The potential for videogame learning in a South African distance education environment*

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Abstract

This article examines the potential for a videogame-based pedagogy in a South African open and distance learning (ODL) environment, wherein videogame interactivity might address the absence of individualised tuition. The discipline of Classics is utilised as a working example, with its primary educational elements, namely the study of history and culture, illustrating the broader appeal of a videogame-based pedagogy that can be deployed to courses ranging from anthropology to cultural and media studies, to history and even art. In largely literature review format, this article first assesses the representation of these elements in commercial videogames, before concentrating on user-modified videogame scenarios ('mods'), and the employment of easy to understand 'toolsets' for creating such course specific content. The creation of such content using these 'toolsets' and other means (eg, free-to-play games) enables lecturers to construct unique videogame learning environments (VGLEs) for teaching purposes. Modern pedagogical principles are also brought to bear upon this notion of a videogame-centred multimedia approach to student-centred learning to properly situate it within the parameters of current educational practice. Finally, the pros, cons, and particular challenges of the use of a VGLE within the South African educational environment are considered.

Keywords: videogame, multimedia, pedagogy, tertiary education, open-distance learning, classics, student-centred learning

INTRODUCTION

Computers are already a part of education in South Africa. But is the extremely limited use of e-learning in South Africa enough when internationally renowned universities have already been employing videogames for several years in order to teach a variety of their courses? This article presents a survey of the existing literature concerning the teaching potential that is inherent in the videogame medium, potential evident in unique game scenarios designed and implemented by enterprising lecturers who wish to replace staid notes and textbooks with a vivid, instructional, and entertaining approach to their subject matter.[1] The

primary research problem that this article attempts to engage with is a question of whether videogame pedagogy can be successful in a country like South Africa. It is my contention that it can be extremely successful, although it is important to note that the study was neither conducted through experimentation nor personal observation. Rather, it was an attempt to bring to light an as yet unutilised teaching and learning methodology (in South Africa that is) so that its positive and negative attributes may be emphasised, and its utility examined. While e-learning systems like the University of South Africa's (Unisa) *my*Unisa are presently utilised in tertiary open distance learning (ODL) environments, as an extension of this approach videogame learning requires its own examination. To this end, the discipline of Classics – the study of ancient Greece and Rome – will function as an illustration of what is possible for the lecturer, because key elements of this discipline can be seen to reveal the broad-ranging appeal of a videogame pedagogy in courses as diverse as art, anthropology, media and cultural studies, and history. The article therefore begins by assessing the overall appeal of gaming before progressing to the present state of the representation of ancient Greece and Rome in commercially available videogame content. From there, the discussion shifts to examine which type of games are most suited to use as learning platforms, before finally engaging with the development of 'mods', user-modified content for videogames, that could potentially be used to create scenarios in which students could become thoroughly immersed in their learning environment.

Even South African schools are making use of e-learning in a number of ways based on their individual resources – from the humble PowerPoint presentation utilised to illustrate a lesson, to the use of Twitter to keep students informed of developments in their studies. As for the 2013 school year Clifton School in Durban has, for example, purchased 40 Apple iPads for classroom use, intending not only to ensure that its students remain up-to-date with the latest technologies, but also that they do so in a paperless learning environment. Through this Electronic Learning Project, students utilise iPads individually, while interfacing with their teacher's own system via the school's network. The teacher creates presentations using the *Nearpod* application allowing for the teacher to pass on information to students in the form of notes created beforehand, and even permitting the insertion of 'pop-up' questions for students to answer during their classes. *AirServer* allows for the results of such questions and worksheets to be presented for the class using a data projector for further discussion. Aside from the fact that the technology replaces traditional paper-based teaching methods, there is no real difference in pedagogical approach, with the technology being used to augment the learning outcomes of particular classes. Thus far, the initiative has been extremely well received (Boniaszczuk 2013).

Using videogames in a similar manner to this does, however, require a very different approach. The resources of the South African education system are devoted to providing more traditional educational materials to public schools and so cannot be seen as a reliable source for technologically motivated approaches to teaching like the Clifton School Electronic Learning Project, meaning that iPad classes remain the preserve of the more affluent private schools. Conversely, South African universities are far better equipped with computer facilities that allow lecturers to set class tests for their students that are instantly assessed using platforms like Moodle, and creating a means via which notes and ideas may be passed from lecturer to student and vice versa utilising systems like *my*Unisa. Unfortunately, none of these examples makes use of the full capabilities of the modern personal computer, and this is precisely what a videogame-based pedagogy could achieve, particularly in the ODL environment which, even in South Africa, is trending towards an e-learning perspective in order to replace more traditional teaching methods.

Videogames are often the first introduction to ancient history that any student receives (Christesen and Machado 2010, 107), assembling the roads of ancient Rome with mouse-clicks or battling the titans with a Playstation controller. The teaching of ancient history and classical culture has, in recent years, made other ventures into the realms of e-learning, including the Perseus Project website, an online assemblage of ancient Greek and Latin texts for reference purposes, and the Perseids platform (linked with Perseus) which seeks to collaboratively translate these same texts in the digital domain (sometimes with student input). Specific examples of teaching ancient history or culture electronically include Roger Travis' work, a collaborative blog entitled *Play the past*, which examines the convergence of 'cultural heritage' and gaming, and his own *Living Epic* blog, concentrating more particularly on the ancient world and gaming (Travis 2008–2014). He also offers courses at his university, dubbed 'practomimes', which teach with the aid of videogames.

As a relatively new but highly influential aspect of the twenty-first century learning environment,[2] can videogames offer the potential to provide ODL with nuanced, realistic, and critical perspectives on courses ranging from history to cultural and media studies, in a manner that may even surpass the sensational influence of film? This question is at the heart of the article, which approaches it by first discerning whether the overall appeal of videogames is broad enough to permit their wider application in a number of ODL courses, then moving on to assess the present state of the videogame representation of ancient Greece and Rome, before finally concentrating on the particulars of learning through a videogame learning environment (VGLE) as an element of a twenty-first century multimedia approach to teaching[3] that examines both present and accepted

representations of the ancient world alongside the pedagogical application of a VGLE experience of antiquity for students. Although this article takes the form of a literature survey, its arguments and the twenty-first century teaching perspective that it presents are informed primarily by work on modern experiential learning and videogame pedagogy as expressed by James Paul Gee. In this way, the article seeks to encourage lecturers in ODL contexts to consider the utilisation of videogame learning for their own courses.

THE 'GAMER': STEREOTYPE VERSUS REALITY

Gaming is traditionally perceived as a male-oriented amusement, with the stereotype of the pimply-faced teenage boy who plays videogames alone for hours on end – the so-called 'gaming addict' who is an obvious dyssemic and social outsider – being a very familiar one.[4] Many more women are playing videogames,[5] and even co-opting the formerly male space of first-person[6] shooter games by forming guilds of their own.[7] Recent demographic studies have also challenged the preconception of gaming as a space dominated by children and teenagers, noting that two-thirds of all gamers are over the age of 18.[8] In addition, single middle-aged women are presently the most frequent gamers, playing dozens of online card and puzzle games every day (Gee 2003, 11). Even in South Africa, the latest technological products are considered 'must have' items by those of school and university-going age, with the recent 'Generation Next Survey', targeting 6 000 South Africans between the ages of 8 and 22 with brand-related marketing questions, revealing that young South Africans see state of the art products like Apple's iPhone, iPad, and Mac personal computer as the 'coolest' products (Just Curious 2013). What this indicates is that a high level of technological interest and proficiency (indeed, higher perhaps than seen in many previous generations) is prevalent among the young women and men that will soon be, or presently are, part of tertiary education in South Africa. Gaming is thus a form of entertainment that is, at the very least, not entirely foreign to the generation of South Africans who spend some of their free time engaging in the multiplicity of smartphone games and social amusements. Additionally, according to Ramone Pickover, gaming category manager for online shopping website Kalahari.com, 'At the end of 2011, the [South African videogame] industry surpassed the R1.7 billion mark; it has also enjoyed year-on-year growth' (Anon. 2012). This is clearly indicative of the penetration of videogames and gaming into South African society, meaning that it is not a pursuit undertaken solely by social outcasts. Furthermore, since 2005 it has even been possible to be awarded provincial and national sporting colours for gaming (Parker 2013). The appeal of gaming has thus spread to mainstream society in South Africa, to both

men and women alike, and thanks to the popularity of MMORPGs (Massively Multiplayer Online Roleplaying Games) like the phenomenally successful *World of Warcraft*, it has evolved into a highly social and interactive experience as well (Cole and Griffiths 2007, 581–582). It should therefore be perceived as an important practice for educators to engage with, a practice that can excite, entertain *and* educate students in an innovative manner. But before the analysis of the pedagogical potential of videogames can begin, the current status of the representation of the ancient world in gaming must be assessed in order to determine what is presently available to gamers.

THE REPRESENTATION OF THE ANCIENT WORLD IN VIDEOGAMES

Ancient Greece and Rome are often found in strategy games – simulations providing complete control of an army or empire's development.[9] Some strategy games like the highly successful *Age of Empires* (1997)[10] characterise history as a continuous and interconnected process (Bogost 2007, 123), tracing the development of human society from the early Stone Age to the Classical period, while the game's expansion, *The Rise of Rome* (1998), continues events into the Roman Empire. *Rome: Total War* (2004) is a critically acclaimed strategy title focusing particularly on the recreation of ancient warfare, by giving the gamer control of individual units of Roman soldiers on the battlefield. The designer of *Rome: Total War*, Stuart Bishop, commented that the game is 'historically accurate up until the point where that interferes with gameplay, because gameplay is king' (Ghita and Andrikopoulos 2009, 116). This indicates that the mechanics of combat were altered to increase the overall playability of the game. It is often the case that game designers select the most spectacular elements of history to bolster a videogame's storyline, as opposed to maintaining strict factual accuracy – 'there is no Pompeii without an eruption, no Macedonia without an Alexander, and no Nero without fire' (Lowe 2009, 77).[11]

Other videogames, however, emphasise different aspects of history, with the *Civilization* (1991 to present) series of videogames[12] concerned with interactions between different peoples and cultures, through trade, warfare, and discovery. *Caesar III* (1998) and *Zeus: Master of Olympus* (2000) shift strategy to the realm of individual city construction. *Caesar III* allows the gamer to found and construct a Roman city, while grappling with typical problems such as hygiene and invading barbarians (Ward 1998), while *Zeus* concerns itself with the Greek cityscape, complete with an agora or marketplace, and arguing philosophers (Butts 2000). Room is always left for deviations from historical reality with mythical creatures and deities appearing as well. In *Rome: Total War*, the deviation from historical fact to computer-generated 'reality' led a group of ancient militarists

and historians to create a highly popular modified version ('mod') of the game called *Rome: Total Realism* (2005), which offers a more precise representation of ancient soldiering.[13] Ghita and Andrikopoulos (2009, 120) argue that education occurs 'subtly' through this game, providing accurate information to anyone willing to learn. Can this 'education' be meaningful? Would such subtle rule 'tweaks' effected to maintain historical accuracy be significant to the average student? Before reflecting more completely on these questions, the roleplaying game (RPG) must be examined for its pedagogical potential as well.

Figure 1: Screenshot of Augustus Caesar as seen at game setup in *Civilization V*

VIDEOGAME LEARNING IN THE MODERN RPG

The computer RPG is capable of bringing an interactive, first person perspective to historical and social relations, lending excitement to what might otherwise appear to be an interactive documentary or simulation. What differentiates

documentary from RPG is that the gamer becomes 'utterly immersed' in the game world by virtue of directly controlling one of its inhabitants (Nichols, et al 2006, 74). The student's perspective can therefore alter the videogame as well, contributing to the uniqueness of every possible learning experience. While strategy games grant 'godlike' control over the development of a society, the experience is neither personal nor individualised, and not nearly as immersive. RPGs grant such control over an individual character, providing a thoroughly immersive view of the constructed reality of the game.

James Gee (2007, 10), a proponent of videogame learning, argues that learning is a pleasurable activity, which would suggest that videogame learning should privilege both the educational and entertainment value of a game equally. Furthermore, learning occurs through 'situated meaning' in the videogame context, a process whereby meaning is given to an educational experience through specific circumstances (Gee 2007, 3). To explain, Karam and Kirby-Hirst (2011) posit that in the similar context of the combination of a film and its videogame tie-in,[14] an inherent pedagogical potential is formulated through the creation of 'reality worlds', an approach that brings to life a 'reality world' capable of representing history or culture with surprising detail, and oftentimes, great authenticity. If one considers that every academic discipline – from history to economics – is in essence a 'reality world' of its own, then at present it is apparent in South Africa that accessing these worlds occurs primarily through the prescribed books of a course. It is also the case that many students are forced to engage with these often complex works from the third or even fourth language perspective, resulting in a great deal of struggle and even failure to understand the relevant subject matter.[15] However, a videogame can expand on important concepts or factual information through a personalised learning experience which has been carefully constructed by the lecturer, thus allowing students to create their own meaning in a graphically represented videogame environment that is sometimes even independent of language.

The only videogame genre truly capable of providing a personal experience is the modern RPG. While early examples such as *Zork* (1980) and the *King's Quest* series (1984–1998), offered linear, one-dimensional plots to gamers, current RPG like the *Elder Scrolls* series (1994–present), especially the recent *Morrowind* (2002), *Oblivion* (2006), and *Skyrim* (2011) offer almost limitless choice in how their story proceeds. This choice translates directly to the manner in which the game may be developed into a VGLE and is reflected in the manifold scenarios that can be constructed by a lecturer. In this way, the ability to make decisions in-game empowers students to create their own knowledge, derived from and constructed through the interactive gaming process.

Game such as these are sold with 'modding' technology that allows for the creation of modified versions of the game ('mods'), readily providing lecturers with the necessary toolkits for creating VGLEs focussed on historically and culturally-oriented learning. The 'Elder Scrolls Construction Set' – sold with the game *Morrowind* – is an easy to understand, user-friendly toolkit allowing gamers to build their own structures, towns, characters, and quests, by utilising the coding of the game, and by extension, it would permit lecturers to create learning-oriented quests and adventures for easy use in university computer laboratories.
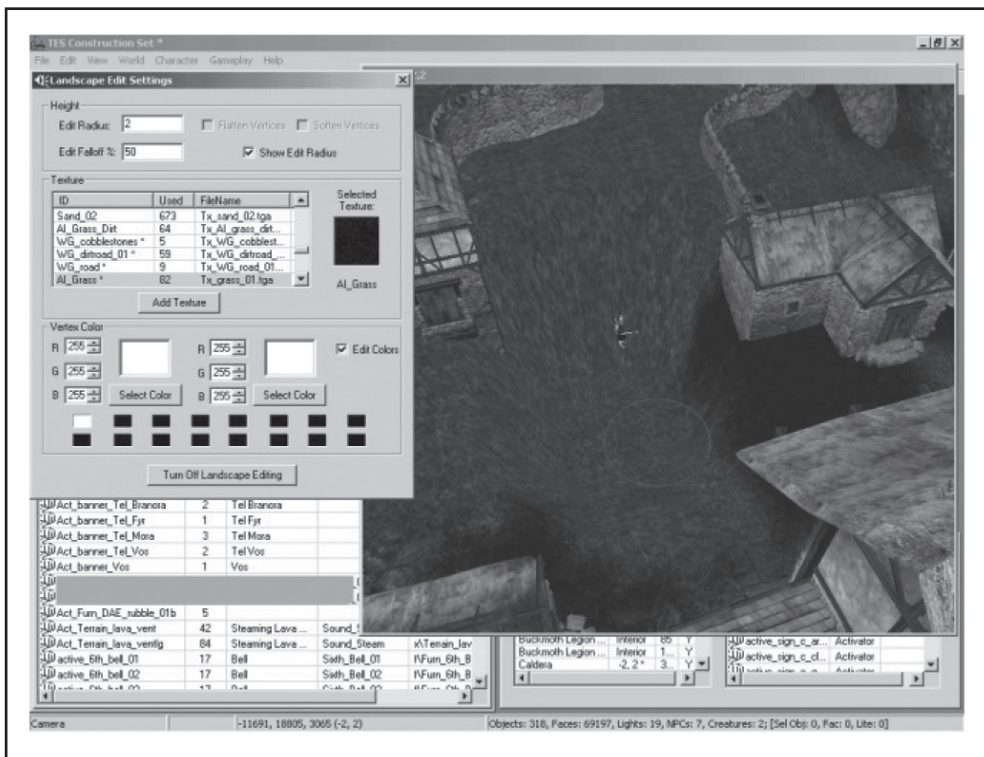
Figure 2: Screenshot taken from the 'Elder Scrolls Construction Set' in action (http://planetelderscrolls.gamespy.com/View.php?view=Articles.Detail&id=89)

The Massachusetts Institute of Technology employed a similar RPG called *Neverwinter Nights* (2002) and its accompanying 'Aurora Toolset', in creating an educational 'mod' proving this concept. The 'mod', called *Revolution* (2004), simulated the town of Williamsburg and its inhabitants during the American Revolution of 1776. Students controlled unique avatars – digital representations of people – through which they explored the colonial town and interacted with locals to learn about life during this historical period. The experience was enhanced

through their avatars' individually pre-programmed backgrounds, which ranged from 'an upper class lawyer, to a patriotic blacksmith, to an African American house slave' (Bogost 2007, 335). In this way, students were offered a distinct impression of Williamsburg and its inhabitants, bringing a unique perspective to a multitude of historical concerns.

Figure 3: An avatar from Revolution (http://www.indiecade.com/images/selected/ revolution-2.jpg)

'SERIOUS' EDUCATIONAL VIDEOGAMES

Revolution is an example of a 'serious' game – a videogame designed primarily for an educational purpose, and distinguished from other entertainment-centred videogames (Adams 2009). Michael and Chen (2006, 38) argue that four criteria govern the success of a 'serious' game: firstly, the 'active involvement and stimulation of all players'; secondly 'sufficient realism to convey the essential truths of the simulation'; thirdly the 'clarity of consequences and their causes both in rules and gameplay'; and fourthly the 'repeatability and reliability of the entire process' as a teaching and testing mechanism. Gee (2003) takes this framework further, developing it into the essential principles that he sees as governing the success of any pedagogically-oriented videogame, which if

applied to commercial RPGs, can foreseeably grant an innovative view of a particular field of study to twenty-first century students, providing them with 'reality worlds' (Karam and Kirby-Hirst 2011) enhanced by 'situated meaning' (Gee 2007, 3) for them to explore and learn from. What follows is a discussion of how learning occurs through the use of a videogame learning environment shaped by Gee's learning principles. This is then linked with an illustration of how these requirements might be adhered to through 'modding' software like the 'Elder Scrolls Construction Set' or 'Aurora Toolset', which would permit even a lecturer with a modicum of computer knowledge to formulate scenarios for student engagement relatively easily.

'SERIOUS' EDUCATIONAL VIDEOGAMES: 'ACTIVE INVOLVEMENT AND STIMULATION'

Michael and Chen (2006, 38) begin their description of 'serious games' by calling for the 'active involvement and stimulation of all players'. In a similar manner, Barbatsis et al, (2011, 60) define the 'serious' game by its twin objectives of 'entertainment' and 'learning', arguing that these must *both* be satisfied to create a successful learning environment. Although Michael and Chen (2006) note that a 'serious' game should 'stimulate' students, this appears to be a relatively minor concern next to its learning potential, while Gee and Barbatsis et al seem to envision learning and entertainment as more of a complex of two intertwined entities. Therefore, a game with educational intent should do more than merely 'stimulate' its users, it must entertain and excite as well. Here, 'learners construct understanding by interacting with information, tools, and materials, as well as by collaborating with other learners' (Dickey 2005, 441). While the notion of students becoming actively involved in the learning process is a key element of modern pedagogical practice, it is amplified through the use of a videogame platform. The level of entertainment brought to bear by a commercially derived VGLE can foreseeably counteract any potential lack of student interest, through simultaneously engaging the critical faculties of students in decision-making and in the assimilation of available knowledge, especially when one considers that, as Sherry (2013, 12) observes, 'in general, children believe that educational games pale in comparison to the production quality of commercial games'. Learning that occurs as part of the enjoyment of gameplay is often better received than a game with a foregrounded pedagogy, as Stivison (2013) illustrates, stating that the more successful 'serious' games provide enjoyment for players while teaching concepts and underlying ideologies *through* the course of play – 'Ask a *Risk* or *Axis & Allies* [sic] player which countries border France, and they'll know

immediately without having to Wikipedia the answer'. The highly interactive nature of a VGLE can thus be said to engage this active learning faculty in students, empowering them to assemble their own knowledge through gameplay that is augmented by the 'situated meaning' of the game environment, thus mirroring constructivist perspectives on active learning in general pedagogical experience.[16]

Experiential learning that occurs within the context of an interactive gaming environment arises because of its inherent 'situated meaning' (Gee 2003, 209). This is learning that is impossible from the perspective of a more traditional textbook-bound student. Constructivist learning approaches envision active student participation in knowledge creation, the relevance of which is increased through involving students in unique situations experienced within a videogame. The information the student learns not only transforms how the history or social interactions they experience are perceived, but also leads to broader applications as well (Lowe 2009, 83). Therefore, when tested, the student is able to connect learnt facts with recollected game experiences in a manner that sees the VGLE reinforcing the information learnt in a highly vivid, memorable, and entertaining manner because it is no longer raw data to be studied, but information that is situated within a specifically relatable context, and discovered through the student's own personal experimentation and individual inquiry (Gee 2003, 211). Nonetheless, for a VGLE to function correctly it must possess realistic qualities for it to seem believable.

'SERIOUS' EDUCATIONAL VIDEOGAMES: 'SUFFICIENT REALISM'

The need to establish a sufficiently realistic VGLE is Michael and Chen's (2006, 38) second criterion, which dictates that for a game to be educationally viable it should realistically resemble the world upon which it is based so that the student's initial disbelief in the virtual environment is assuaged. *Civilization* illustrates this process by faithfully representing details that contextualise the game and ground it in historical reality, for example, only the 'Roman' civilisation has the use of 'Praetorian' units, and only the 'Greek' civilisation utilises the 'Phalanx'. It is, however, the case that such strategy games only treat certain elements of history accurately, with, for example, a society's technological progress being relatively easy to simulate,[17] while a more esoteric concept like religion is not, and it is only the recent expansion to *Civilization V* (2010), entitled *Gods and Kings* (2012) that attempts to illustrate the evolution of religious ideas with any detail.

'SERIOUS' EDUCATIONAL VIDEOGAMES: 'CLARITY OF CONSEQUENCES'

Thirdly, cause and effect should be predictable in the game world, thus allowing for a student's actions to have logical and clearly explicable effects. These might be obvious – decapitating an enemy results in immediate death – or might not be readily apparent – preventing a man from beating his wife results in the man and his friends trying to exact revenge later on. Unreliable cause and effect patterns strain the belief (or disbelief) of students, making for an unreliable teaching tool, which can lead to students suffering an extreme disconnect from the VGLE. When the student's belief in the realism of the environment is broken, the teaching potential of the VGLE is lost as it becomes little more than a gimmick in the eyes of the student – something meant to 'trick' them into learning. But this realism of the VGLE takes two forms, 'perceptual' realism, in which the world created by the game appears true to life, and 'social' realism, in which the student's interactions with others are accurately played out (McMahan 2003, 75–79). It is in the 'social' realism of the VGLE that there is a potential for student embarrassment, as is so often the case in the classroom or lecture hall setting. A fumbling and socially inept interaction with another student's digital avatar could still create embarrassment for the student that is otherwise circumvented in a VGLE (Gee 2003, 62, 67), a virtual environment in which the majority of characters that the student interacts with are themselves all virtual and so their responses are safely removed from the student's reality.

Another example of the safety provided by videogames is seen in the 'save game' feature, which allows the student to test outcomes and consequences without fear. The ability to test distinct methodologies or outcomes is one of the most useful features of videogame pedagogy, in that it allows students to use a multitude of different means of overcoming the same problem, all of which stem from the individual's own abilities and style of problem-solving (Gee 2003, 209). This is particularly true of so-called 'sandbox' games, so named because of the fact that, much like in a child's sandbox, almost anything is possible within the game environment, leaving the student to decide how learning occurs. The *Elder Scrolls* roleplaying games are examples of 'sandbox' games that create a space for students to utilise differing skills and approaches in achieving their goal. Thus, lateral thinking is encouraged, unlike in many educational situations in which the outcomes are emphasised to the exclusion of methodology. In the world of videogames, there are always many ways to accomplish one's goals, always distinct effects to accompany one's actions, with for example, the game *Deus Ex: Human Revolution* offering three broad strategies to achieving objectives: killing the enemy, sneaking around them, and occasionally even talking one's way past

them. Each approach emphasises a different skill set in the individual and speaks to a distinct problem-solving technique, but all end with the gamer being able to 'solve' or beat the game, a specific effect connected to the gamer's actions. This is however meaningless in an educational context without the ability to accurately gauge the progress of students.

'SERIOUS' EDUCATIONAL VIDEOGAMES: 'REPEATABILITY AND RELIABILITY'

The 'repeatability' of a gaming experience is what allows it to be used as an instructional medium and ultimately employed as a mechanism for student assessment, for without consistent testing, videogames cannot be employed in an educational situation. An egalitarian testing process is also possible given that videogame learning does not privilege a single form of information like text, but instead allows learning through various modalities (Gee 2003, 209). While this can also be true of any twenty-first century multimedia learning environment, the experiential learning occurring within a VGLE includes the simultaneous use of visual, auditory, and kinetic elements along with the information being taught. Whether it is underprivileged students who are studying in English and struggling because it is their third or even fourth language, or students whose learning is simply enhanced by being able to connect concepts with images, a multimodal approach allows a VGLE, combined with conscientious facilitation on the part of the lecturer, to cater for differing styles of learning, and indeed, even sometimes make a particular event or experience more memorable because of it.

Giving students from different backgrounds and from different levels of computer proficiency an equal opportunity of immersing themselves in the same VGLE is a notion emphasised by Vygotsky's (1978) 'zone of proximal development'. By selecting the difficulty level most commensurate with their capabilities, a game provides students with a challenge that is never insurmountable, thereby increasing confidence with both subject material and computer techniques and developing students' capabilities. This is because the difference between students' actual abilities and the capabilities they need to master in order to complete a task set forth in a VGLE necessarily encourages the growth of the student (Vygotsky 1978, 86). Monitoring the videogame's difficulty setting is also a useful tool for the lecturer, as this tailors the scenario to the individual student's specific capabilities, allowing every student to achieve success and so reap its rewards when assessment takes place (Gee 2003, 61–62, 67).[18] Thus, a videogame may function as a learning tool in even the most varied of tertiary education environments, including ODL, with students who are entirely

unfamiliar with gaming, or even with the use of a computer for that matter, playing on the easiest of the available difficulty settings, while more technologically proficient students utilise the game platform on a higher difficulty, seeing both learning and satisfaction result for every student. The following section draws together these theoretical perspectives in order to illustrate how they may be applied to university learning with a potential example 'mod' drawn from the teaching of ancient Rome.

Figure 4: In-game screen capture showing the heavy armour of the 'Imperial Legion' from Skyrim (2011) – largely styled after the *lorica segmentata*, segmented plate armour of the ancient Romans

A THEORETICAL EXAMPLE ILLUSTRATING THE USE OF A LECTURER-MODIFIED VGLE

A simple detective-style quest 'mod' set in ancient Rome can be used to illustrate the varied learning potential available through a modified videogame. The videogame 'mod' would be easily constructed by the course lecturer, utilising one of the previously mentioned 'modding' toolsets. These toolsets do not require any programming knowledge to utilise, are extremely user friendly, and relatively easy to learn. Once the lecturer has spent time creating the 'mod' – to begin with, a few simple buildings, characters, a basic quest narrative to drive the action – it could be provided to students as a 'practical' element of their coursework.

The particulars of such a 'mod' might have students exploring the city of Rome for clues as to the whereabouts of a master spy. A small area of the city of Rome could be created as a starting point for the 'mod', with several distinct characters populating the learning environment (a centurion, a senator, and several commoners). Conversations with these townsfolk and interactions with objects in Roman-style buildings would provide a sound means for the students to construct a basic view of Roman daily life while still engaging in the overarching quest narrative and its specific gaming goals.

The political machinations of several Roman senators (their characters created by the lecturer) who attempt to interfere with the students' investigation could be used as quest background. Through this detail, students gain insight into the Roman Republican system of government whilst carrying out their search of the city. And what is more, additional forms of Roman architecture or art could be illustrated within the same context, as could elements of the Roman judicial system, once the students complete the quest goal of capturing the master spy. While students' learning experience could be prematurely curtailed if they were, for example, only offered one attempt at successfully unmasking the spy, the game scenario could offer the students various avenues of investigation to build up a 'profile' of the master spy. These activities might range from uncovering physical evidence like hidden notes scribbled in Latin (which the student must translate), to questioning citizens who may have crossed paths with the spy. While yielding a similar result, each avenue of investigation relies upon different student skills. Modifying the game's difficulty level would impact upon the artificial intelligence (or AI) of the videogame's characters, providing a more difficult message for the students to translate, making it more challenging to persuade citizens for information, and perhaps even to fight off thugs that the spy may have hired to force the student off the pursuit. Should the students be afforded the ability to test different outcomes or methodologies through 'saving'

the game's progress, a variety of responses or reprisals to the students' accusations of espionage could be experienced, both increasing the entertainment value of the game and providing alternative perspectives on what was learnt in previous attempts. Such reprisals might include attempts by the character of a senator, whose pre-programmed personality would be written by the lecturer beforehand, to use his political connections in the senate to discredit the student's accusations, while a Roman centurion accused by the student may choose to have his soldiers harass the student detective, slowing the investigation.

The conclusion of this scenario would lead to the eventual unmasking of the correct game character as the spy. The lecturer facilitating the experience could program the spy to react to the accusation by assaulting the student's avatar, with the scenario thereby culminating in an exciting sword fight. Should a noteworthy Roman public space be chosen as the setting for this event, it could not only make for a highly memorable conclusion to the student's investigations, but also provide information concerning Roman weapons, armour, and even the significance of certain architectural forms in important Roman structures. The limitations of such a teaching scenario are really only imposed by the time that the lecturer is willing to spend learning and experimenting with the 'modding' software.

THE APPLICATION OF VIDEOGAME PEDAGOGY

Turkle (1985, 66–67) writes that 'videogames are something you do, a world that you enter, and, to a certain extent, they are something you "become"'. This degree of involvement with the subject matter can inspire students to interact with their course material at their own pace, using their own strengths, and making their own decisions regarding which knowledge to assimilate. Learning becomes an embodied experience within the VGLE and occurs through multiple modes of information transmission, from sound effects and speech to vivid action, so that no one form is privileged over another. Failure in a game-based learning environment means that one route to overcoming a difficult problem has been closed off and that others can still be tested. In these circumstances, the role of 'lecturer' is evolving, as through videogame pedagogy, the role of 'student' takes centre stage as they become responsible for actively constructing new knowledge for themselves.

Travis (2010) details his use of *practomimes* in the university classroom through the blogs *Living Epic* and *Play the Past*. He integrates games and computer programs into his teaching of everything from Homeric poetry to ancient mythology in what he refers to as 'performative play practice', even utilising his own blogs as elements in the teaching of an RPG-based course on

Herodotus and Greek history. Integrating videogames into a lecturer's teaching approach can entice students into attempting things they otherwise might not in a more traditional educational setting, directly involving them in their own education, and encouraging success that can be tested in examinations (Gee 2003, 61–62). International universities are already utilising videogames for educational purposes – Travis' *practomimes* are one such example, while in *Quests: Design, theory, and history in games and narratives*, Howard (2008b) offers specific advice on how lecturers might utilise the 'Aurora Toolset' to create scenarios that suit their specific teaching requirements.[19] His teaching plan for a course titled 'Writing for Interactive Media', which follows much of what he writes in his book, is also available on the Internet and intriguingly includes sections of 'Required Reading' for students, as well as 'Required Gaming' – play that illustrates what is read and taught in the other parts of the course (Howard 2008a).

A powerful game experience would allow for students to experience their studies from a variety of different perspectives (Gee 2003, 151). This potential can be harnessed through a fully interactive vision of almost any aspect of historical or culturally-based learning scenario that utilises the RPG as its experiential framework. Because students' personalised avatars are the vehicles through which they will be immersed in a given learning simulation, the first-person involvement that is characterised by the roleplaying game interface through which they control their avatars' interactions, has a direct bearing upon the learning taking place within the context of the game-world. While sensationalism may be important in expanding the entertainment value of a videogame, it is an element that, as in the case of the film studies, can be mitigated through either the active involvement of the lecturer, or the setting of a fact-finding task for the students, who can measure reality against sensationalised game fiction. It is therefore evident that the critical analysis of any period of history is entirely possible *whilst* a student labours within the context of a videogame, with passages drawn from the writings of eminent historians and witnesses even utilised to frame the situation as it develops, and being read *through the eyes of the student's avatar* as virtual books found within the VGLE itself. Indeed, the nuance and realism of a particular VGLE are only limited by the willingness and imagination of the lecturer and students concerned, as are its potential for enhancing the learning and discovery for students.

THE PROS AND CONS OF THE VGLE

While it is apparent from the article that the VGLE in fact presents a viable and exciting teaching alternative for any number of university courses, this approach

does have both positive and negative aspects to it. Several of the positive aspects of the use of the VGLE include the fact that videogames can introduce students to new worlds and new academic disciplines more easily than a dense textbook – whether it be learning the basics of trade and economics in *Civilization V* or Roman battle tactics in *Rome: Total War*. Secondly, using the roleplaying game as the vehicle through which students experience a VGLE will provide a unique 'I was actually there' perspective for students engaging in particularly visual or experiential coursework (eg, an investigation of ancient Roman architecture), while the 'godlike' perspective offered by strategy games presents a more global or systemic view suitable for learning broader concepts and ideas. Thirdly, 'modding' software attached to many state of the art games (eg, Skyrim) permits ready access for lecturers to high-end graphics and gameplay, thereby allowing for the creation of a VGLE that could potentially compete with any expensive commercial videogame. In this respect, Education-Entertainment thus provides both learning and entertainment value in a single package, satisfying the requirements for so-called 'Serious Games'. Fourthly, a VGLE offers a space for the active learning advocated by traditional constructivist principles. This experiential approach provides a realistic and logical environment for the testing of theories, new styles of problem-solving and learning through 'situated meaning'. Specific subject matter, theoretical perspectives, and broad concepts can then be examined through traditional testing. The academic and cognitive development of students is thus fostered through examination success and through overcoming the difficult (but not impossible) challenges of the VGLE.

In terms of the negatives against the use of the VGLE, although gaming among women is certainly gaining in popularity, it is still primarily a male-oriented pastime. VGLEs have to take cognisance of this gender 'divide' if they are to meet with any pedagogical success. Secondly, while the gaming industry in South Africa is thriving and expanding into every sector of South African society (few can say that they have not at least dabbled in a cellular phone or Facebook game in a moment of idleness or boredom), high-end gaming remains expensive and is thus the preserve of the more affluent sectors of South African society. Those students entirely unfamiliar with the concept of gaming will require both patient and relaxed tuition in order to build up their confidence and proficiency with this learning medium. Thirdly, factual accuracy is often surrendered in a videogame in favour of more exciting or simpler gameplay. This will need to be mitigated in a VGLE, for although simpler gameplay will enable any level of student to participate in game learning, factual inaccuracies would limit learning potential. The *Rome: Total realism* 'mod' is an example of a good balance of factual accuracy and gameplay.

CONCLUSION

Given South Africa's unique situation in which first and third world elements are to be found within the borders of the same country, the deployment of a VGLE, particularly in the ODL environment, will not be without challenges. The majority of the examples presented in the article speak to the use of a VGLE in the environs of a typical residential university of school classroom in which 'contact' teaching is possible. ODL institutions, however, are somewhat different. Dickey (2005) investigates the teaching of computer-based skills in ODL through the use of a VGLE. According to her study of an ODL business course, teaching elementary skills in the use of programs like Microsoft Word, and of an online course teaching 3-D modelling techniques (Dickey 2005, 441), the use of the freely available program *Active Worlds* (https://www.activeworlds.com/index.html) proved quite successful in creating a virtual learning environment that passed on knowledge to learners separated by great distance. There are two differences between Dickey's study of the use of *Active Worlds* and what is being proposed in the article: firstly, Dickey's study relates to the University of Colorado, Boulder, in the United States, a first world college campus; and secondly, the study conducted was specific to skills and content already native to the computer platform, namely basic computing skills in the use of business-related programs like MS Word, and the teaching of the creation of three-dimensional models using computer graphics. Suggesting that history, cultural and media studies, and other disciplines not directly related to the PC have the potential to be taught in a South African ODL situation is very different and much more challenging to creating skill-and-drill type exercises for MS Word.

In a traditional residential campus context, students could be permitted the use of a VGLE in a university computer laboratory, wherein a single university-wide licence would allow controlled access for any registered students. The laboratory-based installation would also enable lecturers to offer more hands-on tuition and assistance. However, an ODL institution necessarily limits opportunities for hands-on tuition. Nevertheless, the idea of laboratory-based use of a VGLE is possible for an ODL university that has satellite offices in various towns (as Unisa does around South Africa) in which registered students could make use of dedicated computer local area networks (LANs) for this purpose. In order to resolve this lack of a centralised campus LAN for students to utilise, several copies of the base videogame could be purchased by the university and temporarily licensed to small groups of students in a course. The game could even be charged to students' accounts (perhaps at a reduced or subsidised cost) and a DVD sent to them as part of their study material. In order to provide them with assistance, online forums could be established by the lecturer.

Another approach to the distribution of a VGLE to participating ODL students is found in the example of the online distribution platform, *Steam*. A free account allows anyone access to the platform, from which the required base videogame could be easily purchased, downloaded, and installed.[20] The only drawback to this largely online approach is the relatively poor penetration of fast Internet access in South Africa as broadband or 3G Internet makes for a much speedier download. Fortunately, once the download is completed, relatively few games require a constant Internet link in order to function. While this could be successful with high-end games, the expense is somewhat prohibitive, with a new game costing as much as R600 to download. Although *Steam* is renowned for its sales and special offers, this is too great an expense for a rural South African student to pay in addition to tuition fees and study material costs. A less expensive alternative would be to use a game like *Garry's Mod* for teaching as it typically retails for approximately R100. *Garry's Mod* is a sandbox or open-world game with no specific rules other than those set by the players themselves, and is infinitely modifiable. Because of this it can be simply and easily modified by a lecturer to create almost any scenario required by the VGLE, with the lecturer's specific 'mod' being uploaded free of charge to students.

A third alternative arises from the recent proliferation of free-to-play videogames on the Internet. These games are typically downloaded from the game's website without cost and the base game can be played entirely free of charge. The *Active Worlds* website studied by Dickey (2005) provides one such option, wherein a lecturer could create their specific VGLE as a 'world' on the *Active Worlds* site. Only the basic program software needs to be downloaded by students (free of charge), which then allows them to access the 'world' created by their lecturer, and enables them to create their own unique avatars for the online experience. A drawback of this alternative is that it requires a fast Internet connection (eg, at an Internet café) in order to act in the online 'world' created by the lecturer.

A final alternative, which is admittedly perhaps the best 'fit' for the socioeconomic realities of the South African ODL environment, is the use of the Augmented Reality Game (ARG). This is not a true videogame per se, but is a game played out largely in real life, with the aid of a cellular phone. Given the relatively high level of cellphone penetration into all levels of South African society, students would therefore already be equipped with the 'study material' (ie, the cellphone) and knowledge necessary to participate in a course-related ARG. A simple website, maintained by the lecturer, or even printed notes provided as part of student study material, would provide the game's storyline, learning outcomes, and rules. As it requires no form of download, such a website could readily be accessed using students' smart phones. Clues are provided via

the website, study notes, email, and SMS which students must then work through in order to discern the location of their next clue (which could be anything from a specific website to visit, television programme to watch, a particular passage to read in their textbook, or even a location that they must visit). In this way, students work through relevant clues and elements of their course material in order to reach the ultimate goal of the game, as established by the lecturer at the outset.

In closing, it is clear that videogames can potentially provide an exciting and unique approach to ODL pedagogy. Despite the manifold challenges created by South Africa's lack of a first world computing infrastructure, an inventive or creative lecturer can successfully expose students to an innovative and course-specific VGLE. Learning in this manner will not only provide access to twenty-first century skills for previously disadvantaged students but also yield a different approach to learning for those students who struggle with more traditional modes of university instruction. The videogame learning environment is thus a highly useful and potentially powerful means of pedagogy for the South African ODL situation.

NOTES

1   There are many advocates of the so-called Entertainment-Education (EE) approach, with examples of work in this area including Singhal and Rogers (1999), Salmon (2000), Aldrich (2004), Singhal, Cody, Rogers and Sabido (2004), and Mishra and Foster (2007).
2   See Charsky and Mims (2008), and Annetta (2008).
3   Discussions of the multimedia teaching approach include Ghita and Andrikopoulos (2009), Lowe (2009), Christesen and Machado (2010), Barbatsis, Economou, Papamag-kana and Loukas (2011), and Karam and Kirby-Hirst (2011).
4   Several studies concerning this phenomenon include Burgess, Stermer and Burgess (2007), Dickerman, Christensen and Kerl-McClain (2008), and Behm-Morawitz and Mastro (2009).
5   The Entertainment Software Association's 2012 survey reveals women gamers number 42 per cent of all US gamers (ESA 2012).
6   'First-person' refers to the manner in which a game is viewed by the player. A first-person videogame would allow for the player to interact with the environment as though they were seeing it with their own eyes in a 3D perspective. Conversely, a third-person game gives the player a fully realised character to concentrate on, from behind which the camera view is shown.
7   A guild is a collective of like-minded gamers who seek the camaraderie of group play combined with the support system that it provides for accomplishing the tougher tasks in-game. Additionally, the boom in female gamers is such that the South African monthly women's magazine, *Fairlady* (Watson 2011), even took note of it.
8   The ESA 2012 survey places the mean age of gamers at 30.
9   Three strategy game variations exist – real-time strategy, which sees gamers and computer acting simultaneously; turn-based strategy, wherein gamers takes their turn in

sequence (Ghita and Andrikopoulos 2009, 110); and the hybrid strategy game, which typically presents turn-based play on an empire-wide level and real-time play during unit-based combat simulation.

10 These are often referred to as '4X games' – 'e**x**plore, e**x**pand, e**x**ploit, e**x**terminate' (Ghita and Andrikopoulos 2009, 111).

11 It is the appeal of the entertaining nature of these games that, according to the EE perspective, keeps students actively engaged with the learning process even when 'less-than-engaging material' is being examined (Sherry 2013, 12).

12 Bryant (2009) describes illustrating the Spanish conquest of the Aztecs for a class, through utilising a modified version ('mod') of *Civilization IV* that he designed.

13 Since its release, seven complete re-imaginings of the game under the same name have followed, along with a number of expansions (Simanovsky 2005).

14 The film and accompanying videogame tie-in are a late twentieth century phenomenon, with the videogame typically releasing alongside the film and telling a parallel story to the film in order to augment the experience of the 'reality world' that they create (Karam and Kirby-Hirst 2011, 129).

15 This was seen by the author of this article in his recent work teaching as an e-tutor for Unisa for a module assisting students with basic English skills for the workplace.

16 See, for example, Phillips (1995) and Kolb (1984). Such constructivism can even be applied in reverse, whereby students undertake detailed research of a topic (eg, the function of a Roman bath house) and then endeavour to construct their own version of such a bath house using the same computer program as the lecturer (Dondlinger 2007, 25–26).

17 *Civilization* provides a 'technology tree' that must be navigated to move from primitive (eg, 'Horseback Riding') to more advanced technologies like 'Chivalry' (*Civilization Fanatics Center*).

18 *Deus Ex: Human Revolution* (2011) defines its difficulty settings at the outset (as opposed to the standard approach of providing a list of choices – 'easy', 'normal', 'difficult' – to the player without context). 'Casual', the easiest setting, is described with the comment 'tell me a story', denoting a preference for plot enjoyment over the strenuous effort of battling powerful foes. Conversely, the 'normal' difficulty setting, dubbed 'give me a challenge', balances story and gameplay for a more traditional gaming experience (*Deus Ex Wikia*).

19 The 'VRLerna' program, which recreates 'the central building of a prehistoric population at Lerna of Argolis' (Barbatsis et al 2011, 59), is a recent addition to the realm of digital pedagogy. However, 'VRLerna' is not a true videogame as it presents a 3D simulation of a structure which is accompanied by several quizzes related to the manipulation of objects found within the simulated environment (Barbatsis et al 2011, 62). There is no real entertaining gaming experience, and so, while the program makes an interesting addition to any archaeology course, it is not a VGLE by any means.

20 *Steam* presently accepts a multitude of forms of online payment, ranging from credit cards to Paypal.

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REFERENCES

Adams, E. 2009. *Gamasutra: The designer's notebook: Sorting out the genre muddle.* http://www.gamasutra.com/view/feature/132463/the_designers_notebook_sorting_.php?page=4 (accessed 28 June 2012).

Aldrich, C. 2004. *Simulations and the future of learning.* San Francisco, CA: Pfeiffer.

Annetta, L. A. 2008. Video games in education: Why they should be used and how they are being used. *Theory Into Practice* 47: 229–239.

Anon. 2011–2013. *AirServer.* www.airserver.com (accessed 5 October 2013).

Anon. 2000–2013. *Civilization fanatics center.* http://www.civfanatics.com/civ4/techtree/ (accessed 16 July 2013).

Anon. 2011–present. *Deus Ex Wiki.* http://deusex.wikia.com/wiki/Deus_Ex:_Human_Revolution (accessed 26 January 2012).

Anon. 2012. Video gaming tops R1.7 billion. *Bizcommunity.com.* http://www.bizcommunity.com/Article/196/185/76182.html (accessed 30 September 2013).

Anon. 2013. *The Elder Scrolls Wiki.* http://elderscrolls.wikia.com/wiki/Imperial_Armor_(Skyrim) (accessed September 30, 2013)

Anon. 2013. *The Perseids Platform.* http://sites.tufts.edu/perseids/ (accessed 16 July 2013).

Barbatsis, K., D. Economou, I. Papamagkana, and D. Loukas. 2011. 3D environments with games characteristics for teaching history: The VRLerna case study. *Special interest group on the design of communication.* Pisa, 59–66.

Behm-Morawitz, E. and D. Mastro. 2009. The effects of the sexualization of female video game characters on gender stereotyping and female self-concept. *Sex Roles* 61: 808–823.

Bogost, I. 2007. *Persuasive games: The expressive power of videogames.* Cambridge, MA: MIT Press.

Boniaszczuk, I. P. 2013. Personal email outlining the Clifton School Electronic Learning Project.

Bryant, T. 2009. The new school: Don't knock the Aztecs. *The Escapist Magazine.* http://www.escapistmagazine.com/articles/view/issues/issue_203/6097-Dont-Knock-the-Aztecs (accessed 16 July 2013).

Burgess, M. C. R., S. P. Stermer and S. R. Burgess. 2007. Sex, lies, and video games: The portrayal of male and female characters on video game covers. *Sex Roles* 57: 419–433.

Butts, S. 2000. *Zeus: Master of Olympus.* Boy, these games just keep getting better, don't they? *IGN.* http://www.ign.com/articles/2000/11/04/zeus-master-of-olympus (accessed 16 July 2013).

Charsky, D. and C. Mims. 2008. Integrating commercial off-the-shelf games into school curriculums. *Tech Trends* 52(5): 38–44.

Christesen, P. and D. Machado. 2010. Video games and classical antiquity. *Classical World* 104(1): 107–110.

Cole, H. and M. D. Griffiths. 2007. Social interactions in massively multiplayer online role-playing gamers. *CyberPsychology and Behavior* 10(4): 575–583.

Crane, G. R., ed. 1987–present. *The Perseus digital library.* http://www.perseus.tufts.edu/hopper/ (accessed 6 July 2013).

——. 2013. *The Perseids platform: A collaborative editing platform for source documents in classics.* http://sites.tufts.edu/perseids/ (accessed 5 October 2013).

Dickerman, C., J. Christensen and S. B. Kerl-McClain. 2008. Big breasts and bad guys: Depictions of gender and race in video games. *Journal of Creativity in Mental Health* 3(1): 20–29.

Dickey, M. D. 2005. Three-dimensional virtual worlds and distance learning: Two case studies of active worlds as a medium for distance education. *British Journal of Educational Technology* 36(3): 439–451.

Dondlinger, M. J. 2007. Educational video game design: a review of the literature. *Journal of Applied Educational Technology* 4(1): 21-31.

Dougiamas, M. 2002–2013. *Moodle.* https://moodle.org, (accessed 5 October 2013).

Entertainment Software Association. 2012. *Essential facts about the computer and video game industry.* http://www.theesa.com/facts/gameplayer.asp (accessed 12 August 2012).

ESA *see* Entertainment Software Association.

Gee, J. P. 2003. *What video games have to teach us about learning and literacy.* New York: Palgrave Macmillan.

——. 2007. *Good video games + good learning: collected essays on video games.* New York: Peter Lang.

Ghita, C. and G. Andrikopoulos. 2009. Total war and total realism: A battle for antiquity in computer game history. In *Classics for all: Reworking antiquity in mass culture*, ed. D. Lowe and K. Shahabudin. Newcastle upon Tyne: Cambridge Scholars.

Haas, J. 2008. *Revolution.* http://education.mit.edu/projects/revolution (accessed 3 October 2013).

Howard, J. 2008a. Quest Syllabus. *Designing quests: Jeff Howard on game design.* (November). http://designingquests.com/?p=98 (accessed 10 September 2013).

——. 2008b. *Quests: Design, theory, and history in games and narratives.* Wellesley, MA: A K Peters.

IndieCade Foundation. 2014. http://www.indiecade.org (accessed 30 May 2014).

Just Curious. 2013. In case you missed it: Sunday Times Generation Next 2013 Awards. (June 3). *Mail and Guardian.* http://www.news100.co.za/news/in-case-you-missed-it-sunday-times-generation-next-2013-awards-18828 (accessed 29 September 2013).

Karam, B. and M. Kirby-Hirst. 2011. 'Reality worlds' collide: Film and videogames as pedagogical tools for the classics. *Akroterion* 56: 129–148.

Kolb, D. 1984. *Experiential learning: Experience as the source of learning and development.* Englewood Cliffs, NJ: Prentice Hall.

Kovalskys, G., F. Sommer and E. Abramzon. 2013. *Nearpod.* www.nearpod.com (accessed 5 October 2013).

Lowe, D. 2009. Playing with antiquity: Videogame receptions of the classical world. In *Classics for all: Reworking antiquity in mass culture*, ed. D. Lowe and K. Shahabudin, 64–90. Newcastle upon Tyne: Cambridge Scholars Press.

McMahan, A. 2003. Immersion, engagement, and presence. A method for analyzing 3-D video games. In *The video game theory reader*, ed. M. J. P. Wolf and B. Perron. London: Routledge.

Michael, D. and S. Chen. 2006. *Serious games: Games that educate, train, and inform.* Boston, MA: Thomson.

Mishra, P. and A. Foster. 2007. The claims of games: A comprehensive review and directions for future research. In *Proceedings of the Society for Information Technology and Teacher Education International Conference 2007*, ed. C. Crawford, D. A. Willis, R. Carlsen, I. Gibson, K. McFerrin, J. Price and R. Weber, 2227–2232. Chesapeake, VA: AACE.

Nichols, D., T. Farrand, T. Rowley and M. Avery. 2006. *Brands and gaming: The computer gaming phenomenon and its impact on brands and business.* Basingstoke and New York: Palgrave Macmillan.

Parker, F. 2013. Screen stars: Playing games is a serious sport. (January 11). *Mail and Guardian.* http://mg.co.za/article/2013-01-11-00-screen-starts-playing-games-is-a serious-sport-now (accessed 20 September 2013).

Phillips, D. C. 1995. The good, the bad, and the ugly: The many faces of constructivism. *Educational Researcher* 24(7): 5–12.

Planet Elder Scrolls. 1996–2010. http://www.planetelderscrolls.ign.com. (accessed 30 May 2014).

Salmon, C. 2000. *Setting a research agenda for entertainment-education.* Atlanta, GA: Centers for Disease Control and Prevention Office of Communication.

Sherry, J. L. 2013. The challenge of audience reception: A developmental model for educational game engagement. In *Digital games: A context for cognitive development New directions in child and adolescent development*, ed. F. C. Blumberg and S. M. Fisch, 139, 11–20.

Simanovsky, D. 2005. *Rome: Total realism.* http://www.rometotalrealism.org/index-2.html (accessed 6 August 2011).

Singhal, A., M. J. Cody, E. M. Rogers and M. Sabido, eds. 2004. *Entertainment education and social change: History, research and practice.* Mahwah, NJ: Lawrence Erlbaum.

Singhal, A. and E. Rogers. 1999. *Entertainment-education: A communication strategy for social change.* Mahwah, NJ: Erlbaum.

Stivison, M. 2013. *Successful serious games.* http://www.geekinsider.com/2013/03/13/successful-serious-games/ (accessed 7 July 2013).

Travis, R. 2008a. *Living Epic.* http://livingepic.blogspot.com/ (accessed 12 August 2012).

——. 2008b. *Play the past.* http://www.playthepast.org/ (accessed 12 August 2012).

Turkle, S. 1985. *The second self.* New York: Simon and Schuster.

University of South Africa. 2003–2011. *my*Unisa. https://my.unisa.ac.za/portal (accessed 5 October 2013).

Valve Corporation. 2003. *Steam.* http://www.store.steampowered.com (accessed 30 May 2014).

Vygotsky, L. S. 1978. *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Ward, T. C. 1998. *Caesar III.* Impressions latest rev of their strategy classic leaves very little to be desired. *IGN.* http://www.ign.com/articles/1998/10/09/caesar-iii (accessed 16 July 2013).

Watrall, E. and R. Travis. 2012. *Play the past.* http://www.playthepast.org (accessed 28 June 2012).

Watson, M. J. 2011. Girls on the game. *Fairlady*, March: 64–66.

VIDEOGAMES CITED

Anderson, T., M. Blank, B. Daniels and D. Lebling. 1979. *Zork.* Infocom.

Bethesda Game Studios. 2002. *The Elder Scrolls III: Morrowind.* Bethesda Softworks.

——. 2006. *The Elder Scrolls IV: Oblivion.* 2K Games.

——. 2011. *The Elder Scrolls V: Skyrim.* Bethesda Softworks.

Bioware. 2002. *Neverwinter Nights.* Infogrames.

Blizzard Entertainment. 2004. *World of Warcraft.* Blizzard Entertainment.

Education Arcade. 2004. *Revolution.* Massachusetts Institute of Technology.

Ensemble Studios. 1997. *Age of Empires.* Microsoft Game Studios.

——. 1998. *Age of Empires: The Rise of Rome.* Microsoft Game Studios.

Firaxis Games. 2005. *Civilization IV.* 2K Games.

——. 2010. *Civilization V.* 2K Games.

——. 2012. *Civilization V: Gods and Kings.* 2K Games.

Impressions Games. 1998. *Caesar III.* Sierra Entertainment.

——. 2000. *Zeus: Master of Olympus.* Sierra Entertainment.

Microprose. 1991. *Civilization.* Microprose.

Sierra Entertainment. 1984–1998. *King's Quest I-VIII.* Sierra Entertainment.

The Creative Assembly. 2004. *Rome: Total War.* Activision.