games-To-Teach* project in the US (eg, Jenkins and Squire, 2004), an influential series of projects and interventions exploring a range of uses of videogames to support learning. This strand of research and practice develops more broadly into an argument for the deployment of games in education as a harnessing of young people's participatory culture (Squire, 2011; Steinkuhler et al, 2012).

A subset of the research literature explores the use of virtual worlds for learning. Such environments closely resemble the digital worlds of 3-D games, though they are often not strictly classified as games, since they contain no specific ludic structures, such as challenge, obstacle, reward, win-lose state. Analyses of such worlds in the service of learning include discussions of enacting *Macbeth* in the virtual world *Second Life* (Thomas et al, 2014); the construction of a virtual world for primary school literacy learning (Merchant, 2010); the nature of literacies in virtual spaces (Merchant et al, 2012); learning processes in the virtual worlds of MMORPGs (Massively Multiplayer Online Role-Playing Games) (Carr and Oliver, 2009); and the nature of student seminars in *Second Life* (Burn, 2011). These studies present a complex array of theory and practice; but a commonly-reiterated theme is the opportunity for identity-play in virtual worlds, where learners can calibrate the differences and similarities between their online and offline identities.

The evidence suggests, then, that games can contribute a number of benefits to education, in particular, modelling principles of effective teaching and learning; simulating real-world situations for students to explore; integrating learning-by-doing with the exploratory processes of play; offering opportunities for experimentation with alternative learning roles; capitalising on students' experience of game culture. Other benefits have been identified in research reviews. A 2012 systematic review found that:

... playing computer games is linked to a range of perceptual, cognitive, behavioural, affective and motivational impacts and outcomes. The most frequently occurring outcomes and impacts were knowledge acquisition/content understanding and affective and motivational outcomes. (Connolly et al, 2012).

Meanwhile, another review in the same year concluded that while the research shows many possibilities for games to support learning, there is little robust evidence of impact on attainment. It suggests further research, and follows Kirriemuir and McFarlane (2004) in focusing on how different kinds of games can be used for learning, rather than generalizing the effect of one game to all games, as many studies do. In these respects, it echoes an earlier review by Futurelab, which concluded:

However there is little data on how games are used and how successfully they are integrated into teaching practice. There is no data about what subjects currently benefit from games, nor how they are used by teachers. (McClarty et al, 2012)

Clearly, opinions are divided. The argument made in this chapter is that games may well have a range of capacities to support learning, though these need to be robustly evaluated. However, such uses may be less significant in the long run than attention to games as a cultural form in their own right – a proposal which will occupy the remainder of this chapter.

## 2. LUDIC LITERACIES

Gee's book makes an explicit connection between videogames and the New Literacy Studies (eg Street, 1984, 2003; Maybin, 2000; Gee, 2000; Lankshear and Knobel, 2006), arguing that the sociocultural models of literacy advocated by this body of work are well exemplified in the playing of games, where 'reading' is closely associated with social practices and domains, and to the building and exploration of social identities. However, some of the earliest work in the relation between games and literacy emerged from researchers in Australia (eg Beavis, 1998; Nixon, 1998; Beavis, 2000). Catherine Beavis (Beavis, 2001) describes a 1999 research project in which a Year 8 class played fantasy-themed games (*Heroes of Might and Magic; Beyond Time*) as a wider reading activity around the class reader, Ursula LeGuin's *A Wizard of Earthsea*. Through analysis of reading and writing activities related to the games, Beavis provides evidence for an expanded notion of literacy which builds on students' rich textual worlds, and the knowledge of fantasy, genre, narrative and text that this generates.

More recently, Beavis and her co-researchers reported on an extended project which explored the relation between games and literacy in five Australian secondary schools (Beavis et al, 2009). This found further evidence of the value of harnessing students' extensive experiences of game worlds, genres, forms and narratives, as well as building on the expressive practices of making para-texts such as fan writing and art. A further article addressing the question of games as a form of e-learning summarises the range of approaches that can be taken, including this time forms of game production (Apperley and Beavis, 2013). Like the earlier research, this work conceives of literacy broadly within the New Literacy Studies tradition, but more specifically within a model developed by Durrant and Green, which conceptualises literacy on three ways, as cultural, critical and operational (2000). However, it also incorporates more recent notions of communicative forms particular to videogames,

such as the procedural rhetoric elaborated by Bogost (2010), and in this and other respects engages with mainstream game studies in ways Gee does not.

In the UK, Burn has made the case for the use of videogames in English, adding an argument for the study of adaptation (Burn, 2004). Here, the argument is more specifically literature-related, proposing that, just as English teachers might work with stage or film adaptations of literature, so they might also look at game adaptations where they exist, looking for features of the game which elucidate aspects of the literary text in different ways, while also paying attention to the game itself as a valued cultural form. This argument is followed up later by a project in which researchers collaborated with Shakespeare's Globe to develop a game-authoring tool for students to make their own games of Macbeth (Burn and Durran, 2013). The project found that, as well as approaching narrative in different ways, making the game provided new ways to think about metaphor and character motivation. This example also demonstrates a wider place for a focus on games in Arts education, discussed at more length in section 4 below.

Burn makes the case elsewhere that the study of games in the literacy/English classroom can contribute to detailed understanding of grammatical structures (Burn, 2010), drawing on social semiotic frameworks (Kress and van Leeuwen, 2006). Here, the argument focuses on aspects of lexicogrammar which are common (though different) across different media, such as the system of person in language. Students' understanding of how first, second and third person works across literature, film and videogame might result in more complex grasp of the semiotic principles involved. An applied example of this approach at work in a secondary classroom is provided in another project (Partington and Buckingham, 2012), where Year 8 students explore these forms of address across the book, game and film of *Harry Potter and the Chamber of Secrets*.

In the different context of the primary school literacy classroom, Angela Colvert describes the making of Alternate Reality Games (ARGs) with students to explore the class reader. Situated again in the tradition of New Literacy Studies, this account exploits the more open nature of ARGs to integrate students' literacy practices across a range of media, including writing, visual design, audio and video, illustrating the multimodal nature of such projects.

To summarise, then, projects exploring games and literacy find evidence of the close relation between narrative-based games and literacy practices, within models of literacy advanced by New Literacy Studies, in some cases integrated with models of multimodal literacy. Benefits relate both to the literary and linguistic aspects of literacy characteristic of English curricula, and to the more broadly-conceived literacies envisaged in social semiotic and multimodal models, where communicative acts take place across and between modes and media (Kress and Jewitt, 2003; Kress and van Leeuwen, 2001). Increasingly, such research integrates models of literacy with theories of play and game, addressing ludic aspects of texts, sociocultural practices of play, and the procedural nature of digital games.

### **3. LEARNING ABOUT GAMES: THE MEDIA EDUCATION CASE**

This argument requires something of a change of perspective. The research viewed so far has deployed games as a means to an end: as a way of approaching and potentially transforming media content; and so can properly be referred to as e-learning, although, as we have seen, there is a qualitative difference between approaches in which the games as games have no direct relevance to the curricular content, and those in which games are effectively a cognate form as in the case of teaching about literature, where games are closely related in their narrative, representational, semiotic and cultural properties.

However, in the final analysis, in all these examples, games remain the learning vehicle rather than its object. The Media Education case is for the study of games as cultural forms in their own right, much as we might study literature or drama; or more broadly in the Arts, music, art, dance and the visual arts. Some parallels might help. As Buckingham points out (2007), the advent of video-recording and playback technologies prompted a flurry of excitement about the use of the moving image to teach the curriculum, from the use of history archives to the showing of science documentaries. Now that this novelty has died down, and the use of video and film has taken its place in a wide range of audiovisual (and now digital) technologies in the pedagogic repertoire, it seems obvious that the most important role played by film in schools is in its own right, as film and media educators internationally testify, and as national policies for education in film heritage indicate (eg Reid et al, 2013). In the same way, we can argue, and demonstrate through practical examples, that games deserve a place in cultural education in their own right.

However, this is a surprisingly elusive component of the wider set of debates and proposals for games in schools. A Google search for “teaching *about* videogames” reveals, on its first page, “7 Ways videogames will help your kid in school”; Teaching Ethics and Narrative with violent videogames”; “A New School teaches through videogames”; “School Uses videogames to teach thinking skills”; “How Mainstream games are being used as teaching tools”; and so on. Nevertheless, the case for games as an object of study in media education is relatively well-established in its own right, and as an extension of the study of other media forms such as film and television. More generally, as the next section will argue, including games in the liberal arts curriculum seems a logical extension of the study of culture, narrative forms, representation, design, aesthetic function and sociocultural significance in these related areas, especially as the traditional attention to canonical literature, drama and associated art-forms has expanded over the last half-century to include the popular arts.

How this might work is best exemplified in countries which have advanced mechanisms for media education and media studies courses, such as, inter alia, the UK, Australia, Canada and New Zealand. Thus, Burn and Durrant propose approaches for the teaching of media institutions, a core media literacy concept (2008); Oram and Newman present methods for teaching about videogames in Media Studies classes (Oram and Newman, 2006); Burn and Durrant analyse videogame design by 12 year-olds in a media education curriculum (2007). Rather differently, but still focusing on attention to games in their own right, Berger and McDougall describe the ‘reading’ of the noir-styled detective game *L.A. Noire* (Rockstar, 2011) within the cultural practices and idioms of advanced-level (A-Level) English (Berger and McDougall, 2013).

The pedagogic framework within which these approaches can be developed is modelled in some detail by Buckingham and Burn (2007). This article makes the case for the so-called 3-Cs model of media literacy, in which the analysis and production of media texts is seen as cultural, critical and creative. These three apparently innocuous terms are, of course, notoriously contested. In school curriculum policy, 'culture' typically refers to elite culture, heritage culture, and sometimes 'multicultural' formulations. It rarely refers explicitly to popular culture, which is a distinctive feature of media education. 'Criticality' in literacy and literature curricula typically refers to a critical grasp of textual and linguistic structures; whereas critical understanding in media education as Buckingham and Burn describe it also includes concepts of the roles of media institutions and audiences. Finally, creativity is a widely-debated term in education, covering formulations from neuro-psychology, neo-liberal economics, cultural studies and child development (Banaji and Burn, 2007). Buckingham and Burn draw on a Vygotskian model to theorise the forms of creativity in students' videogame designs, emphasising social context and the transformation of cultural resources through the use of semiotic tools.

These three aspects of media literacy, then, are followed through by Buckingham and Burn in relation to a game design project in a Year 8 class. The cultural aspect of literacy is seen in relation to the gaming cultures of the students, which are drawn on in the project, building on experience and knowledge of game genres, game-play, and in the case of three students, proto-design activities in commercial games which provide editable levels for players. Again, the argument here is that the popular cultural experience of students needs to be acknowledged and deployed in the classroom, not simply for motivational reasons, but because it has value in itself.

The critical aspects of media literacy are sub-divided into media institutions, texts and audiences, a conceptual framework developed elsewhere by Buckingham (2007), and by Burn and Durran (2007). In relation specifically to games, each of these categories requires specific kinds of understanding. The class develop their understanding of media institutions by simulating the work of a game design studio, by marketing their game through poster design, and by imitating the work of games journalism in reviewing their game. They develop their understanding of game texts by exploring concepts such as narrative, rule and economy: games are generally understood as rule-governed systems (eg Juul, 2005; Salen and Zimmerman, 2004); while game economies represent the quantified elements programmed into the game, such as time, health, ammunition, weight, and so on. The understanding of these concepts is also exemplified by the students' game designs, using a software developed by the research project in which the classroom activity took place. In their designs, students developed a narrative for their game, Jimmie DeMora and the Dying World, which tells the story of a protagonist whose mission is to defeat an evil corporation who are withholding a source of renewable energy, thereby causing worldwide flooding from the melting polar icecaps. The understanding of audiences is developed by strategies such as making walkthroughs, online instructions made by fans to help other players complete the game, and a distinctive feature of gaming culture, as opposed to other activities common across different media, such as fan art and fan fiction.



Finally, the article considers the nature of the creativity displayed by this production activity. While creativity is popularly evaluated in relation to originality, the analysis here draws on Vygotsky's model of creativity in childhood and adolescence (1931/1998), in which, as in children's play, cultural and material resources are transformed imaginatively, but then subordinated to processes of rational thought – in this case, narrative and ludic design.

The case for learning about games rather than through them is, then, perhaps best expressed, theorised and exemplified in the context of media education and media literacy. However, this subject area is difficult to maintain as a distinct curricular domain. Typically, internationally, it is subsumed within mother tongue programmes, arts programmes or ICT programmes; or else it is dispersed across the curriculum as a theme. While these formulations are often pragmatic, representing ways to raise the profile of media education, they also indicate various overlaps in the domains of knowledge concerned. As we have seen, there is considerable common ground between media education and mother tongue and literature programmes, which all deploy conceptions of literacy and the pedagogies associated with them. To associate media education (and the study of games) with the arts highlights different kinds of common ground, and different emphases, as the next section will show.

#### **4. THE LUDIC ARTS**

The place of games in the arts can be made, as with media education, within the rationale that they are a cultural form worthy of study in their own right. The case becomes differently inflected within the arts, however, where concerns with aesthetic form and value are arguably more prominent than concerns with literacies or communicative competence. In this respect, advocates of the rightful place of games in art curricula might seek validation in shifts in cultural and academic attitudes to games in the early twenty-first century. Games are regularly exhibited and curated, for example: a well-known example is the widely-travelled *Game On* exhibition, organised by London's Barbican Centre, and visiting Chicago, Melbourne, and the Science Museum in London. Meanwhile, the academic argument for games as art has been made in diverse ways. The collection of essays in Mitchell and Clarke's *Videogames As Art* (2007), for example, attend to questions of design, aesthetic form, different genres such as machinima (the animation evolving from games), and fan art.

In a computer game studio, it would be impossible to disentangle the skills and cultural references of the world of art and design from those of media production. Concept art for game design looks like painting, but is directed towards the construction of media narratives and the pleasures of the gaming market. The 3-D animation can be as beautiful as anything the world of art-house animated film offers; but again is inclined towards a different economy of consumption and regime of taste. A critical understanding of genre, narrative, ludic structure and the political economy of game development and publication is integrated with an artistic commitment to aesthetic form and effect. This section of the chapter will briefly consider the case for a study of games in different art forms, before looking in detail at an example from my own research which, while situated in an intermediate space between literary studies and media studies, incorporates different art forms in a school videogame design project.

## Art and Design

It is possible to say, in a rather reductive way, that art education and media education have traditionally represented opposing ends of the spectrum of cultural value. While art education has espoused the realm of high art, whether in its historical attention to the established canons of Renaissance and Romantic art or in its embrace of high modernism, media education has championed the domain of popular culture, from the culture of the comicstrip to more recent media forms such as computer games and reality television. In this respect, art education has belonged with arts education more generally, which has conventionally seen its mission as acquainting children with the traditions and heritage of Western arts, especially in music, theatre, dance and literature.

However, the recent history of art education has some parallels with media education. For one thing, the creative production of works of art by children is arguably a more substantial part of its mission than the acquisition of canonical knowledge. Furthermore, a disciplinary shift in art education can be seen towards a curriculum for 'visual culture', involving a move away from the institutions of fine art towards a more inclusive engagement with practices of visual representation. Paul Duncum describes formulations of visual culture in art education thus:

Dobbs [1998] uses it to refer to 'paintings, drawings, sculptures, architecture, films and so on' while for most of those who use the term it is the 'and so on' that is of special interest: the sites of contemporary cultural experience, television, the Internet, malls, video games, theme park rides, and so on. (Duncum, 2005)

This shift has been seen as a move away from conceptions of art education as elite and isolated from the culture of young people, towards a domain situated firmly within the project of modernity, towards a postmodern diversity of practices (Addison and Burgess 2003). In this new dispensation, the old oppositions between word and image, artistic medium and technology, the sense of sight and the other senses addressed by contemporary multimodal texts are profoundly questioned. In respect of the relation between art and media education, this new diversity can also be seen as a productive rupture of disciplinary boundaries. New forms of collaboration with other education practices occupied with visual culture become not only possible, but desirable.

In this context, it is possible to see not only how the art practices of videogames, such as concept art, fan art, and animation can be legitimately explored in art classrooms (see Schott and Burn, 2004, on fan art related to art education), but also how the curricula and pedagogies of art education can be aligned with other art disciplines to explore popular media such as videogames. The possibilities are hinted at by Sweeny, although the social meanings and uses of videogame culture in games such as *Grand Theft Auto* are here seen as a potential obstacle (Sweeny, 2010).

## Drama

Drama may be seen as a fruitful domain of arts education which might harness videogames. Indeed, in game studies, videogames have long been perceived as a dramatic form first and foremost. Brenda Laurel conceives of the players' dramatic role as protagonist in traditional Aristotelian form (1991); while Gonzalo Frasca adapts Augusto Boal's *Theatre of the Oppressed* (1979) as a model for his own *Videogames of the Oppressed* (2001). Meanwhile, the apparent distance between embodied physical drama and the virtual embodiment of game characters and avatars has reduced in recent years with the advent of physical movement detection and interfaces such as the Nintendo Wii and Microsoft's Kinect.

However, examples of practice remain relatively few. An exception has been the work of a group of drama educators in Australia, led originally by John Carroll, whose 1998 essay on games and drama explored the analogies between role-play in games and in process drama, and the common themes of identity play which both forms evoke (Carroll, 1998). Later work with colleagues Cameron and Anderson have continued this theme with a range of studies of new media and drama education, including the use of games, machinima, and virtual worlds (Carroll and Cameron, 2005; Carroll, Anderson and Cameron, 2006).

A 2009 collection by the same group (Anderson et al, 2009), presents a variety of detailed case studies which integrate games and drama. These include the integration of process drama with Multiplayer Virtual Worlds (Dunn and O'Toole, chapter 2); drama and the virtual world, Second Life (Flintoff, chapter 13); and epistemic games related to drama (Carroll, chapter 6).

In general terms, then, games are seen as a form of digital drama, a set of technologies for forms of role-play and the creation of imaginary worlds which drama educators might profitably deploy.

## **Music**

In the case of Music education, it is possible to point to the importance of music in games, and the adulation accorded to game-composers, especially in Japanese games, and ways in which this might be harnessed for the music classroom as an object of study in its own right. A project current at the time of writing explores such possibilities at the University of Kent. Entitled 'Guitar Heroes in Music Education? Music-based video-games and their potential for musical and performative creativity', it brings together artists, composers, game designers and educators to develop approaches to the use of games and the design of games in educational settings. The project website indicates the rationale for the project:

This network aims to investigate the potential of music-based video-games, such as Guitar Hero, Wii Music, RockSmith, Dance Central or Child of Eden to foster a creative engagement in its players. By connecting academics from a wide range of relevant disciplines (such as music education, music psychology, game and gaming theory, theatre studies) with both game designers and artists and musicians, who have embraced the soft- and hardwares of gaming for creating new ways of composing and performing, we seek to discuss this topic from the best possible variety of angles. We also seek to facilitate discussions and suggestions towards impact by interrogating how our renewed shared understanding about the creative potential of these

games will influence future game design. We further ask how existing and future games could be implemented in music education, be it in the classroom or the conservatoire. (<http://music-games-creativity-network.blogspot.co.uk/2013/10/guitar-heroes-in-music-education-music.html>)

This kind of work, building on early exploratory research such as Cassidy and Paisley's case study of a learners' encounter with the music game Rock Band 3 (Cassidy and Paisley, 2013), indicates how much potential there might be in incorporating the design processes of game music, the sonic properties of videogames, and the vitality of game culture into music education, following a long tradition of setting popular music styles alongside classical repertoires. Furthermore, although this network does not explicitly suggest it, an obvious extension of such a rationale, as with Art education, might be to seek cross-arts collaboration modelled on the work of the game design studio.

### **Literature Study and the media arts**

This project from my own research developed an authoring tool for young people to use to make computer games based on Macbeth. It was a collaboration between the DARE research centre at the Institute of Education, University of London, Shakespeare's Globe, Immersive Education Ltd, and Coleridge Community College in Cambridge, a campus of Parkside Federation Academies. It was funded by the Arts and Humanities Research Council in the UK.

The project suggests three reasons for making videogames of Shakespeare in schools. Firstly, like any production of the plays in theatre or film, game adaptation raises questions of interpretation: how to visualise the play, how to use the dramatic text, how to dramatise the actions and events. We routinely use film adaptations of Shakespeare plays, and of many other literary texts, considering such questions of interpretation. However, in this case we are proposing that students make their own games, rather than study a commercial production. In this sense, the project is more similar to developing a class drama based on Macbeth; or making a class film or animation based on the play. The same questions apply: how to interpret the text, given the audiovisual resources and cultural forms of the new medium; but the students make their own choices rather than analysing those made by a professional director or designer.

Secondly, although game adaptations can be compared with film adaptations, the medium poses its own particular questions about text, drama and narrative. Games challenge our conventional thinking about narrative function and structure: games ask questions, offer choices, pose puzzles, set challenges, rather than simply making narrative 'statements'. The grammar is different: the dynamic of the player's progress through the text is different from that of a theatre-goer, film-viewer or reader. And, importantly, games are 'interactive': the students are designing opportunities for players to take on the role of Macbeth or Lady Macbeth. In this sense, it does resemble the logic of educational drama, in which students might improvise aspects of the play, exploring motivation, emotional charge, and dramatic aspects of language and physical action.

Thirdly, games are an art form and entertainment medium familiar to young people, offering a bridge between their cultural worlds and that of the Shakespearean canon. There is room here to think about how society establishes cultural value.

In developing their game levels, the students created missions (get past the guards, kill the king, leave the daggers); but also used the game to explore the psychology of the play. They created 'economies': quantified representations of qualities such as ambition, conscience, fear, greed and guilt; and one level used green corridors to represent 'the sewers of Lady Macbeth's mind' (Figure 1).



**Figure 1: screenshot from Year 9 Macbeth game: 'the sewers of Lady Macbeth's mind'.**

One level was made by twin girls, and represented Macbeth's killings of Duncan. The following analysis considers the nature of the game adaptation: how it shows an understanding of play and game; how it represents the sociocultural interests of the young makers; and how it demonstrates a multimodal integration of different communicative mode and art forms.

### *The Witches*

The level puts the player in the position of Macbeth: being given instructions by Lady Macbeth to commit the murder; finding a dagger to commit the deed; making his way past the guards to Duncan's bedchamber; and killing the king. However, although the girls had been allocated this scene for their game level, they had previously shown a particular interest in the witches during an exploratory game-making session. In this level, they insert the witches as a kind of flashback: the player has

the opportunity to go upstairs, where he meets two of the witches, who remind him of the prophecy that he will become king. Three features of the design are notable. First, the witches are 'voiced' using the girls' own voices, whereas they attach to the other characters pre-recorded speeches by actors. This choice seems to indicate a greater investment in the witches characters and function, continuing the interest they had earlier shown in the fantastic, supernatural elements of the play (Figure 2).



**Figure 2: screenshot from Year 9 Macbeth game: the witches**

Second, the witches are located on the upper level of the game environment, a mixture of baronial hall and wooden chambers on three levels. The player begins, with Lady Macbeth, on the middle level; goes upstairs to the witches; and goes down to the lower level to kill Duncan. One interpretation of this design may be developed using Kress and van Leeuwen's grammar of visual design (2006), in which they suggest that the social meanings of the top and bottom of images are, respectively, the realms of the Ideal and Real. In this case, we might expect the king to be located at the top, representing the ideal of monarchy, the virtuous regime which Macbeth's crime throws into disarray. In fact, the girls have elevated the witches to this realm, suggesting an idealisation of their supernatural agency; while the king is relegated to the murky depths where corporal vulnerability, moral decay and political intrigue swallow him up.

Third, as indicated above, the girls have remodelled the temporality of the play, bringing the witches back from an earlier scene. This may be a determined effort to insert the scene of most imaginative interest to them, regardless of the original sequence in the text. However, it does function as an echo of the prophecy at a

relevant moment; and also, in ludic terms, as a reinforcement to the player to continue their mission.

### *The Economies*

The software contains three 'economies', or quantifiable assets, visible on the player interface as coloured columns which rise or fall as they are augmented or depleted. By default, they are labelled 'Health', 'Strength' and 'Hunger' (Figure 3). Events, locations and objects in the game can be programmed by the students to cause these economies to rise or fall. In discussions with the Globe about the development of the software, the question arose of the characters' motivations. The researchers suggested removing the labels from these economies, so that the students could label them with attributes appropriate to the play.



**Figure 3: screenshot from Year 9 Macbeth game: the player interface showing the economies.**

In the case of the girls' level, they have chosen to label the economies 'Conscience', 'Ambition' and 'Courage'. They programme various events in the level to raise and lower these emotions: for example, if the player picks up and 'drinks' a bottle of wine, the courage level goes up, while the conscience level goes down. This game mechanic, then, adapts and transforms Lady Macbeth's reference to drinking the wine later drugged and given to the guards: 'That which hath made them drunk hath made me bold'. Similarly, if the player enters a room beyond the witches, he finds coffers of gold and crowns: if s/he picks them up, the 'ambition' column rises.

We might imagine humanist objections to such treatment of literary texts: a resistance to the transformation of human emotion represented in drama and literature into programmed mechanics and numerical systems. In fact, of course, the original text is by no means an actual human, but a codified representation of human drama through the sign-systems of lexico-grammar and theatre. Furthermore, the Shakespearean text itself plays with metaphors of liquid quantity to represent affect and motivation. The following lines of Lady Macbeth show a series of such metaphors:

Come, you spirits  
That tend on mortal thoughts, unsex me here,  
And fill me from the crown to the toe top-full  
Of direst cruelty! make thick my blood;  
Stop up the access and passage to remorse,  
That no compunctious visitings of nature  
Shake my fell purpose, nor keep peace between  
The effect and it! Come to my woman's breasts,  
And take my milk for gall, you murdering ministers,  
Wherever in your sightless substances  
You wait on nature's mischief!

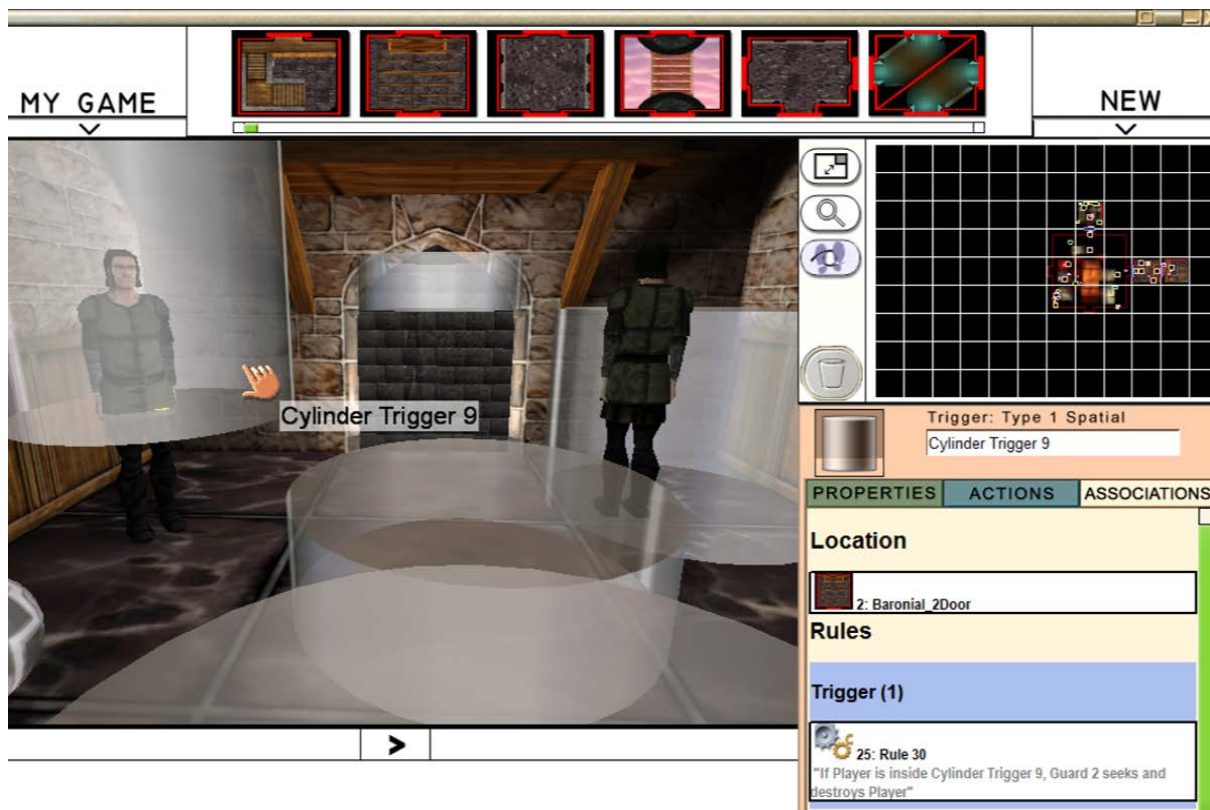
#### Act 1, Scene 5

In this passage, cruelty is represented as a liquid entity; blood can be thickened as another metaphor for cruelty; remorse is depicted as a substance which can flood in through apertures in the body; milk is a liquid representing compassion. So, to represent conscience, ambition and courage as liquid-filled containers, programmed to fill or deplete depending on the player's choices, is by no means inconsistent with the representations of such qualities in Shakespeare's text.

#### *The Mission*

The girls have constructed the player's mission with specific ludic qualities, which also closely reflect the dramatic events of the scenes in the play. Firstly, Lady Macbeth functions as the giver of the mission, a familiar role in adventure and role-playing games. She is also the person to whom the player is instructed to return on completing the murder. Second, the girls place various obstacles in the way of the player: a door which needs a key (an obstacle with no specific corollary in the play); and three sleeping guards who must be either evaded or fought with. This is designed by the use of programmed space in the form of 'trigger volumes', defined spaces visible in design mode but invisible to the player (Figure 4). These are placed around the guards, who are programmed to 'seek and destroy' the player if s/he should enter the defined space. In this way, the player can progress wither by using a dramatic sense that to go too close to the guards might waken them; or by heeding a ludic sense from gaming experience that game-space is dynamic in this way. The two – the dramatic sensibility and the ludic – are fused, a feature of good game design (Carr et al, 2006).





**Figure 4: the design interface of the girls' level, showing the trigger volume.**

In general, then, the project produced, as we expected and hoped, a sense of how computer games might offer innovative ways to approach a corpus of work weighed down by the history of cultural heritage. However, it also produced some surprises, both about how young people use game-authoring creatively and about what games could do with qualities such as emotion and psychology. In short, we were surprised that the teenagers used the technology of game development to produce emotion and metaphor, and play with narrative temporality. These are hopeful developments in terms of how games might offer new ways to think about, transform and recreate the literary canon.

More specifically, the game designs of the students showed how it was possible to produce transformations of the literary text realised as dynamic, dramatized, ludic space; as programmed economies which deployed game mechanics to dynamically represent emotion; and as ludic sequences of challenge and reward which reworked the dramatic narrative.

Finally, the project exemplified two more aspects of games in arts education. Firstly, that they are multimodal (Kress and van Leeuwen, 2001). While the characteristic mode of the literature and literacy classroom is monomodal, emphasising written language, the game adaptation integrates 2-D and 3-D visual design, spoken language, written language, music, moving image in the service of a procedural narrative. By the same token, such a production is cross-arts: it integrates the visual arts, the media arts, drama (both in the form of voice acting and in the form of virtual actors), and music.

The implication of this for curriculum design and pedagogy are profound. The best way to approach a project of this kind may be to have the teachers of English, Drama, Media, Art, ICT and Music all in the same room, working with the students. A game studio would exemplify the co-ordination of such specialisms, preserving specialist space for specific tasks while providing for their technical integration and co-design. For schools, this raises considerable opportunities but also significant challenges, requiring radical rethinking not just of learning space and time, but also of pedagogic traditions and how they model design work, manage conceptual development, structure but also open up opportunities for creativity, and balance individual work against group collaboration.

## **RESEARCH METHODOLOGIES**

The thrust of this chapter is to argue that videogames are best located in education in their own right, rather than as a form of e-learning. When it comes to researching such uses, however, the researcher is faced with challenges similar to those experienced in e-learning research, or indeed any research involving digital technologies. This is a large topic, and can only be touched on briefly within the scope of this chapter: but some important considerations can be grouped under three headings.

### **Data capture: game play**

Like all digital media, games involve high quantities of iteration in play, so that capturing the processes of play and learning can be difficult. The easiest way to capture a play sequence are to film students playing (which can capture context, physical movement, speech, facial expression, but not the screen with any degree of detail. The other method is to use video-capture software to turn the screen play sequence into a video, which gives screen detail (play events, interface management, game controls), but not context. The ideal is to combine the two.

It may be, however, that the play is remote – in homes, or between different education sites. The same techniques of video-record and capture remain the best options, though multi-situated.

If the play takes place in an online game of virtual world, the researcher can participate like the other players in the form of an avatar. In this case, the researcher can capture their own play sequence as video, and subsequently analyse the actions of other avatars. The decision must be made whether the researcher is a participant observer, playing the game or participating in the virtual world, or whether they are simply observing. This decision will have consequences for where the researcher locates themselves, how they do or do not deploy in-game talk, text-based chat and so on. An account of in-game interview procedures in the MMORPG World of Warcraft is given in Carr and Oliver, 2009.

### **Data capture: game design**

In processes of game design, more options are open. The researcher can collect design documents (drawn or digital images, scripts, plans), digital objects (3D

models, animations, environment designs, sound files), and specific software design iterations, as was the case in the Macbeth project described above.

Beyond these specific methods, the conceptual development, socio-cultural engagement and creative intentions of the learners can of course be investigated through ethnographic methods such as observation and interview. If the project involves a game or virtual world, interviews can take place between the researcher's and participants' avatars, as was the case in a Second Life project with an animation educator (Burn, 2009).

## **Ethics**

The most challenging ethical problems pertain to questions of identity and consent online. It may be that the researcher cannot determine the 'real' identity of subjects in avatar form; and has also to decide whether to reveal or conceal his/her own identity. Consent may be difficult to obtain in the usual way, unless online participants are willing to provide offline contact details. A general guide to ethics in online research is provided by Bruckman (2002); while many of the relevant issues are explored in relation to research in World of Warcraft by Carr (2012). Carr also explores the ethical issues raised by disability in online games and worlds (2010). Meanwhile, McKee and Porter experiment with visual methods for the negotiation of ethical issues in online games and virtual worlds (2009).

Perhaps the most important point to recognise is that, in spite of the apparent differences between game environments and the 'real' world, researchers are still always conducting research with real people, even though they may appear as exotic animations. The same rules of informed consent, privacy and ownership apply as in conventional research, even though new ways may need to be found to make them work.

## **CONCLUSION: CULTURE, CODING AND CREATIVITY**

The argument presented here, then, is essentially against gamification, and against an over-emphasis on games as a form of e-learning. While acknowledging that game-based approaches, simulations and virtual worlds may all become useful tools in the pedagogic repertoire alongside other digital technologies, and indeed alongside older traditions of play-based learning, the argument here is that this largely misses the point. It is rather as if someone were to announce: "I've discovered this fantastic new art form called poetry – and we're going to use it to teach chemistry!" The analogy is, of course, not exact, but the rhetorical force may make the point that the game designer and theorist Eric Zimmerman had in mind when he made a keynote speech to the MIT Sandbox Summit in 2012, entitled 'Games are Not Good for You'. His argument was that educators needed to move away from a 'design literalism' depicting subject content to an emphasis instead on their cultural and artistic value: essentially the argument of the present chapter:

We are in danger of instrumentalizing games, of turning something that's rich and complex and ineffable into a blunt tool for narrow and utilitarian purpose. I want to argue that we stop strip-mining the games that we love in order to harness them for potentially dubious ends". (Keynote, MIT Sandbox Summit,

April 18<sup>th</sup> 2012. (<http://video.mit.edu/watch/sandbox-summit-games-are-not-good-for-you-so-why-are-we-here-11156/>)

The argument made in this chapter, then, has been that the arts in education – including, importantly, the media arts - are the most appropriate curriculum location for attending to games in their own right, as a specific instance of the popular arts, but an instance which, by virtue of their extreme multimodal nature, provokes boundary-crossing in arts education practice, integrating narrative, dramatic action, music, visual design and the media arts. A final point to make involves another curriculum domain, however, which poses a set of questions requiring more space than this chapter can afford. This is the profound changes to school computing curricula internationally, and a move away from programmes devoted to software use towards a rediscovery of creative coding, promoted by policy interventions such as Hope and Livingstone's Next Gen report in the UK (Hope and Livingstone, 2011), which identified the shortage of programmers in the games industry and called for the reinvention of the computing curriculum to prepare future workers in such industries.

This kind of call coincides with a rise in informal educational programmes promoting creative coding: code clubs, hackathons, maker-faires and so on, in which educators in a wide variety of contexts seek to promote a kind of indie aesthetic in learning computer code, often through the medium of game design. More formal instantiations of such initiatives can be seen in the connected learning philosophy of the MacArthur Foundation-funded Quest to Learn schools in New York and Chicago, with learning principles derived from game and play, such as multiple routes, iteration and multimodality – derivations of the principles elaborated by Gee which were discussed earlier in this chapter.

More generally, the coding revolution suggests a need to overcome new versions of the arts-science divide notoriously identified by CP Snow in 1951 (Snow, 2001/1959). Current formulations such as STEAM (the STEM subjects with an A for Arts inserted) indicate such aspirations. But if such movements are successful, it will be even clearer that the main educational interest in games and computer code is not as a means to an end, but as an end in themselves.

## REFERENCES

- Addison, A and Burgess, L, eds (2003) *Issues in Art and Design Teaching*, London: Routledge Falmer
- Apperley, T and Beavis, C (2013) 'A Model for Critical Games Literacy'. *E-Learning and Digital Media*, Volume 10, Number 1, 2013
- Anderson, M., Carroll, J., Cameron, D. (2009). *Drama Education with Digital Technology*. United Kingdom: Continuum.
- Banaji, S and Burn, A (2007) *Rhetorics of Creativity*, commissioned by Creative Partnerships, at [www.creative-partnerships.com/literaturereviews](http://www.creative-partnerships.com/literaturereviews)

Beavis, C (1998) 'Computer games, culture and curriculum', in I. Snyder (ed.) *Page to Screen: Taking Literacy into the Electronic Era*

Beavis, C. (2000) 'Computer games as class readers: developing literacy skills for the twenty-first century', *The English and Media Magazine*, 41: 31-35

Catherine Beavis (2001) 'Digital Culture, Digital Literacies: Expanding Notions Of Text'. in Beavis C, Durrant C (eds) (2001) *P(ict)ures of English: Teachers, learners and technology*. Norwood, SA: AATE & Wakefield Press.

Beavis, C, Apperley, T, Bradford, C, O'Mara, J and Walsh, C (2009) 'Literacy in the digital age: Learning from computer games'. *English in Education*, Volume 43, Issue 2, 162–175, Summer 2009

Berger, R and McDougall, J (2013) 'Reading videogames as (authorless) literature'. *Literacy*, 47 (3), 142-149.

Boal, A (1979) *Theatre of the Oppressed*, London: Pluto Press

Cassidy, G and Paisley, A (2013) 'Music-games: A case study of their impact'. *Research Studies in Music Education*, June 2013; vol. 35, 1: pp. 119-138.

Bogost, I (2011) '*Gamification is Bullshit*'. At [http://bogost.com/blog/gamification\\_is\\_bullshit/](http://bogost.com/blog/gamification_is_bullshit/). Retrieved 20.3.15

Bogost, I (2010) *Persuasive Games: The Expressive Power of Videogames*. Cambridge, MA: MIT Press.

Bruckman, A (2002) *Ethical Guidelines for Research Online* - <http://www.cc.gatech.edu/~asb/ethics/> - online research guide

Buckingham, D (2003) *Media Education: Literacy, Learning and Contemporary Culture*, Cambridge: Polity

Buckingham, D (2007) *Beyond Technology: Children's Learning in the Age of Digital Culture*. Cambridge: Polity Press.

Buckingham, D and Burn, A (2007) 'Game-Literacy in Theory and Practice', *Journal of Educational Multimedia and Hypermedia*, 16.3, October 2007, 323-349

Burn, A. (2004) 'From The Tempest to Tomb Raider: computer games in English, media and drama', *English, Media, Drama* 1(2): xx-xx

Burn, A. (2005) 'Potter-Literacy – from book to game and back again; literature, film, game and cross-media literacy', in *Papers: Explorations into Children's Literature*, 14(3), 5-17

Burn, A and Durrant, J (2007) *Media Literacy in Schools: practice, production and progression*. London: Paul Chapman

Burn, A and Durrant, C (eds) (2008) *Media Teaching*, AATE and Wakefield Press

Burn, A (2010) 'Rules of Grammar, Rules of Play: Games, Literacy, Literature', in Locke, T (ed) *Beyond the grammar wars: A resource for teachers and students on developing language knowledge in the English/literacy classroom.*, London: Routledge

Burn, A (2011) 'The Skeleton in the Seminar: Teaching and Learning in Virtual Worlds'. iVERG proceedings 2010, 1-12.

Burn, A and Durran, J (2013) 'Playing Shakespeare: Macbeth – Narrative, Drama, Game'. In *Teaching English*, National Association for the Teaching of English. Issue 1, February 2013.

Carr, D. (2012) Interpretation, Conflict and Instruction in Online Multiplayer Games: Lessons from Warsong Gulch" in *Computer Games / Players / Game Cultures: A Handbook on the State and Perspectives of Digital Game Studies*, edited by J Fromme and A Unger. Publ: Springer.

Carr, D (2010) Constructing disability in online worlds: conceptualising disability in online research. *London Review of Education*. 8.1, March 2010. 51-61.

Carr, D, Buckingham, D, Burn, A, Schott, G (2006) *Computer Games: text, narrative, play*, Cambridge: Polity

Carr, D and Oliver, M (2009) Tanks, Chauffeurs and Backseat Drivers: Competence in MMORPGs. *Eludamos. Journal for Computer Game Culture*. 2009; 3 (1), p. 43-53

Carroll, J (2002) 'Digital Drama: a Snapshot of Evolving Forms', *Melbourne Studies in Education*, Vol. 43, No.2, November 2002, 130-141

Carroll, J. Anderson, M. & Cameron, D. (2006) "Real Players? Drama, technology and education." Trentham, Stoke on Trent.

Carroll, J. (2009) "Point of view: Linking applied drama and digital games", Ch 4 in Anderson, M. Carroll, J. and Cameron, D. (eds.) (2009) *Drama education with Digital Technology*. Continuum, UK. London

Carroll, J and Cameron, D (2005) 'Machinima: digital performance and emergent Authorship', *Proceedings of DiGRA 2005 Conference: Changing Views – Worlds in Play*.

Clarke, A and Mitchell, G (eds) (2007) *Videogames as Art*, London: Intellect

Colvert, A (2009) Peer Puppeteers: Alternate Reality Gaming in Primary School Settings. *Breaking New Ground: Innovation in Games, Play, Practice and Theory*. Proceedings of DiGRA 2009

Connolly, T, Boyle, E, MacArthur, E, Hainey, T and Boyle, J (2012) 'A systematic literature review of empirical evidence on computer games and serious games'. *Computers & Education*, Volume 59, Issue 2, September 2012, Pages 661–686

Cope, B and Kalantzis, M (2000) (eds) *Multiliteracies: literacy learning and the design of social futures*. Melbourne: Macmillan

Durrant, C and Green, B, 'Literacy and the new technologies in school education: Meeting the L(IT)eracy challenge', *Australian journal of Language and Literacy Education*, 23, 2, 2000

Duncum, P (2005) 'Visual Culture Art Education: Why, What and How. In *Critical Studies in Art and Design Education*. Ed Hickman. Bristol: Intellect. 2005.

Egenfeldt-Nielsen, Simon (2007). *The Educational Potential of Computer Games*. Continuum Press.

Frasca, G (2001) 'Videogames Of The Oppressed: Videogames As A Means For Critical Thinking And Debate'. MA dissertation, Georgia Institute of technology.

Gee (2000) 'The New Literacy Studies; form "socially situated" to the work of the social' in Barton, D., Hamilton, M. and Ivanic, R. (2000) *Situated Literacies: reading in context*. Routledge: London. pp. 180-196

Gee, J (2003) *What Video Games have to Teach Us about Learning and Literacy*, London: Palgrave

Heidegger, M (1954/1977) "The Question Concerning Technology," *Basic Writings* Ed. David Farrell Krell (Harper & Row, 1977), 287

Huizinga, J (1944) *Homo Ludens; A Study Of The Play-Element In Culture*. London: Routledge & Kegan Paul.

Jenkins, H (2006) *Convergence Culture: Where Old and New Media Collide*, New York: NYU Press

Juul, J. (2005) *Half-Real: Video Games Between Real Rules and Fictional Play*. Cambridge, MA: MIT Press

Kirriemuir, J. and McFarlane, A. (2004) *Literature Review in Games and Learning*. Bristol: NESTA Futurelab

Kress, G. and Jewitt, C. (eds.) *Multimodal Literacy*, New York: Peter Lang

Kress, G and van Leeuwen, T (1996) *Reading Images: the Grammar of Visual Design*, London: Routledge

Kress, G and van Leeuwen, T (2001) *Multimodal Discourse: The Modes and Media of Contemporary Communication*, London: Arnold

Laurel, B. (1991). *Computers as theatre*. Menlo Park, Ca.: Addison Wesley.

Lankshear, C and Knobel, M. (2006) *New Literacies: Everyday Practices & Classroom Learning*. New York: Open University Press.

Lankshear, C & Knobel, M (2003) *New literacies, changing knowledge and classroom learning*, Open University Press, Buckingham

Livingstone, I, and Hope, I (2011) *Next Gen: Transforming the UK into the world's leading talent hub for the video games and visual effects industries*. London: NESTA

- Mackey, M (2011) *Narrative Pleasures in Young Adult Novels, Films and Video Games*. London: Palgrave MacMillan.
- Manovich, L (1998) *The Language of New Media*, Cambridge MA: MIT Press
- McClarty, K, Orr, A, Frey, P, Dolan, R, Vassileva, V and McVay, A (2012) 'A Literature Review of Gaming in Education'. Pearson Research Reports, at <http://www.pearsonassessments.com/research>.
- Maybin, J. (2000) 'The New Literacy Studies: context, intertextuality and discourse' in Barton, D., Hamilton, M. and Ivanic, R. (2000) *Situated Literacies: reading and writing in context*. Routledge: London. pp. 197-209
- McKee, H and Porter, J (2009) Heidi A. McKee & James E. Porter: 'Playing a Good Game: Ethical Issues in Researching MMOGs and Virtual Worlds'. *International Journal of Internet Research Ethics*. 2.1. February 2009.
- Merchant, G., Gillen, J, Marsh, J & Davies, J. (2012) *Virtual literacies: interactive spaces for children and young people*. London: Routledge.
- Merchant, G. (2010) 3D Virtual worlds as environments for literacy teaching. *Education Research* 52:2 (pp.135-150)
- Murray, J (1998) *Hamlet on the Holodeck*. Cambridge MA: MIT Press
- Newman, J. (2004) *Videogames*, London: Routledge
- Nixon, H. (1998) 'Fun and games are serious business', pp. 21-42 in J. Sefton-Green (ed.) *Digital Diversions: Youth Culture in the Age of Multimedia* London: UCL Press
- Oram, B and Newman, J (2006) *Teaching Video Games*. London: bfi.
- Partington, A and **Buckingham, D** (2012) 'Challenging theories: conceptual learning in the Media Studies classroom', *International Journal of Learning and Media*, 3(4), pp.7-22.
- Reid, M, Burn, A, Wall, I (2013) *Screening Literacy*. London: bfi.
- Salen, K. and Zimmerman, E. (2004) *Rules of Play; Game Design Fundamentals*. Cambridge, MA: The MIT Press
- Schott, G and Burn, A (2004) 'Art (Re)production as an Expression of Collective Agency within Oddworld Fan-culture', *Works & Days*, 43/44, 22(1&2), pp 1-24; reprinted in Clarke, A and Mitchell, G (eds) (2007) *Videogames as Art*, London: Intellect
- Snow, Charles Percy (2001/1959). *The Two Cultures*. London: Cambridge University Press.
- Squire, k (2011) *Video Games and Learning: Teaching and Participatory Culture in the Digital Age*. New York: Teachers' College Press.



- Squire, K. & Jenkins, H. (2004) 'Harnessing the power of games in education'. *Insight (3)*1, 5-33.
- Steinkuhler, C, Squire, S and Barab, S (2012) (eds) *Games, Learning, and Society: Learning and Meaning in the Digital Age*. Cambridge: Cambridge University Press.
- Street, B. (1984) *Literacy in Theory and Practice* Cambridge: CUP
- Street, B (2003) 'What's "new" in New Literacy Studies? Critical approaches to literacy in theory and practice'. *Current Issues in Comparative Education*, Vol. 5(2)
- Sutton-Smith, B. (2001) *The Ambiguity of Play*, Boston: Harvard University Press
- Sweeny, R (2010) 'Pixellated Play: Practical and Theoretical Issues regarding Videogames in Art Education'. *Studies in Art Education* , Vol. 51, No. 3 , Spring 2010
- Thomas, A., Ely-Harper, K. & Richards, K. (2014). Virtual Macbeth: Using virtual worlds to explore literary texts. In: L. Unsworth & A. Thomas (Eds.). *English teaching and new literacies pedagogy: Interpreting and authoring digital multimedia narratives*. New York: Peter Lang.
- Vygotsky, L.S. (1931/1998). 'Imagination and creativity in the adolescent' (1931) *The collected works of L.S. Vygotsky*, vol. 5, 151-166