DVD and Machinima in Management Training: Human Actors and Avatars in Real and Immersive Virtual Worlds (IVWs)

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A dissertation submitted to the University of Dublin in partial fulfilment of the requirements for the degree of Master of Science in Technology and Learning

2011

Declaration

I declare that the work described in this dissertation is, except where otherwise stated, entirely my own work and has not been submitted as an exercise for a degree at this or any other university.

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Abstract

This paper compares learner experiences of DVD in management training with Machinima - films created in immersive virtual worlds (IVWS). For decades, video/DVD has been widely accepted as an effective approach for modeling desired behaviours in management training. However, there have been criticisms of the medium. The cost of production is prohibitive and there is intimidation of the learner by their perception of the skilful model in the medium.

Learners may be less likely to be intimidated by avatars modelling desired behaviours in IVWs such as Second Life. Machinima is a cost effective method for producing films of these behaviours in Second Life. Machinima, accordingly, offers an alternative way to deliver effective modeling for executive learners. Before further investment is made in Machinima, the learner experience with this medium should be researched to examine how learners perceive models observed in Second Life using Machinima.

In this study a set of learning sequences were produced using both DVD and Machinima production methods. Scenes were designed and a storyboard created; a cast of characters were engaged and the scenes were filmed and edited using similar techniques. In the DVD mode the cast were professional actors; in the Machinima film the characters were avatars controlled by humans. The purpose of this research was to understand more fully how students experience learning in IVWs and to compare the reactions, as expressed by learner preference, to DVD and Machinima in management training. The subject of the learning was a set of generic management skills in dealing with employee performance. Thirty two individuals, aged 20 – 44, participated in the research. The sample was divided into 4 groups each of which engaged in the observation of both DVD and Machinima learning sequences. Group A experienced the DVD sequence first followed by the Machinima sequence in Real World. The order was reversed for Group B. Subjects were invited to choose their preferred approach for a second learning event. Groups B and C followed both sequences in Second Life so that Real and Second Life experiences might be contrasted. Learners participated in individual interviews post event. The methodology was interpretivist in orientation and used a case study method. This was appropriate given the

need to explore the learner experience and perception of the two alternative forms of learning delivery.

The results of the study showed that participants prefer Machinima as a delivery mechanism in significant numbers. Additionally, participants perceived that both media worked equally well as a learning medium but that Machinima held certain advantages. DVD contained certain distractions in terms of body language, facial expressions and appearance whereas the absence of these distractions in Machinima allowed participants to concentrate on the message of the learning sequences. The location of Real World or Immersive Virtual World had no apparent effect.

Introduction and Background

We engage with new technology on the basis of what it replaces, or could replace, and not by its *'new unique characteristics and potential'* (Winn, 2005:1). A century ago motor cars were little more than carriages with engines. In more recent times, PowerPoint was merely a digital version of an old style overhead projector. We constantly strive, with new technology, to see how it may enable us to improve how we have done things up until now. Users of Machinima, digital films made in Immersive Virtual Worlds (IVWs), may respond in a similar way to the potential of this new technology. Notwithstanding that it may be beneficial to look forward as well as backward this paper will examine how users respond comparatively between DVD and Machinima on a subject matter of modelling of manager-staff behaviour.

IVWs are environments that perceptually surround an individual. These environments create a psychological state in which the individual interacts with, is included in, and is enveloped by (Blascovich et al., 2002). Shared environments involve multiple individuals who are also surrounded by the same virtual environment. Each user is usually represented by an agent or avatar or human like figure. Others refer to IVWs as '3D computer environment in which users are represented on screen as themselves or as made-up characters and interact in real time with other users (PCMag.com, 2011).

IVWs, in particular the best known example, Second Life, are an ever-present focus of educators today (Middleton & Mather, 2008). They offer a harbinger of a better world of pedagogy where modelling, in an immersive space, can be presented to students to apprehend an immediate, absorbing, and secure experience. This form of learning can engage students in new ways while accommodating the widening range of learning styles present in the education settings of today (Aldrich, 2005; de Freitas, 2006; Dickey, 2005).

Background and Context

Up until recently, video and DVD dominated the presentation of modelling of desired behaviours in management training. Video based modelling has been the most typically used in behavioural training studies (Buggey, 2007). Management training itself has been defined as *'those activities*

designed to impart specific skills (e.g. time management, delegation) which would be immediately applicable in a particular organizational setting' (Wexley & Baldwin, 1986:280). In the early days of the field, case reports dominated the discipline and there was a lack of empirical studies to inform effective training design (John P. Campbell, 1971; J. P. Campbell, Dunnette, & Weick, 1970; I. L. Goldstein, 1980). In more recent times there have been calls for increased rigour in studies and for more research into the effectiveness of training methods. In a significant meta analysis of management training studies Taylor & Russ-Eft (2005) identified modelling as delivering sustainable advantage in training programmes. Video and DVD techniques, in training programmes, have involved behavioural modelling as a demonstration of behaviours so as to lead to effective performance (M. Gist, E., 1989). A consistent finding from research is that video modelling provides better training outcomes than lecture based instruction, computer-aided instruction, and self study from a manual and that continued research into this approach is thus warranted (Yi & Davis, 2003).

In spite of general agreement regarding its effectiveness in training, there are significant drawbacks which have militated against the ubiquitous use of video in training (M. Gist, E., 1989). One of the most powerful of these issues concerns the cost of developing video based forms of modelling. Production costs are considerable and some of these artefacts resemble truncated television dramas with the attendant production values and costs. Accordingly, they are usually quite expensive to develop (Keys & Wolfe, 1988). A second issue with these media is intimidation, on the part of the learner. Trainees are often intimidated by certain selected sequences featuring experienced agents (Marsh, Mitchell, & Adamczyk, 2010). This issue is related to the sophistication and perceived skill of the model being presented. Learners may perceive that the standards being portrayed by the model cannot be attained by them. Alternatives to this medium should be considered.

In this study, DVD in management training using human actors is contrasted with sequences using avatars that are made on virtual film sets in IVWs Machinima. Machinima, as an alternative to DVD offers presumed advantages. Until now the overall rationale for the use of Machinima in training programmes focuses on the benefits for the executive educator. The teaching of skills in a virtual environment affords certain advantages (Savin-Baden, 2008). The development of Machinima offers the possibility of access to a simple, low-cost approach that can be afforded for regular use.

The cost of film production in IVWs using Machinima is much lower than traditional DVD in Real World. The Real World DVD sequences used for the current study required an investment of €28,000 exclusive of VAT. The Machinima creation for this study cost €2,000 exclusive of VAT. In addition, it is also possible that the familiarity learners have with pedagogical agents today will enable them to comfortably apprehend the intended learning outcomes from the Machinima learning sequences without the attendant intimidation present with actors in traditional video.

Given that modelling in IVWs using Machinima could present a viable opportunity for modelling desired behaviours in management training the following research question was proposed for this study:

RQ: *How do learners perceive Machinima in contrast to DVDs in management training in Second Life and real world?*

The topic of the study is a set of management skills to be viewed by subjects using two contrasting methods of delivery – DVD and Machinima. The study was also set in two environments – Real World and Second Life. A sample of 32 subjects was chosen for the study and divided randomly into four, equally-sized groups. Each individual engaged in the observation of both learning delivery media. Group A experienced the DVD medium first followed by the Machinima medium. This sequence was reversed for Group B. The same order was repeated for Groups C and D in Second Life. Each learner was invited to choose their preferred medium for a second learning choice of medium. Learners were interviewed to discuss preferences post event. Recent research has demonstrated that oral intervention in modelling by the models or the teachers can have a significant effect on cognitive acquisition (Kampiotis, 2006). Accordingly, it was decided for the purposes of this study to omit oral intervention in any sequence.

The methodology for this study is interpretivist being located within a socially constructed world-view. The research method is case study being an appropriate method within this overall approach. This method will allow the issue to be studied to a certain depth. At hand is the exploration of the interaction of certain factors (deliver method and learners) that contribute to the focus of this enquiry. The methods of data gathering and analysis include observations, interviews and the analysis of interview data.

Literature Review

Introduction

The purpose of this literature review is to support a theoretical justification for this study. The research question relates to the ways in which learners perceive DVD and Machinima in respect of learning sequences. Attention is a core element of observational learning. Accordingly, this literature review seeks to assemble knowledge from extant work in respect of social learning theory. The foundations for the use of observational learning and modelling in training and development for managers are found in the work of Bandura and others in social learning theory and behaviour modelling techniques (Manz & Sims, 1981). The review also discusses how DVD has been treated in the literature in respect of management training. The literature showing key deficiencies in terms of its use is discussed. The use of IVWs and Machinima, more recent developments in education are posited in this research as having potential as an alternative approach. Accordingly, literature regarding their use in education is also reviewed.

Method

Crucial to all research degrees is the assembly and review of literature pertinent to the purpose and question of the research. It is vital to devote care, attention and time to this pursuit before research is attempted. Significant benefits emerge from an effective literature and these include: avoiding repetition in research; building where others have left off; identifying valuable contacts; increasing breadth of knowledge; accessing seminal work; assembling contrasting views; and identifying methods that may be relevant to the topic (Bourner, 1996).

This study brings together literature from four discrete areas or disciplines. As the research question relates to a comparison between DVD and Machinima in IVWs, these areas were reviewed from specific perspectives. The literature on the use of DVD in management training was examined and the benefits and disadvantages of using DVD in this sphere were discussed. Innovative uses of Machinima were also considered and detail was reviewed regarding the advantages in terms of cost and otherwise of this medium. Additionally, as the use of DVD and

Machinima draw on the concept of modelling from the literature, consideration was given to the work of Bandura and others specifically in relation to Social Learning Theory (Bandura, 1977).

The primary sources for locating relevant literature were electronic. Principal among these sources were the databases of Academic Source Premier, ERIC, Business Source Premier, Web of Science and Web of Knowledge. Example search terms were video, DVD, management training, modelling, Machinima, interpersonal skills, training and development. The scope of the review was limited to the use of DVD in management training. There is a significant literature in respect of modelling and video in the health sciences but this was not reviewed.

Social Learning Theory

Albert Bandura introduced modelling and observational learning over 40 years ago as a part of his celebrated work on social learning theory (Bandura, 1977). Accordingly at the latter end of the last century Wood and Bandura (1989) were able to conclude emphatically that any phenomena that could be learned by direct experience, could also be acquired vicariously by observing other people's behaviour and the consequences of that behaviour.

People do not function in isolation. As social beings, they observe the conduct of others and the occasions on which it is rewarded, disregarded, or punished. They can therefore profit from observed consequences as well as from their own direct experiences. (Bandura, 1974:860).

These authors argue against those who assumed that individuals could learn only by direct experience – in their view an incorrect interpretation of behaviourist theories. What was often forgotten by behaviourist researchers was that learning could occur as a result of stimulus that occurs before the behaviour and not after it (Manz & Sims, 1981). Other scientists also were using learning through observation as a fundamental tenet of their research throughout the 20th century (Adams, 1987; Bandura, 1962, 1971, 1977; Black & Wright, 2000; Sheffield, 1961). Bandura's influence allowed that individuals could represent modelled activities symbolically which enabled them to acquire new behaviours observationally and without reinforcement. Others' preoccupation with the ethics of reinforcement distracted the debate away from the critical issue of whether '***one can keep people from learning what they have seen***.' (Bandura, 1974:864).

In Social Learning Theory there are four processes governing modelling. In the component process of *attention* the learner chooses what to observe and to extract from the array of modelled

activities. In the second component process the learner activates *representation* to transform and configure information observed into rules, procedures and conceptions. During representation, individuals rehearse coded information having transformed it into usable memory codes. The third component entails *behavioural production* where people act out their symbolic conceptions and then compare how adequate their actions were against their conceptual model. A fourth process is *motivation* where individuals perform due to expected outcomes which they value. Motivation can be direct, vicarious and self produced. People can be motivated by the consequences to others who are similar to them and can be demotivated by adverse effects which occur to these same others (Wood & Bandura, 1989).

Modelling

The imitation of modelled behaviours is an important tenet of teaching practice today (Buggey, 2007). In the pantheon of teaching strategies, modelling has taken its place as one of the foremost techniques and is one of the most popular methods of teaching skills in a range of domains - for example motor skills in sports (Bird & Ross, 1984), cognitive behaviour modification, (Meichenbaum, 1977) and a combination of fine motor skills and cognitive problem solving in surgery (Custers, Regehr, McCulloch, Peniston, & Reznick, 1999). The principle of modelled behaviours has been adapted quite extensively in the field of education also (Maheady, Mallette, & Harper, 2006). Furthermore modelling , using DVD in education, can be used to enhance learning (Christie & Collyer, 2008). Using Social Learning Theory it is vital for educators to be aware of what people attend to when observing modelled behaviour in DVD learning sequences. The next section discusses modelling with DVD.

The use of DVD in training often employs the concept of modelling in demonstrating a set of desired behaviours through the use of a visual representation. This technology has been generally welcomed in the literature and support for its effectiveness and efficiency in transferring learning has been recorded (J. O. Campbell, Lison, Borsook, Hoover, & Arnold, 1995) (Olshfski & Cunningham, 1985). Gagliano (1988), in an extensive review of the medical literature, declared it effective as a means of achieving patient outcomes. Burke and Day's (1986) meta analysis of 70 studies suggested modelling as an effective method of training. Most research in management training has concentrated on behavioural modelling and here video based (DVD) modelling has been in dominant use (M.E. Gist, Rosen, & Schwoerer, 1988).

Video modelling, as a teaching approach, has clear benefits in training (Manz & Sims, 1981). Where subtle responses are required that are difficult to put in an oral or written form the video modelling approach supersedes other forms. A video modelling approach can be more enjoyable than other, less stimulating formats. When the observer sees respected models exhibiting the appropriate responses the credibility of these responses may be enhanced (Gladstone & Spencer, 1977).

Video modelling works in training through self efficacy beliefs on the part of the learner Bandura (1997). Self efficacy embodies expectations and beliefs about competently performing towards specific outcomes (Bandura, 1997). Video modelling employs vicarious learning principles which may be preferable to older traditional approaches to training which are seen as having many deficiencies (A. P. Goldstein & Sorcher, 1974). These principles have been identified so as to improve effectiveness of training and have been presented in four steps of a training process:

a) presentation of models (e.g. video displaying the desired behaviour),

b) imitation or rehearsal of desired behaviours,

c) social reinforcement of favourable recognition for adoption of the modelled behaviours by the observer; and

d) transfer training to encourage use of the learned behaviours back on the job (Manz & Sims, 1981:110).

Drawbacks

Despite general acclaim video modelling in management training does contain significant drawbacks. These drawbacks have perhaps militated against even greater utilisation of this technique (M. Gist, E., 1989). DVD requires significant budgets, human resources, locations and copious amounts of time – all elements leading to inaccessibility for many educators and organisations. Audiences have become more sophisticated with the ubiquity of quality televisual productions and accordingly, training video productions must strive to achieve broadcast quality production values lest they suffer by comparison. As a result production costs are usually quite considerable (Keys & Wolfe, 1988). Other issues concern the tendency to model characters with dauntingly competent profiles. Trainees often find such portrayals intimidating rather than

inspiring (Marsh, et al., 2010). Such drawbacks suggest that alternatives to this medium may be sought.

In globalised organizations DVD in training materials may be expected to travel across national boundaries as human resources managers may be reluctant to develop specialized training materials for each geographical area. National culture can, however, affect how people accept and learn from training materials. Hofstede has described how national culture can affect how individuals behave in organizations (Hofstede, 2001). He also described differences in teaching and learning approaches across cultures (Hofstede, 1986). Educational DVDs are produced within a cultural milieu. Accordingly, these materials are transported across national boundaries and used in learning situations and with learners of nationality and culture that are different to that of the country of origin of the materials. . It is plausible that learners are, at very least, distracted by facial and behavioural mannerisms when using educational DVD production from different cultures. However, the use of such 'foreign' materials in learning interventions suggests that educators assume that learners will apprehend learning as long as they comprehend the language in use. There is an assumption here that learners pay significant attention to the message being portrayed and are not distracted by superficial features such as body language, facial expressions and dress. Research is required to identify if learners actually pay attention to, and are distracted by, these issues in DVD and alternative learning media.

IVWs and Machinima in Education

In recent times some authors have suggested a broader consideration of digital media which have been created in the local environments for training purposes (Bradley, Middleton, & Nunnington, 2006). This wider consideration does not necessarily have to be limited to real life locations but should also include blended learning environments (Middleton & Mather, 2008). Locally developed media should be able to overcome barriers and obstacles which are rooted in technical complexity and cost such as those which exist with traditional video (Collis & Moonen, 2002). Media should be capable of quick installation and deployment in accordance with learning needs. Aspirations to use media in authentic context may founder on material obstacles such as cost and availability. This is dependent upon accessibility and ease of production and use (Middleton & Mather, 2008). IVWs may provide such access.

The use of IVWs in training for post experience adults is increasing. The US navy embraces this technology because it provides a safe and depersonalized environment for learners at significantly reduced costs (Carr, 2007). Czarnecki(2007) reports on its use for health care provision in London. Despite the spread of the medium and general awareness thereof more needs to be done to understand how learners actually learn in IVWS (Savin-Baden, 2008). The use of IVWs however, does offer an opportunity to explore pedagogically based issues from the learner perspective in a somewhat different manner than was done in the past. IVWs such as Second Life offer universal and unbounded spaces where there is an opportunity to adopt different learning values other than those that apply in fixed and traditional learning spaces (Olsen et al., 2004; Savin-Baden, 2008). More research should be conducted into the learner experience in IVWs to increase understanding regarding how learners learn in such spaces and ultimately how teachers should teach.

Machinima may offer an opportunity to access learning in IVWs more easily. Machinima is 'animated film making within a real time virtual 3D environment' (Daly-Swanson, 2007). Arising from the gaming community it is now being appropriated by educationalists for teaching purposes. Machinima enables film making in real time using avatars representing human actors. These avatars may be manipulated in a similar fashion to way puppets were controlled by puppeteers of the past. Machinima offers a continuum from simplicity to sophistication that has been heretofore out of the reach of the educator (Call, 2005). In contrast to the traditional video medium, Machinima 'brings the film set and cast' to the producer and thus renders an equivalent medium accessible to modern educators (Bardzell et al., 2006).

Machinima has potential to be used in a pedagogical manner that is appropriate to constructivist beliefs of educators. This is in line with the theoretical model most of the computer-based educational environments follow and is recorded in almost all reviewed empirical studies (Mikropoulos & Natsis, 2011). An effective learning environment depends on its pedagogical approach so that it may achieve its educational goals in a philosophically consistent manner. In an extensive ten year review of the literature on immersive educational environments Mikropoulos & Natsis, (2011) discovered that almost all of those studies that clearly reported constructivism as their theoretical approach. Those who did not report an approach implied constructivism through their use of terminology: experiential learning, inquiry based learning and collaborative learning

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(Barab, Hay, Barnett, & Keating, 2000; Lim, Nonis, & Hedberg, 2006; Tuzun, Yilmaz-Soylu, Karaku, Inal, & Kizilkaya, 2009); guided discovery learning (Chen, Yang, Shen, & Jeng, 2007); learning by doing (Hokanson et al., 2008); collaborative learning (Holmes, 2007; Johnson, Moher, Ohlsson, & Gillingham, 1999; Ketelhut, 2007). In the education environment of today tasks can be carried out by learners through direct action and manipulation. Virtual environments replicate this using realistic tasks similar to the real world allowing a constructivist pedagogy to be employed (Mikropoulos & Natsis, 2011).

IVWs and Machinima offer significant opportunities to examine how learners perceive these environments and how they learn within them. They offer the possibility of contrasting learner perceptions between old and new media. Given the lack of extant research in this area and the disadvantages of the traditional media such as video and DVD it is appropriate that suitable alternatives be explored. These alternatives, however, must be authentic and credible in the eye of the learner (Middleton & Mather, 2008)

Credibility in Communication

Value in new digital media may be perceived in different ways compared to more traditional techniques video and DVD. This may refer to how 'real' or 'believable' the communication is perceived to be. DVD relies rather heavily on high production values for credibility and realism purposes as stated above. When receiving communication, as in modelling in training situations, the source of the communication is vital. A significant characteristic of that source is its credibility and perceived realism. Before we 'believe' or accept the thrust of a communication we evaluate the credibility of its source (Aronson, 1999). In training situations, the participants evaluate the credibility of the source of the communication whether that source is the tutor or even a role model portrayed in a DVD or other learning artefact such as a case study. It is plausible that participants spend a considerable amount of their energy and attention assessing the credibility and realism of models presented to them in training prior to accepting the intended message.

The challenge, therefore, for the producers of DVD in management training is to select and portray role models that individuals find real and credible and thus appropriate as models for their future behaviour. In the globalised organisations and multicultural environments of today this task becomes more challenging. Producers of DVD for management training purposes must choose models which seem appropriate to an increasingly diverse audience. Not only do gender, race and

ethnicity arise as issues but facial expressions, body language and appearance in terms of dress, jewellery and body adornment can act as a distraction to the learner and interfere with learning. Cultural norms may also interfere with the credibility of certain learning sequences.

Contemporary digital media do not rely on their production values to establish realism and credibility (Papert, 1986). Rather this type of media relies much more on *its 'currency, authenticity, specificity and occasionally … its constructionist value '* (Middleton & Mather, 2008:208). The accessibility of these media allows student users greater engagement and the asynchronous nature transforms the relationship the student has with learning media. Contemporary media are much less associated in the minds of learners with a transmission mode of learning delivery (Laurillard, 2002). Learners appreciate contemporary media as enabling an interactive conversation with the learning and accordingly they may view traditional DVD and contemporary media in very different ways. This may lead to potential opportunities and some obstacles for educators when dealing modern learners.

Conclusion

Social learning theory suggests that people do not learn from experience alone but from the observation of others' performance and the consequences of that performance (Bandura, 1974). Accordingly, modelling of required behaviour is an appropriate and effective means of learning for individuals. DVD, a medium for modelling has been utilized successfully in management training for decades with significant results for organizations and individuals (Marilyn E. Gist, Bavetta, & Stevens, 1990; Gladstone & Spencer, 1977; Manz & Sims, 1981). There are however, considerable disadvantages with this medium which are related to cost, intimidation of learner, cultural and context issues. Modern learners may find the transmissive overtones of traditional DVD an obstacle to their acceptance of this mode of delivery. Learners seek to establish credibility in the source of any communication. In today's diverse world the producers of DVD for management training purposes are faced with a challenging task to represent appropriate role models in their learning materials for an increasingly diverse audience. The simple stereotypes of the past are no longer viable. Accordingly, learners may spend precious time and energy perusing modern DVD sequences in search of confirmation of credibility in the models being presented.

In contrast, Machinima in IVWs is an alternative means of delivering management training which may overcome some of the disadvantages of DVD. The absence of 'attempted reality' may lead

learners to suspend disbelief regarding the appropriateness of the model being presented. The absence of body language, mannerisms and facial expressions may remove from the learner the obligatory search for credibility and may allow the learner to concentrate in an undistracted manner on the message being presented.

Accordingly, IVWs, such as Second Life, offer significant opportunities to examine how learners perceive these environments in contrast to the same activities in the real world. Accordingly the research question of this study is as follows:

RQ: How do learners perceive Machinima in contrast to DVDs in management training in Second Life and real world?

Accordingly, there are some related hypotheses that emerge from this research question as follows:

H 1.   Subjects will pay attention to different elements in DVD and Machinima media

H 2.   Subjects will report intimidation in DVD sequences in contrast to Machinima

H 3.   Subjects will report lower distraction by visual elements in Machinima than to DVD

H 4.   Subjects will report distraction by facial expressions and appearance in DVD

H 5   Subjects will report a higher affective reaction to Machinima sequences than DVD

H 6   Subjects will experience these media differently in Real and Immersive Virtual Worlds

Design of Research

The introduction of new technology in education provides an opportunity to replicate existing practices (Winn, 2005). Accordingly, MSPowerpoint replicated what older classroom technologies such as slide and overhead projectors were able to achieve. However Girvan and Savage (2010) recommend going beyond this stage to examine the potential that the technology has to offer. Video in management education has delivered considerable benefits to educators for a considerable time (M.E. Gist, et al., 1988). Machinima is an alternative technology which can replicate in IVWs the tasks that are currently executed using management DVD. Following the exhortation of Girvan and Savage it may be fruitful to explore the potential of this new medium for management training and education.

The impact of video and its successor DVD on management education has been significant due to its ease of use. Proprietary DVD can be played and paused at will according to the learning design. As such it facilitates learner-tutor interaction. The ubiquity of material available from corporate producers allows educators to source abundant support for learning events. Although there is an entertainment factor in using DVD, educators are able to bridge the gap between surface learning and learning appropriate to higher education settings (Marx & Frost, 1996). DVD is a highly planned event and is based on scripts and storyboards in a predetermined manner. Anything that does not correlate exactly to the storyline is cut. However, this does have certain advantages. Marx and Frost. (1998)discuss the positive responses to DVD in teaching and learning among managers and educators. This particularly relates to the ability to engage learners and focuses on the window of engagement which refers to the visual attention that learners pay to a DVD's content.

Machinima is 'filmmaking within a real time virtual 3D environment' according to the Academy of Machinima Arts and Sciences (Jones, 2005:134). In Machinima movies are designed, performed and filmed within the virtual computer graphic sets generated by the IVW. Machinima, like other digital medial work best when utilised in a blended curriculum and where the media are 'specifically designed to set challenges, seed ideas, or illustrate problems' (Middleton & Mather, 2008:207). Machinima replicates traditional film and DVD production. Stories are written and

outlined in a storyboard fashion. Scenes are shot using film production techniques and instead of human actors a cast of avatars controlled by humans is used. This approach enables learners and educators to produce quality learning sequences with high production values.

Machinima does not require that the producer must search and find cast, crew and settings as the IVW brings all of these elements to the producer (Bardzell, et al., 2006).Accordingly, the world of film production, at one time inaccessible to educators and learners, is now, at once, available. IVWs are multi-user environments that are free to use and can be rendered interactive by the user. Users can utilise the inexpensive set development potential of IVWs to recreate an infinite array of contexts. According to the Academy of Machinima Arts and Sciences (2011) Machinima can save cost and time in that directors can organise their sets as if they were puppeteers – directing the action in real time.

The purpose of this research, therefore, is to explore how learners perceive Machinima in management training in contrast to DVD in the modelling of desirable manager behaviours. In addition it explores learner perceptions of Machinima in contrast to DVD in management training. These aims have arrived from specific findings in the literature. DVD is theoretically grounded as an appropriate and successful means of modelling desirable behaviours in training (Burke & Day, 1986; M.E. Gist, et al., 1988). DVD, however, may be inaccessible to educators and intimidating to learners (Marsh, et al., 2010). Machinima in IVWs may offer an alternative to DVD in training as a modelling tool as it may overcome some existing problems that exist with DVD. Until now Machinima has been researched from the perspective of the educator only (Savin-Baden, 2008). Accordingly, comparative research into its use as an educational tool is warranted.

Design of artefact and experience

This research design required that subjects experience both DVD and Machinima executions of the same modelled learning experience of desirable manager behaviour. Initially a set of learning experiences were created. These experiences of desirable manager behaviour were developed in DVD *and* Machinima formats. Both formats were deployed in real world and Second Life settings to enable participants to view them under different conditions. This allowed for immediate alternate delivery and comparison of formats. Participants were invited to view one of the films in both DVD and Machinima. Following this viewing the subject was then invited to choose a preferred format for viewing both a second and a third film (although this third choice was

recorded, the third film was never actually viewed). This design allowed learner preference to be elicited and the reasons for their choices could then be explored. As perceptions may be influenced by primacy and recency effects, the subjects were deployed at random to differing schedules to control for these effects.

Design of video sequence

The subject of DVD in management training was specifically chosen because of the long tradition of using video in the development of managers (Yi & Davis, 2003). Despite the ubiquity of available material it was decided to produce original material in both media – DVD and Machinima. The use of original material excluded the possibility that the subjects could have experienced the films in a prior training experience. The management topic dealt with in the films was performance management. Performance management is a particularly challenging area for line managers and its effectiveness is contested (Heathfield, 2011). Two performance management sequences were chosen as follows: a) The Reprimand, and b) The Poor Performance Interview. Each film was designed to be capable of being used in a management development event to assist facilitators and their audiences to explore areas of dealing with employee performance.

To assist in the development of the visual media, a set of learning outcomes was developed to guide the work. These outcomes were for guidance purposes for artefact development and were intended also to assist in constructing a set of learning experiences accompanied by appropriate facilitation. These outcomes were as follows:

a) The Reprimand – *after this session, participants will be able to deliver a constructive reprimand to their staff member using the given protocol*
b) The Poor Performance Interview – *after this session, participants will be able to conduct a performance counselling interview according to the given protocol*

Following the development of the learning objectives the 'pre-production' of the DVD was conducted. Each film required a script to execute the intended story of the sequence - see Appendix 1. The scripts were written and tested for clarity and comprehension on experienced human resource development practitioners chosen from the Health Service Executive (HSE) in Ireland. The scripts were short in length in that the films were designed to form part of a larger learning programme and were not intended to constitute a complete module of learning on the

topic. On completion of the scripts for the two films, an appropriate cast was sought. As it was intended to achieve high production standards for the project, a selection of professional actors was summoned for audition from which final selections were made. In parallel to this activity an appropriate location was sought. Following some consideration, permission was received from a city centre administration unit of Health Services Executive (HSE) to use their facilities. The location provided convenient access for those involved in production. In advance of production a visit to the location, usually termed a 'recce') took place to decide where the scenes could be filmed. From this a 'shot list' for the films was composed, see Appendix 2. The scenes were recorded on Hi def Digital Video Tape using a broadcast-quality camera. This footage was then transferred into a proprietary editing package. Initially a rough of the films was prepared and reviewed for suitability before final edit and sound mix were completed. Scenes from the production are shown in the screenshots listed below.

Figure 1 Reprimand - DVD

Figure 2 Poor Performance DVD

Design of Machinima Sequence

The Machinima sequences replicated those in the DVD medium. Although the pre-production of the Machinima filming was aided by the pre-production work that was done for the DVD medium a significant amount of preparation was also required for this medium. Initially a location had to be acquired. Accordingly, Second Life was chosen to supply the location for the shooting. This vendor was chosen for the stability and functionality of the site. It was also selected because of the availability of a themed conference centre on the land purchased. This obviated the need to construct film sets in Second Life as the themed Island provided basic sets, similar to those which had been chosen in real life for the DVD filming. The scripts which had been used for the DVD production were also used for the Machinima films. Locations within the themed conference centre were chosen for the shooting. Avatars were used in the place of actors and these were controlled by colleagues involved in the teaching and learning profession. The filming was executed using the proprietary software for screen capture – FRAPS. No attempt was made to faithfully replicate the scenes or the actors' appearance other than gender. Exact similitude between the two media was deemed impossible and could even become distracting to the viewer. Scenes from the Machinima production are shown in the screenshots listed below. During the filming of the Machinima sequences it was noted that the diction, enunciation and articulation of the professional actors in the DVD sequence was noticeably different to the non-professional performances in Machinima. Accordingly, it was decided to use the same sound track – the professional actors' voices - for both films.

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Figure 3 Reprimand Machinima

Figure 4 Poor Performance Machinima

Group Sequences

The group sequences were conducted as per the following table. The rationale for the variable

ordering of viewing of the media sequences was related to the concepts of primacy and recency.

The ordering of the presentation of information has a significant history in the literature. Care

should be taken by researchers to account for outcomes which may be explained by these

psychological phenomena. Accordingly for group both in Second Life and in the real world, each ordering was conducted in equal numbers as described in the following tables:

Group A – Real World

Interview Number	Name	Location	Allocated Seq.
1	Fintan Lalor	Real world	DVD – Machinima
2	James Brennan	Real world	DVD – Machinima
3	Carolina Alfaro	Real world	DVD – Machinima
4	Sarah Gibbons	Real world	DVD – Machinima
5	Joan Cahill	Real world	DVD – Machinima
14	David Byrne	Real world	DVD – Machinima
15	Niall O'Reilly	Real world	DVD – Machinima
16	Keiron Fletcher	Real world	DVD – Machinima

Table 1 Group A Real World, DVD - Machinima

Group B – Real World

Interview Number	Name	Location	Allocated Seq.
6	Sharon O'Brien	Real world	Machinima - DVD
7	Geidre Visockaite	Real world	Machinima - DVD
8	Conor Gannon	Real world	Machinima - DVD
9	Paul Delaney	Real world	Machinima - DVD
10	Grainne Madden	Real world	Machinima - DVD
11	Lisa Kelly	Real world	Machinima - DVD
12	Emma Brennan	Real world	Machinima -DVD
13	Tom Smith	Real world	Machinima -DVD

Table 2 Group B Real World, Machinima - DVD

Group C – Second Life

Interview Number	Name	Location	Allocated Seq.
17	Niall Kelly	Second Life	DVD – Machinima
18	Kathy Hanrahan	Second Life	DVD – Machinima
19	Barry Fennelly	Second Life	DVD – Machinima
21	Gerard Rooney	Second Life	DVD – Machinima
23	Eanna Lohan	Second Life	DVD – Machinima
26	Mark Rooney	Second Life	DVD – Machinima
28	Juan Hernandez	Second Life	DVD – Machinima
30	Luisa Kabala	Second Life	DVD – Machinima

Table 3 Group C Second Life, DVD - Machinima

Group D – Second Life

Interview Number	Name	Location	Allocated Seq.
20	Conor Ryan	Second Life	Machinima - DVD
22	Amy Fitzgerald	Second Life	Machinima - DVD
24	Brian Minnock	Second Life	Machinima - DVD
25	Damien O'Reilly	Second Life	Machinima - DVD
27	Ray Keating	Second Life	Machinima - DVD
29	Charlotte Rufie	Second Life	Machinima - DVD
31	David F. Byrne	Second Life	Machinima -DVD
32	Bernie Stevenson	Second Life	Machinima -DVD

Table 4 Group D Second Life, Machinima - DVD

Irrespective of location (Second Life or Real World) each participant was shown two films in succession, one in Machinima format and the other in DVD format. Following this they were invited to view another film with a different script and storyline. In this case, however, they were constrained to choose only one medium in which to view it - either Machinima or DVD. Following

this viewing they were asked if they were to view a third sequence involving the same alternatives. The pattern of choices offered is as shown in the following table:

First Event	DVD and then Machinima **or** Machinima and then DVD
Second Event	Choose and view a second sequence **either** in DVD or Machinima
Third Event	Choose a third sequence **either** in DVD or Machinima

Table 5 Choices offered to participants

In the third event participants were merely offered the choice of DVD or Machinima but were told that it was a hypothetical choice as they were not permitted to view this third choice. Nevertheless their choices and rationale for same were discussed.

Research Methodology

This section will describe the methodology and research design for conducting this research and in doing so will examine both the nature of knowledge and the means of assessing that knowledge within the context of a research philosophy based on an interpretivist perspective. The design of this research involves the development and delivery of films, experienced by learners with a subsequent semi structured interview to examine and explore the learners' experiences and perceptions. Furthermore, this design was used to gather knowledge on the learner perceptions of these media on an affective basis. In this section this research design will be described and justified within this interpretivist perspective.

Several connected themes appear. At first there is a review of the philosophical perspectives that are relevant to the research question and a discussion on the interpretivist perspective appropriate to this study. There follows a description of the research design prompted by this philosophical approach. Finally, a detailing of the data collection and analytic approaches used, including justification for these approaches is presented.

Choices in research

The researcher in social science must make a fundamental choice. This choice is between very different ontological and epistemological positions. How, therefore, can the best approach be selected?   Blaikie (1993)answers this question by suggesting that there is no neutral ground on which to evaluate the relative merits of each position.

 "any conclusion about the strengths or weaknesses of any approach or strategy will entail the adoption of a particular set of ontological and epistemological assumptions" (Blaikie, 1993:201)

Thus this current research is interpretivist in its approach and in this section this approach will be described and justified. Knowledge exists, according to interpretivists, in its shared meaning (Schwandt, Denzin, & Lincoln, 1994). Interpretivism rejects any notion of a single objective reality, a belief which is held by positivists. Instead multiple realities exist which are constructed in context. This places the researcher in a fundamentally different position than he/she occupies in the positivist tradition. While positivism detaches the researcher from the issue being studied,

interpretivism places the researcher as part of the study and the reality being uncovered, producing as it were, a theory of the theory of others (Schutz, 1972).

An interpretivist epistemology asserts that there is no objective knowledge of social activity. The researcher becomes embedded in interaction or communication with the subject of the research. Knowledge is acquired through the hermeneutic task of *"penetrating the frames of meaning of social actors"* (Blaikie, 1993:205). The outcomes of the research are the result of the interaction between the researcher and subject. In this way interpretivist epistemology emphasises involvement, depth and closeness to subject.

This polarity in epistemology can be characterised in relation to this issue of reality. Positivist observers visualise themselves as being objective or outside of the reality whereas interpretivists or social constructionists see the researcher as part of the knowledge generating process inside the reality.

An interpretivist and qualitative approach

This research used a qualitative approach in holding that knowledge of reality is gained only through social constructions. The core objective of the study is consistent with this in its attempt to better understand learning by learners who have used traditional video and Machinima in training. Accordingly, qualitative studies try to understand phenomena through the meanings that people assign to them. Thus a case study will be used for this research which, in itself is exploratory. A case study approach is appropriate to both qualitative and exploratory research. In doing this, increased understanding will be achieved in respect of learning by learners who are contrasting two approaches – traditional video and Machinima.

A case study entails an analysis of a single case. However the form and location of cases are varied and may be multifaceted. Cases may be

- A single organisation
- A single location
- A person
- A single event

(Bryman & Bell, 2007:62)

Yin (2003)distinguishes different types of case study. The **critical case** involves a specific hypothesis and an examination of how or if this hypothesis may hold. The **unique case** is common in clinical studies. The **revelatory case study** involves material or subjects previously inaccessible to researchers. The **representative** or **typical** case explores a case which is exemplary in everyday situations. The **longitudinal** case examines situations over time (Yin, 2003). Cases are valuable in qualitative research and are subject to praise and criticism as outlined in the following table.

Case study advantages	Case study disadvantages
• Depth is possible • Plurality of data collection methods • Access to small number of cases • Focus in depth on a specific group or unit	• Difficult to manage a lot of data • Challenge in cross checking information • Impossible to generalise • Influence of researcher • Researcher is influenced

Table 6 Advantages and disadvantages of case studies (Anderson, 2009)

The case study is appropriate to a qualitative research approach in that it is exploratory research aimed at gaining new insights. It is also appropriate given that knowledge of social reality is gained only through social constructions. In this research the core objective is to understand learning by learners who are contrasting two approaches. In this way we may understand phenomena through the meanings that people assign to them. The approach for this current research is a combination of the **critical case approach** to gain understanding of circumstances in which a hypothesis may or may not hold and a **revelatory case study** to gain access to something which was inaccessible to previous researchers.

In terms of data gathering, a wide range of different methods are facilitated by the case study method. The principal objective is to understand the phenomena of concern through the meanings that people assign to them. The main data gathering approach used was semi structured interviews. This approach allows subjects to review new territory, separated from context. With face to face interviews, the researcher's detachment is a challenge. The researcher must guard against disclosing preferences. The semi structured interviews focused on:

• Subjects' experience with both media

- Perceptions regarding both media

- Perceived advantages and disadvantages of media

- Reasons for choosing as they did

- Reactions to both media

- Elements they paid attention to in both media

This research used a convenience sample of 32 students drawn from two business masters programmes at NUI, Maynooth – MSc in Business Management and MSc in Strategy and Innovation. The subjects were aged between 22 and 44 years. Nineteen were male and thirteen female. In general they were computer literature being able to use the university's applications for student support and basic MS Office applications.

Data Collection Process

The planning and preparation for this research commenced with the development of the research question and related hypotheses leading to possible interview topics and questions. The use of a loose interview structure included the availability of standardised questions to use when individuals became silent or reticent. This interview approach enabled underlying themes to emerge and facilitated the modification of lines of enquiry. It is incumbent upon the interviewer to probe answers to obtain a rich quality of view. However, it is also possible for the interviewer to build up trusting relationships.

The core objective of the research is to understand perceptions of learners who have used Machinima in training in comparison to traditional video. The approach is qualitative is its attempt to understand phenomena through the meanings that people assign to them. Accordingly data was collected in various ways. As soon as participants accepted the invitation to participate in the research they completed an online questionnaire to establish demographic data and pre research attitudes and beliefs. While participants viewed the learning sequences they were observed and their reactions sought immediately following the viewing of each sequence. In the period following the viewing of the learning experiences there was an initial data analysis to examine the patterns of choices of the participants and to guide the semi structured interviews. Semi Structured interviews were conducted with each participant. A template for guiding each interview was constructed based on the research questions – see Appendix 3. Following the

conduct of the semi structured interviews the data was subjected to examination to seek to identify patterns and themes.

32 subjects participated in the research. The subjects were students on two business masters programmes at the School of Business at NUI, Maynooth. They were aged between 22 and 44 years. The semi structured interviews required a maximum of 20minutes per subject. No significant ethical issues presented and Informed consent required was acquired from each subject. Subjects were informed that their participation was voluntary and refusal was accepted without objection. The design of this research was intended to garner an understanding of subject perceptions of using Machinima in comparison to DVD in management training. It also sought to understand better participants' preferences between DVD and Machinima in management training.

The study involved an iterative sequence of enquiry commencing with a pre questionnaire which informed the semi structured interviews and subsequent data analysis. The pre questionnaire was displayed on a proprietary online survey resource entitled Survey Monkey www.surveymonkey.com and 31 participants completed it in its entirety. The questions posed were mainly in the format of statements with a five point Likert scale set of options for the participants to choose from. The questions/statements posed were as follows:

1. Please state your name
2. Please state your age
3. My skill levels with computer technology are excellent
4. My knowledge of Second Life is comprehensive
5. My knowledge of management skills is excellent
6. I believe that the use of avatars in training (e.g. airline safety displays) is a positive development
7. I believe that it's possible to learn management skills, attitudes and behaviours from traditional management training videos
8. I believe that it is possible to learn management skills from avatars in Second Life just as you do with traditional management videos

These questions were posed to established preconceptions and biases regarding the media concerned. It also was designed to elicit and differences in attitudes to technology that may have been the result of age or skill levels.

Furthermore, subject reactions inform the semi structured interviews, information from which iteratively informs the observation process. In parallel the research question inform the semi structured interviews also and ultimately the findings. The process of the research can be seen in the next figure.
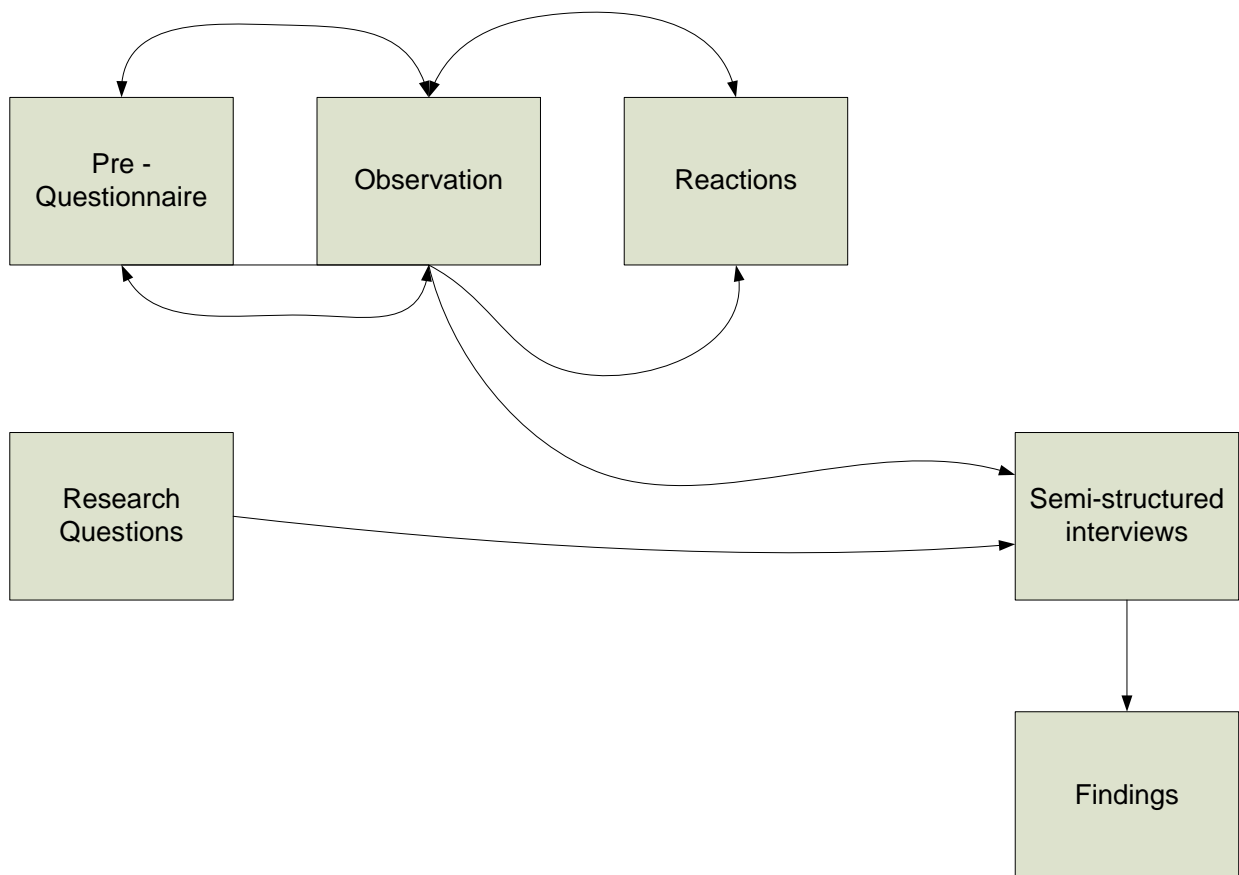

Figure 5 Data Gathering Process

Planning for the collection of data in a qualitative form of enquiry requires a significant degree of preparation (Mason, 2002). Initially the researcher outlines the research questions and

subsequently the component minor questions leading to the development of interview topics and questions and ultimately a loose interview structure including any standardised questions. A pre-questionnaire was used which gathered demographic data and preconceptions of individuals who engaged in the research. As individuals viewed the sequences they were observed. During this time their reactions to the learning sequences and their behaviour while making choices was noted. There followed semi structured interviews leading to data analysis in this section and findings in the following section. Sample extracts from the semi structured interviews are in Appendix 4.

Data Gathering

In analysing the data there was a minimum predefined set of coding of data which has been gathered at the interview stage. The set of predefined data was as follows:

1. Data which has been gathered 'In world'
2. Data gathered in 'real world'
3. Data gathered from Machinima first, traditional DVD second sequence
4. Data gathered from traditional DVD first, Machinima second sequence
5. Demographic data, age, gender
6. Computer literacy, self report, Likert scale, 'very illiterate' to 'very literate'
7. Previous management training (in the skills demonstrated in the sequences)

After the first set of 4 interviews there was an inductive development of further codes. These new codes were based on responses in the early interviews. This approach is appropriate to exploratory research and relevant to interpretivist research. The pre questionnaire was also delayed for issue following these initial interviews to allow for refinement of its questions based on early responses in these interviews. During the semi structured interviews the information to be elicited from the participants included:

- Learner attention
- Learner reaction to each medium in comparison
- Learner differences – in world/real world

The 4 interviews comprised a pilot test and also the enabling of a review of questions plus an initial gathering of data and a test coding of same. Although permission was sought and gained for

audio recording only handwritten notes were taken as there was a significant amount of technology involved and a judgement was made at this early stage to simplify the process until seamless performance in the part of the researcher was achieved. Handwritten notes were taken in the format of direct quotes from participants. These were typed up immediately following the interviews and samples are contained in Appendix 4. As a means of analysing the data, codes were first identified following several readings of the transcripts. The data were then assembled into concept cards which are popular in qualitative data analysis (Bryman & Bell, 2007).

Findings and Discussion

This section refers to the findings from the data collection activities in the research and it also comprises a discussion on these findings. The data sets include: the results from the pre questionnaire; the data showing the actual choices made by each individual within Groups A,B,C and D following the viewing of their allocated sequence; the concept cards which represent the themed ideas which emerged from the coding of the semi structured interviews.

Data

In advance of the viewings and interviews a questionnaire was issued to the participants to the research. This survey was carried out online using proprietary software, Survey Monkey, www.surveymonkey.com which was licensed for use for research purposes. Thirty one respondents completed the survey out of 32 potential participants. The questions in the survey were developed from the research questions and hypotheses. Diagrammatic representations of the responses are shown below.

Results of Pre questionnaire

This convenience sample was gained from cohorts of two masters degree programmes conducted at the School of Business, National University of Ireland, Maynooth, Co. Kildare. Accordingly the age range of the participants was significantly skewed toward a younger age grouping. The following figures contain the diagrammatically presented data from this survey.
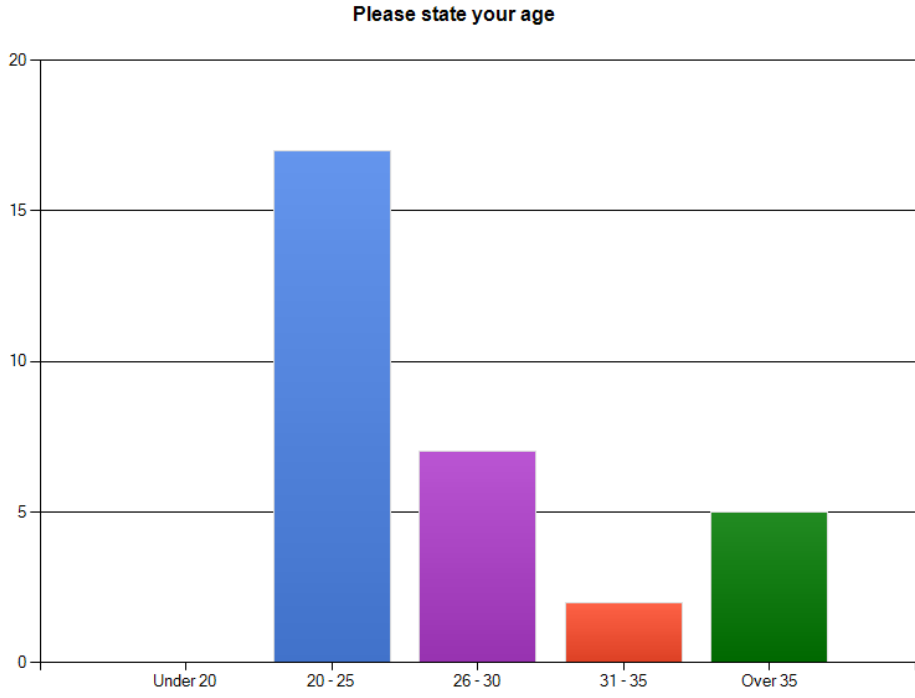
Figure 6 Participants' age ranges
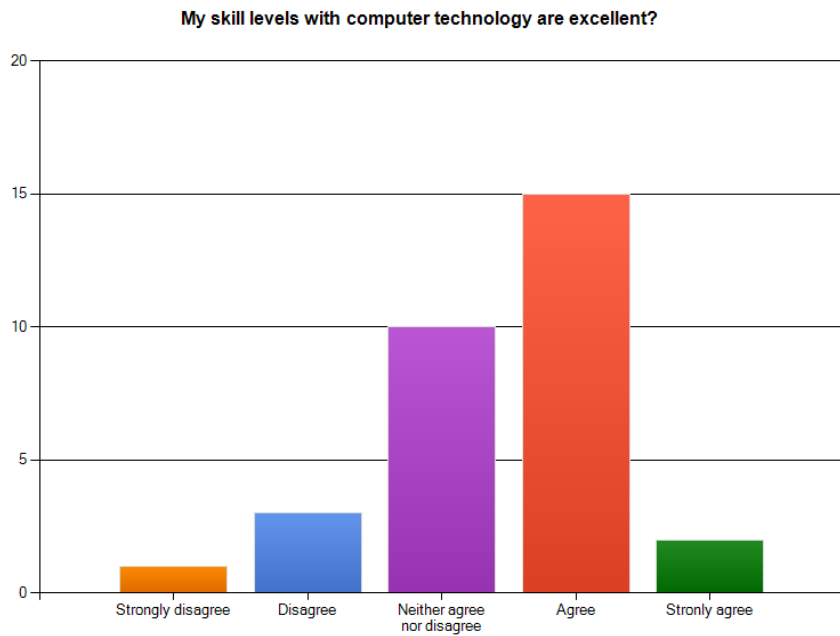
Figure 7 Perceived skill levels of participants

Participants responded in Figure 7 rather positively in terms of their technology skills. Although there was no test applied, all participants, being members of a masters' degree programme had to display significant skills to engage with university systems and to deliver course work appropriately. This removed any potential effect of a lack of technological skill on the findings of the research.

My knowledge of Second Life is comprehensive
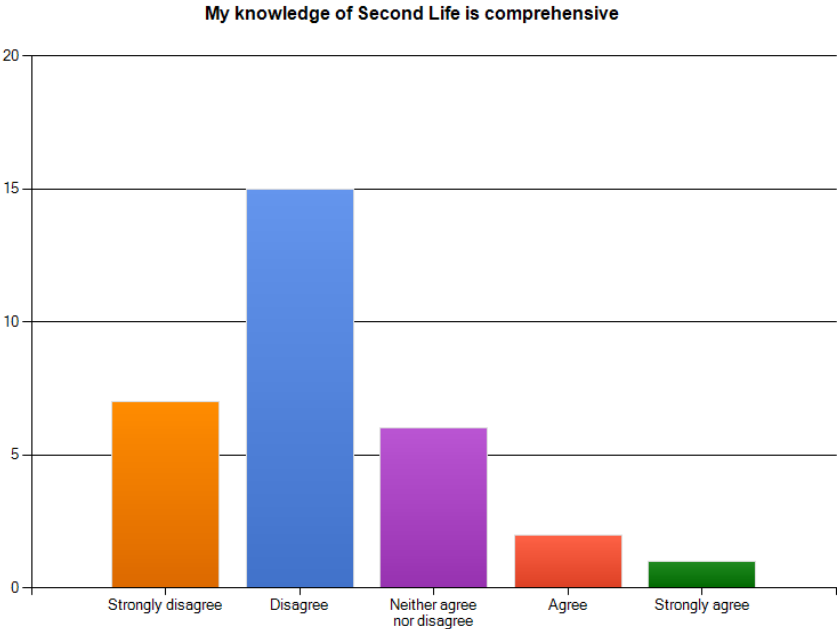
Figure 8 Participants' knowledge of Second Life

Figure 8 displays the participants' responses to the question regarding prior knowledge of Second Life. Participants demonstrate a significant ignorance of this virtual world and only one individual strongly agreed that his/her knowledge was comprehensive. The vast majority of participants were in disagreement with the statement that their knowledge of Second Life was comprehensive. In this instance there was little likelihood of a negative or positive predisposition towards Second Life among participants.

My knowledge of management skills is excellent
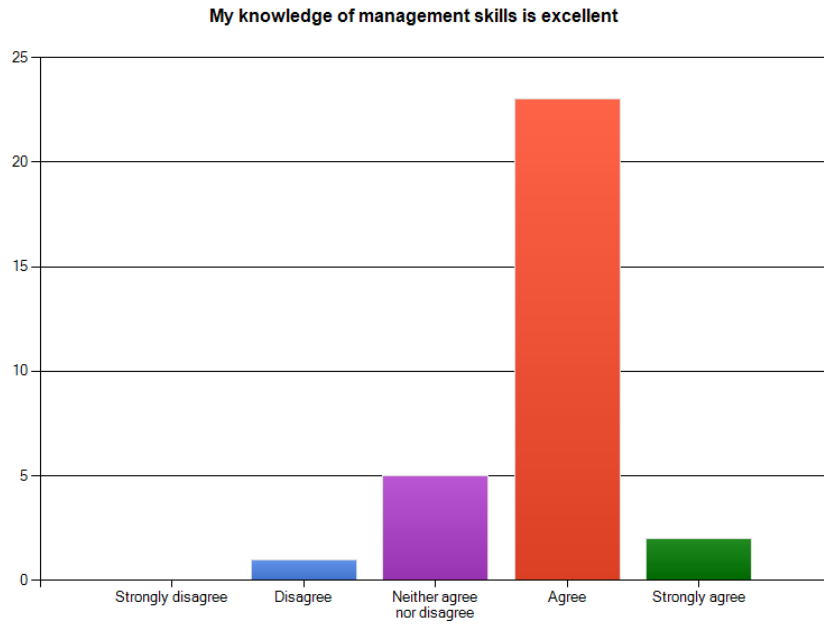
Figure 9 Participants' perceived knowledge of management skills

The question regarding the participants' knowledge related to the ease of which the subjects would understand the substantive material in the management sequences. The purpose of this question was to ascertain if the proposed learning sequences were comprehensible to the participants. There were two management sequences shown which related to the performance management skills of managers. Participants responded suggesting that they could easily comprehend the presented material.

I believe that the use of avatars in training (e.g. airline safety displays) is a positive development
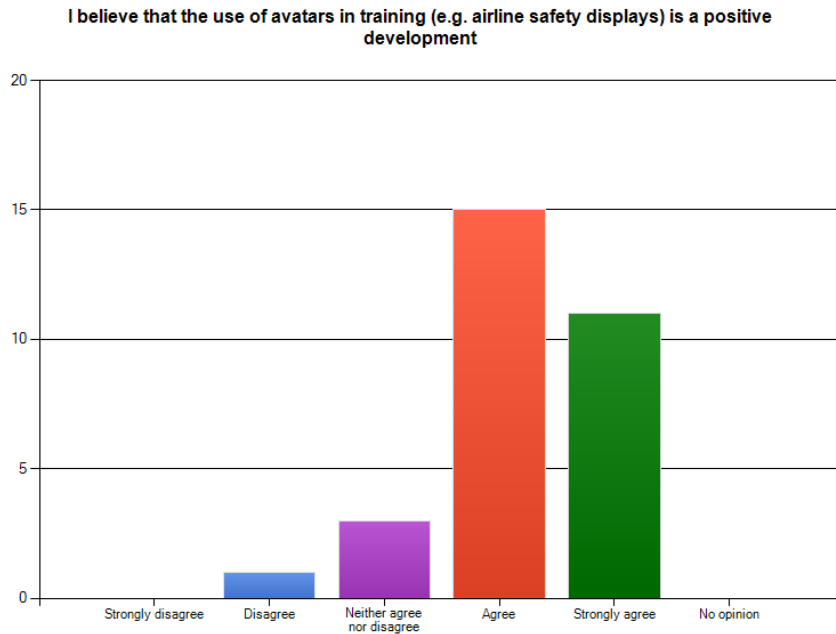
Figure 10 Participants' attitudes towards avatars in training

Figure 10 refers to predisposition towards accepting the role of avatars in training. Participants' responses indicate that there were few, if any, negative predispositions towards the use of avatars in training situations.

I believe that it's possible to learn management skills, attitudes and behaviours from traditional management training videos
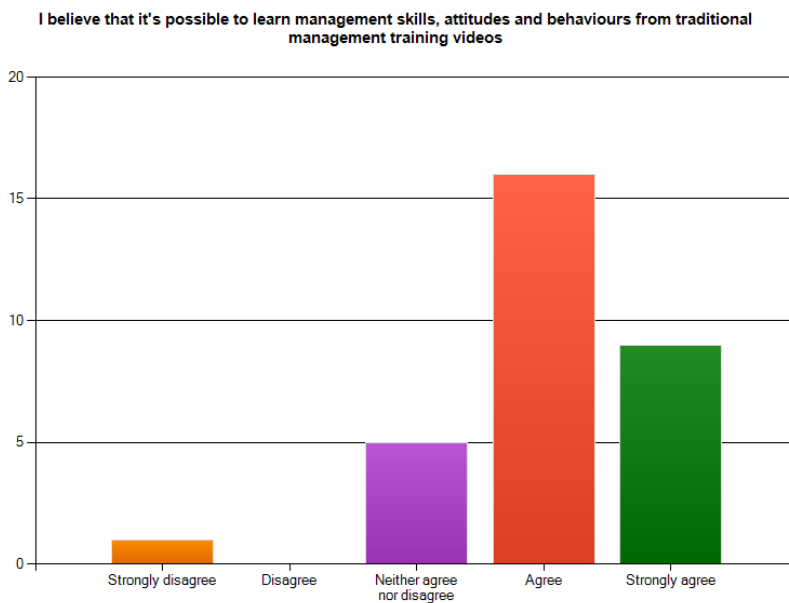
Figure 11 Participants' attitudes towards learning management skills from videos

In a similar way Figure 11 examines predispositions regarding the use of video in management training. Participants demonstrate with their responses here that there are also few, if any negative predispositions towards the use of video in management training.
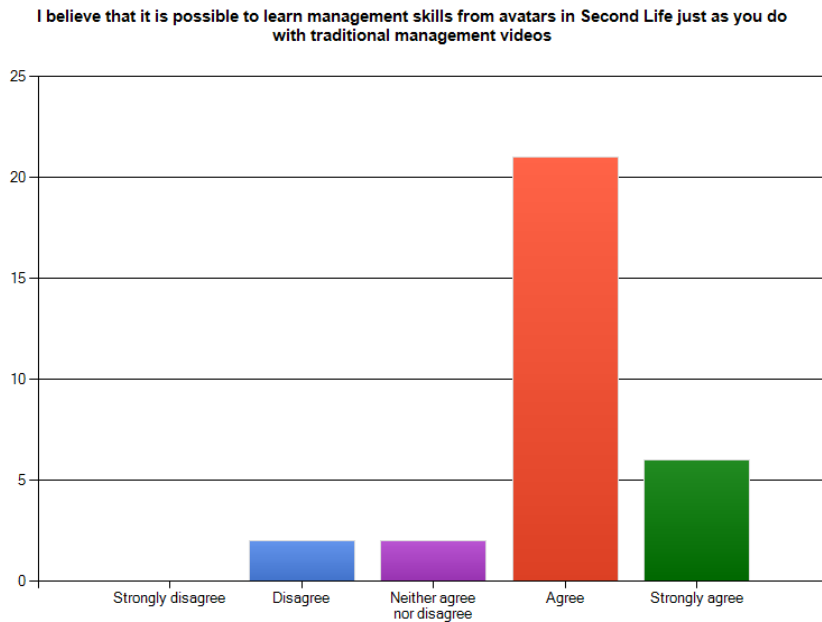
Figure 12 Participants attitudes towards learning from avatars in training

Figure 12 shows that similar to participants' responses for the use of avatars in training the subjects also largely agreed that it was possible to learn management skills from avatars in Second Life. This removed the prospect of any negative predispositions regarding the issue of learning management skills from avatars.

Patterns of choices by participants

Participants in this research experienced both DVD and Machinima films. Following the viewing of the two media each participant was invited to view two further sequences however on these occasions they had to choose **either** DVD or Machinima. To account for primacy and recency the order of media was varied and Groups A and B experienced the sequences in Real World whereas

Groups C and D were in Second Life. The patterns of sequences and choices are shown in the following tables

Group A – Real World

Interview Number	Name	Location	Allocated Seq.	First Choice	Second Choice
1	Fintan Lalor	Real world	DVD – Machinima	Machinima	Machinima
2	James Brennan	Real world	DVD – Machinima	Machinima	DVD
3	Carolina Alfaro	Real world	DVD – Machinima	Machinima	Machinima
4	Sarah Gibbons	Real world	DVD – Machinima	Machinima	Machinima
5	Joan Cahill	Real world	DVD – Machinima	DVD	DVD
14	David Byrne	Real world	DVD – Machinima	Machinima	Machinima
15	Niall O'Reilly	Real world	DVD – Machinima	Machinima	Machinima
16	Keiron Fletcher	Real world	DVD – Machinima	DVD	Machinima

Table 7 Group A Real World, DVD – Machinima Order

In Group A above participants were situated in Real World and viewed their sequences on a 32" flat screen monitor. Their allocated sequence was DVD first, followed by Machinima. In 6 out of 8 cases participants chose to watch Machinima for their first choice. Of these, 5 chose to remain with this medium when the second choice was offered. Of the two participants who chose DVD for a first choice, (Interviews 5 and 16) one remained with this medium for the second choice and the other reverted to Machinima. Both of these participants were in the age category of over 35 years. Interviewee No 2 selected DVD for the second choice was in the age category 26 – 30 years. All of the participants who chose Machinima as a first choice were in the age category of 20 – 25 years.

Group B – Real World

Interview Number	Name	Location	Allocated Seq.	First Choice	Second Choice
6	Sharon O'Brien	Real world	Machinima - DVD	Machinima	Machinima
7	Geidre Visockaite	Real world	Machinima - DVD	DVD	Machinima
8	Conor Gannon	Real world	Machinima - DVD	Machinima	Machinima

9	Paul Delaney	Real world	Machinima - DVD	DVD	DVD
10	Grainne Madden	Real world	Machinima - DVD	DVD	Machinima
11	Lisa Kelly	Real world	Machinima - DVD	DVD	Machinima
12	Emma Brennan	Real world	Machinima -DVD	DVD	DVD
13	Tom Smith	Real world	Machinima -DVD	DVD	Machinima

Table 8 Group B Real World, Machinima - DVD Order

In Group B above participants were situated in Real World and viewed their sequences on a 32"
flat screen monitor. Their allocated sequence was Machinima first followed by DVD. In 6 out of 8
cases participants chose to watch DVD for their first choice. Of these, 2 chose to stay with this
medium when the second choice was offered. The 4 remaining participants opted for Machinima
for their second choices. Of the two participants who chose Machinima for a first choice, both
remained with this medium for the second choice. One of these participants was in the age
category of over 35 years and had excellent technological skills. Interviewee No 12 selected DVD
for the second choice was in the age category 20 - 25 years. All of the participants who chose
Machinima as a first choice were in the age category of 20 – 25 years. Interviewee No 6, who
chose Machinima at first and second invitations, was in the age category of 35 years plus.

In reviewing both Groups A and B it appears that a recency effect was taking place with a strong
likelihood that the most recent medium to be viewed would also be chosen for the first choice. For
the second choice, however, a preference for Machinima was well established with 12 preferences
out of sixteen declaring for that medium. Slight differences emerged in terms of final choices with
those in the older category preferring DVD over the Machinima sequence. This was countered in
one example where a participant in the over 35 years' category had expressed a preference for
Machinima in both first and second choices. Where such anomalies occur it is often worth
exploring with these participant in follow up questions to establish if any differences occur within
categories. In such follow up questioning it was ascertained that the three participants in the over
35 years category who had expressed a preference for DVD has all had managerial experience and
had had significant exposure to management training using DVD. The remaining participant in this
category (Interviewee No.6) who had expressed a preference for Machinima in her first and
second choices had had not exposure to such materials.

Group C – Second Life

Interview Number	Name	Location	Allocated Seq.	First Choice	Second Choice
17	Niall Kelly	Second Life	DVD – Machinima	Machinima	Machinima
18	Kathy Hanrahan	Second Life	DVD – Machinima	Machinima	Machinima
19	Barry Fennelly	Second Life	DVD – Machinima	DVD	DVD
21	Gerard Rooney	Second Life	DVD – Machinima	DVD	Machinima
23	Eanna Lohan	Second Life	DVD – Machinima	DVD	Machinima
26	Mark Rooney	Second Life	DVD – Machinima	Machinima	DVD
28	Juan Hernandez	Second Life	DVD – Machinima	Machinima	Machinima
30	Luisa Kabala	Second Life	DVD – Machinima	Machinima	Machinima

Table 9 Group C Second Life, DVD - Machinima Order

In Group C above participants were situated in Second Life and viewed their sequences on a 32"
flat screen monitor. Their allocated sequence was DVD first followed by Machinima. In 5 out of 8
cases participants chose to watch Machinima for their first choice. Of these, 4 chose to stay with
this medium when the second choice was offered. The remaining participant in this group opted
for DVD for their second choice. Of the 3 participants who chose DVD for a first choice, one
remained with this medium for the second choice and the other two participants reverted to
Machinima. Seven of the eight participants were in the age categories below 30 years. The eighth
participant, (Interview No. 18) was in the age category 35 plus.

Group D – Second Life

Interview Number	Name	Location	Allocated Seq.	First Choice	Second Choice
20	Conor Ryan	Second Life	Machinima - DVD	DVD	Machinima
22	Amy Fitzgerald	Second Life	Machinima - DVD	DVD	DVD
24	Brian Minnock	Second Life	Machinima - DVD	DVD	DVD
25	Damien O'Reilly	Second Life	Machinima - DVD	Machinima	Machinima
27	Ray Keating	Second Life	Machinima - DVD	Machinima	Machinima
29	Charlotte Rufie	Second Life	Machinima - DVD	Machinima	DVD

31	David F. Byrne	Second Life	Machinima -DVD	Machinima	Machinima
32	Bernie Stevenson	Second Life	Machinima -DVD	Machinima	Machinima

Table 10 Group D Second Life, Machinima – DVD Order

In Group D above participants were situated in Second Life and viewed their sequences on a 32"
flat screen monitor. Their allocated sequence was Machinima first followed by DVD. In 3 out of 8
cases participants chose to watch DVD for their first choice. Of these, 2 chose to stay with this
medium when the second choice was offered. The 1 remaining participant opted for Machinima
for the second choice. This participant (Interview No 20) was in the age category of 31 – 35 years.
Of the 5 participants who chose Machinima for a first choice, four remained with this medium for
the second choice. Two of these participants were in the age category of over 35 years and had
excellent technological skills. Interviews No 22 and 24 who selected DVD for the second choice
were in the age category 20 - 25 years. In reviewing both Groups C and D it would seem that no
suggestion of primacy or recency effect could be supported. Nor does it seem likely that choices
could be explained on age grounds given contradictory data present. The trend established with
groups A and B in stating a preference for Machinima was continued.

Contemporaneous with the viewing of each sequence, a semi structured interview took place with
each participant. During these interviews, handwritten notes were made of individual responses
to questions and subsequent discussions. These notes were typed and coded using the concept
card method (Bryman & Bell, 2007:587). The data from this process are shown in the next section.

Concepts and Concept Cards

One of the techniques from grounded theory which helps to analyse data is that of concept cards.
Interpretivist studies generate a significant amount of field notes and transcripts from interviews
and methods must be employed to deal with this amount of data. Concept cards help to identify
particularly important concepts from a study. The researcher accumulates incidents, statements
and events and codes them using a label of significance and finally places them in a concept card.
The label allows themes to emerge which may be analysed further for the identification of
relationships within and between cards (Bryman & Bell, 2007). In the current study and following
each interview the handwritten notes were typed into individual interview transcripts. These
transcripts were read several times and statements of significance were coded. Similar elements

of interest were gathered in concept cards representing a theme of interest which emerged during the interviews. These concept cards are contained in the following tables.

Concept Card Realism: An early concept which emerged following initial coding was that which has been termed **realism**. Realism refers to the degree which the participants felt that the sequence they were viewing felt 'real' or 'false.' See concept card on realism in the next table.

Concept Card - Realism

Data Source	Individual	Quotation, opinion
Interview 1	FL - (DVD/M)	I kept asking in the DVD is that their real feeling
Interview 2	JB - (DVD/M)	DVD looks like a bad scene from a soap. This is not what happens in real life (DVD)
Interview 3	CA - (DVD/M)	You know they are not real (DVD) They look as if they don't believe what they say (DVD)
Interview 4	SG - (DVD/M)	It was contrived (DVD) I did not believe it (DVD)
Interview 5	JC – (M/DVD)	Looks false (SL) Could not be real (SL) Too surreal to get anything from it (SL) More believable (DVD)
Interview 8	CG - (M/DVD)	Be more realistic if they moved (SL) Quite fake (DVD) It's hard to take it seriously (DVD) More realistic (SL) Quite forced (DVD) Maybe DVD is overly good Bad actors and a silly scene (DVD) You know SL is not real DVD is too obvious DVD is too perfect
Interview 9	PD - (M/DVD)	Facial expressions makes DVD more believable

Interview 10	GM - (M/DVD)	DVD is more realistic
		Seemed real to me (DVD)
Interview 11	LK - (M/DVD)	DVD feels more scripted
Interview 12	EB - (M/DVD)	Better idea, more real (DVD)
		Actual people, feel for them more (DVD)
		Relate to them better (DVD)
Interview 15	NO'R - (DVD/M)	More realistic (SL)
		Can't say if it's the truth they are telling (SL)
Interview 16	KF - (DVD/M)	If he was portrayed in a suit…more realistic (SL)
		You compare DVD actors with self
		Relate to DVD a lot more
Interview 18	KH – (DVD/M)	She didn't seem very credible (DVD)
		It's like interior design (TV reality shows). You try to put that person into that house and sometimes say that person does not fit in that house (DVD)
		You are trying to make sense of what you are looking at because they are real people (DVD)
		You think which one of those people on the screen does your boss think you relate to (DVD)
Interview 27	RK – (M/DVD) SL	SL is more believable
		Seemed almost staged (DVD)
		DVD looked like a staged piece
		Second one looks more staged (DVD)
		Earring loses credibility (DVD)
		Low level of professionalism in dress (DVD)
		SL takes the human element out of it
		Second sequence is not as believable (SL)
Interview 28	JH – (DVD/M) SL	Avatars represent real people
		You know it's a virtual world (accept it) SL
Interview 29	CR – (M/DVD) SL	Not natural gestures in the DVD
Interview 30	LK – (DVD/M) SL	Too played, not natural (DVD)

		Not real (DVD)
		In SL it's not a question of 'is it played well?'
		You don't expect that it's real (SL)
Interview 31	DFB – (M/DVD) SL	Only so much you can expect from avatars
		I had a predefined expectation of realism standard
		from DVD
		SL expectations of realism were lower
Interview 32	BS – (M/DVD) SL	In my head the SL is not real
		DVD is not real life
		Trying to be as near to real life as you can get (DVD)

Table 11 Concept Card - Realism

The theme or concept of realism refers to how 'real' the sequence felt to each of the participants. There were differences among participants. Amongst the participants who had considerable previous work experience there was a perception that the DVD presented a more 'real' account of reality than the Machinima sequence. Younger, less experienced participants were more likely to see the DVD sequence as false and contrived and had few such problems with the Machinima sequence. Although initially this difference seemed to relate to age, it became clear following some follow up questions that work experience was a much more plausible explanation. Accordingly, participants with work experience have perhaps been socialised into accepting DVD in management training as the norm and would see Machinima as an untried alternative to an accepted and established success story. Furthermore, the older and more experienced are perhaps less likely to be described as 'digital natives' (those who are at ease with the new technologies) and presumably are more at home with a classical format such as DVD. The actual numbers of participants involved was so small as to render conclusions impossible.

Concept Card Attention: During the semi structured interviews, participants were also invited to comment on those elements in the learning sequences that they paid attention to or which caught their eye or ear or even elements which bored them and failed to grasp their attention. Participants responded significantly and in volume to these questions and this led ultimately to the formation of a concept entitled attention. This concept is outlined in the next table.

Concept Card - Attention

Data Source	Individual	Quotation, opinion
Interview 1	FL - (DVD/M)	Boring DVD, does not get my attention at all I caught more on the Machinima I'd rather watch Machinima I paid more attention to Machinima Machinima is new looking DVD is too familiar
Interview 2	JB - (DVD/M)	DVD looks the same as a lot I've seen Sounds a bit cheesy (DVD) Too concise (DVD) Sameness about it (DVD) DVD does pass you by a bit Machinima background looked more professional More interesting (Machinima) First time I've seen it (Machinima) We are used to screens DVD is over played People are so familiar with DVDs…want something different
Interview 3	CA - (DVD/M)	Oh, God not another video I paid more attention because of the technology (Machinima) This is a novelty…cool…exciting (Machinima)
Interview 4	SG - (DVD/M)	Little bit boring after a while (DVD)
Interview 8	CG - (M/DVD)	DVD is a bit boring I see a lot of those (DVD) It's hard to take it seriously (DVD) More movement (Machinima)

		It's something new (Machinima)
		Machinima will work better if not overused
		Machinima is better because it's new
Interview 11	LK - (M/DVD)	Machinima catches your attention
		It keeps your attention (Machinima)
Interview 12	EB - (M/DVD)	So dead (SL)
		DVD easier to watch
		If SL was longer I'd lose interest
		DVD more interesting
Interview 17	NK – (DVD/M)	I noticed his earring (DVD)
		DVD is an ordinary pale room
		Boss is very harsh
Interview 18	KH – (DVD/M)	I was attracted to the colour in DVD
		I heard every word of that…something to look at…help me focus (SL)
		I paid attention to the arm of her chair (SL)
		You focus on the message (SL)
Interview 19	BF – (DVD/M)	You could see anguish on her face (DVD)
		The facial movements and expressions… came through better in the first video (DVD)
		Bit of a shock on her face (DVD)
		Attend more towards the wording, dialogue (SL)
		Paid more attention to face, demeanour (DVD)
		Face to face speaking to each other (DVD)
		I was solely concentrating on dialogue (SL)
		I was trying to read the employee, her reactions, how she was actually taking information in (DVD)
		In SL just listening to the dialogue
		Paid attention to the body language (DVD)
		SL paid more attention to tone
		Tone of voice of employee, came across better in SL

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		because I was only paying attention to dialogue
		Focus more on the phrasing and tone in SL
		Message in SL because there's not a lot of visual you
		listen more and pick up on tone better.
Interview 20	CR – (M/DVD)	More emotion and see his annoyance (DVD)
		The first one I paid attention to the voice (SL)
		Second one you can see the human features because
		it's actors (DVD)
		DVD I paid attention to what I saw
		You could see facial expressions (DVD)
Interview 21	GR – (DVD/M) SL	Paying attention to how they were saying (DVD)
		Concentrated on the voice (SL)
Interview 22	AF – (M/DVD) SL	Was paying attention to what was going in on the
		facial expressions (DVD)
		Was paying attention to her in SL
Interview 25	DO'R – (M/DVD) SL	DVD, just the way it is, it's boring
		Heard the message the first time (don't need it again)
		(DVD)
Interview 26	MR – (DVD/M) SL	Paying attention to the actor (DVD)
Interview 27	RK – (M/DVD) SL	I paid attention to the male (SL)
		In DVD I paid attention to the female
		I was working out the characters in SL
		Paid attention to the tone of the interaction (SL)
Interview 28	JH – (DVD/M) SL	I paid attention to the girl – red dress (DVD)
		I paid attention to the boss (DVD)
		Not focus on the background in SL
		Sport boss (SL)
		Analysing dress in DVD
		Focus on the message in SL
		In SL features are simplified

Interview 29	CR – (M/DVD)SL	Nothing stands out
		SL is more unusual
		Voices, paying attention to the voices (SL)
Interview 30	LK – (DVD/M) SL	Pay attention to the male (SL)
		You focus more on what is being said (SL)
		Even though they are not moving it lets you focus on what is being said (SL)
Interview 31	DFB – (M/DVD) SL	DVD quality is poorer
		Quality is better with Machinima
		Did not judge the actors' ability – I know they were not real people (SL)
		I did judge the actors' ability as I was looking at them (DVD)
		There is more sophistication in SL
		DVD seems cheap
		I've seen lots of videos
		Not curious about it (DVD)
Interview 32	BS – (M/DVD) SL	Watching out for eye contact
		Message, not personality is coming across in SL
		Most DVDs are the same
		Don't have the personality issue so you can pay attention to the message (SL)

Table 12 Concept Card – Attention

The concept of attention followed closely on how participants had perceived the concept of realism. Participants who had seen either DVD or Machinima as 'realistic' also concurred that they paid more attention to that medium. Where one medium was preferred over the other, that medium also took on benevolent attributes. A trend emerged in the concept of attention being paid to different elements depending on preference expressed. Participants who preferred Machinima seemed to have paid attention to the message and the voices portraying that message. Participants who preferred DVD were attending to features of the actors such as dress, facial expressions or emotion.

Concept Card Learning: The element of attention has a certain relationship to the following concept of distraction in which attributes of the learning sequences can be seen to distract from the message intended. In addition to realism and attention, participants also referred to the concept of learning. Learning refers to perceive learning by participants in respect of each medium. Responses made during the interviews were coded and can be seen in the following concept card.

Concept Card – Learning

Data Source	Individual	Quotation, opinion
Interview 1	FL - (DVD/M)	I absorb more with Machinima
Interview 2	JB - (DVD/M)	DVD is static learning
		Easy to figure out where it was going (DVD)
Interview 6	SO'B - (M/DVD)	I missed the message (DVD)
		The message is clear in SL
		It's clearer in Machinima
		The importance came across in Machinima
		It's getting across the point in Machinima through the audio
		Message came across factually in both
Interview 7	GV – (M/DVD)	It brought the message across (Machinima)
		It did the job (Machinima)
		Both portrayed the message
Interview 8	CG - (M/DVD)	I understood the whole thing
Interview 9	PD – (M/DVD)	Facial expressions enhanced the meaning of DVD
		You get more from DVD
Interview 11	LK - (M/DVD)	Both media are clear
Interview 12	EB - (M/DVD)	Very clear what is happening in both
		Messages were very clear
Interview 14	DB – (DVD/M)	Point is coming across in SL
		You know what is going on in both

Interview 15	KF – (DVD/M)	You learn the message plus actions you must take as a manager (DVD)
		Get more from the human actor (DVD)
		You listen to the message in SL
Interview 18	KH – (DVD/M)	The message was clear…about being on time (DVD)
		It's a lot clearer when you have avatars
		I heard the message more clearly (SL)
		Message a lot clearer in the second one (SL)
		It's very clever and I heard every word of it (SL)
Interview 19	BF – (DVD/M)	Message comes across stronger (DVD)
		I'm choosing it because it's getting the message across better to me (DVD)
Interview 20	CR – (DVD/M)	Message seemed a lot clearer in DVD
Interview 21	GR – (DVD/M) SL	DVD is clearer
		Much better for understanding DVD
Interview 22	AF – (M/DVD) SL	DVD is clearer
		Clear message coming across (DVD)
		Much clearer than SL (DVD)
Interview 23	EL – (DVD/M) SL	Machinima not as clear
		DVD clear
		DVD clearer than Machinima
		Manager dealing with reprimand in first scene, understand well in both
		Manager is dealing with poor performance in second scene, understand well in both
Interview 24	BM – (M/DVD) SL	Clear situation in both
Interview 25	DO'R – (M/DVD) SL	Don't get the body language (understand) (DVD)
		Real accents, not digital (understandable) (SL)
Interview 26	MR – (DVD/M) SL	Clearer message in SL
Interview 27	RK – (M/DVD) SL	Learning is pretty clear (SL)

Interview 29	CR – (M/DVD) SL	Message is clear
		Makes it easier to understand (DVD)
Interview 30	LK – (DVD/M) SL	Clear what is being said
Interview 31	DFB – (M/DVD) SL	It taught the lesson (SL)
Interview 32	BS – (M/DVD) SL	Both media are very clear
		The message is in the setting (SL)
		Message is clear in both media

Table 13 Concept Card – Learning

Participants seem to agree in terms of learning as a concept. Participants ultimately preferred one medium over the other and favoured that medium generally in terms of learning. However, there was a general agreement that both media had delivered the message effectively. To what degree this was due to watching the first sequence twice is difficult to ascertain.

Concept Card Distraction: During the interviews participants referred often to issues regarding distraction. While watching the media, principally the DVD, participants reported that they were frequently distracted by mannerisms, dress and other issues. These comments are coded and recorded in the following concept card.

Concept Card - Distraction

Data Source	Individual	Quotation, opinion
Interview 3	CA - (DVD/M)	With the real actors you get distracted
		With Machinima I wasn't distracted, I already knew it was a computer
		I noticed it was the same voices but it let me concentrate on the interaction
Interview 4	SG - (DVD/M)	DVD is distracting
		Keeping attention is difficult in DVD
		Body language is distracting in DVD
		Cues are not there to distract in Machinima
		After a while Machinima could be distracting
Interview 5	JC – (M/DVD)	Looks false (SL)

		Could not be real (SL)
		Too surreal to get anything from it (SL)
		More believable (DVD)
Interview 6	SO'B – (M/DVD)	You are not distracted in Machinima with their body language
		You could focus on the issue in Machinima
		My eye was drawn to other things in DVD
		I would have missed things in DVD
		Noting is distracting from the message in Machinima
Interview 7	GV – (M/DVD)	DVD has emotions, facial expressions and body language.
		You focus less on what is actually being said
		With the avatar you are listening to what is being said
		Since it's about listening and reflection, I pick the avatar
Interview 8	CG – (M/DVD)	Don't have to concentrate on people in SL
		Distraction in DVD
		In SL you pay attention to what is being said
		There are no distractions in SL
		There is a distraction feature in DVD
Interview 11	LK - (M/DVD)	Light over their heads concentrates you (Machinima)
		You are not necessarily listening to what is going on (DVD)
		In SL you have to listen
Interview 12	EB - (M/DVD)	Concentrate better (DVD)
		Listening more (DVD)
		Hear things a bit more with avatars
Interview 14	DB – (DVD/M)	Once you get used to SL you concentrate on the point
		You focus on 'listening to the point' (SL)
		Not how they are saying it or their mannerisms (SL)

		You listen to what is going on in SL
		Listen to the language being used
Interview 15	NO'R - (DVD/M)	More focus on what they are saying (SL)
		Focus in SL on what is coming out of their mouths
Interview 16	KF - (DVD/M)	Could end up missing something you should see (being distracted in DVD)
		Rather than concentrating on the message (DVD)
		DVD evokes more than the issue at hand
		You have to exercise more control as a learner (DVD)
		Opportunity to be distracted (DVD)
Interview 17	NK – (DVD/M)	Earring took me off the topic (DVD)
		Bit strange that earring (DVD)
		Would not expect that (earring) (DVD)
		Listened more to what they were saying (SL)
		Earring distracted (DVD)
		Can concentrate more on message (SL)
		Concentrate more on the technique more in SL
Interview 18	KH – (DVD/M)	I found myself distracted by trying to read the human beings rather than listen to the message (DVD)
		Personally I wasn't distracted by their facial expression (SL)
		However I was distracted by his belly (SL)
		You are still distracted by the 'pretend' people (SL)
		You begin to evoke stories and get distracted from the message (DVD)
		The fact that you are trying to make a story somehow distracts you from the message (DVD)
		It's taking away from the message (DVD)
		I did not feel distracted in any way (SL)
		There's no colour in it…no distraction (SL)

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Interview 19	BF – (DVD/M)	Drifted away from dialogue in (DVD)
		Began to watch things other than the dialogue (DVD)
Interview 24	BM – (M/DVD) SL	You are able to listen to what they are saying (SL)
		You don't pick up on the body language but you definitely listen to what they are saying (SL)
		Have to focus on what is being said (SL)
		If safety was needed you'd be able to listen closely to the message (SL)
Interview 25	DO'R – (M/DVD) SL	Could concentrate on the message (SL)
		Can concentrate on the message (SL)
		Nothing to distract you (SL)
Interview 26	MR – (DVD/M) SL	These aren't the greatest actors
		You focus in SL
		Less is being offered to you (SL)
		You focus on the message (SL)
		Could not concentrate on actors' message because of body language (DVD)
		Harder to focus on DVD because of distraction of body language (DVD)
		Not paying attention sometimes (DVD)
Interview 27	RK – (M/DVD) SL	SL takes out things like the earring (SL)
		No other distractions (SL)
		Not as much distraction (SL)
Interview 28	JH – (DVD/M) SL	I focus on the environment in DVD
		Focus more on the message in SL
		You focus more on situations in SL
		Distraction levels are not the same in SL
		Not so distracted in SL

| Interview 31 | DFB – (M/DVD) SL | Earring is a distraction (DVD) |
| | | SL is engaging |

Table 14 Concept Card – Distraction

Distraction was established as a concept during and following the interviews with participants. This concept arose principally with those participants who had favoured Machinima over DVD. These participants were quite likely to refer to DVD having distracting qualities. Even those participants who favoured DVD referred to it as a medium that 'evokes more than the issue at hand' (Interview 16) suggesting that the image and behaviour of real actors stimulated a variety of thoughts memories and potentialities which had little to do with the central point of the DVD. This was similarly referred to by other participants as a distraction. Participants found the ability to see facial expressions and body language during the sequence while watching DVD as a distracting element. Conversely, participants repeatedly saw that Machinima offered no such distractions and that the learner could focus more easily on the key message of the sequence.

Concept Card Disposition: During the interviews participants regularly referred to differences between DVD and Machinima. The principal difference expressed was concerning the ability (or lack of same) to identify the disposition or state of mind of the actor through the facial expressions, gestures or other body language features. These emerged as a concept which has been termed disposition in the following table.

Concept Card – Disposition

Data Source	Individual	Quotation, opinion
Interview 6	SO'B – (M/DVD)	There is a lot of visual in DVD – can see body language
		I'm picking up on body language in DVD
		Body language in DVD is not in tune with responses
		I was looking at her putting up here folder against her (DVD)
Interview 7	GV – (M/DVD)	There's a lack of emotion (Machinima)
		More emotion in DVD
		Emotions play a huge part in understanding
Interview 8	CG - (M/DVD)	It would not put me off…lack of facial expressions

		(Machinima)
		They are not moving at all in SL
		In SL you don't have to watch features
Interview 9	PD - (M/DVD)	Facial expressions makes DVD more believable
		Big thing for me is expressions and eye contacts
		There are no facial expressions in SL
		In DVD you can see the live expression of the human actor
		In SL the boss is not facing her
		I paid attention to the eye contact or lack of it
		(Machinima)
		The body position was important to me
		Facial expressions may not be as big an issue in some situations so Machinima might be used
		There is a bit of an unwritten eye contact in the DVD (sequence) which is important
		(Body language)….enhances the meaning of DVD
Interview 10	GM - (M/DVD)	Difficult to assess feeling (SL)
		Can't tell her emotions (SL)
		You can see a lot more in DVD – she's uncomfortable
		See body language…she's standoffish (DVD)
		In SL not really reacting
		Cant see body language (SL)
		SL not conveying emotions
		I paid attention to the body language and emotions
		I can see the facial expressions in DVD
		Can't see her emotions in SL
Interview 11	LK - (M/DVD)	He was looking at her in the DVD
		Facial part is the only difference
		Height of rudeness not to look at her (SL)
		Head was moving in DVD

		Need the eye contact (SL)
		You know who is talking in DVD
		They are not looking at the person in Machinima
Interview 12	EB - (M/DVD)	You can see body language in DVD
Interview 13	TS – (M/DVD)	Body language of boss shows he's disappointed (DVD)
		Can't see that in SL
		No body language or facial expressions in SL
		No body cues to show upset in SL
		These things (body language) get the message across
		No hand movements in SL
		Mags was angry – you can tell from her face (DVD)
Interview 14	DB – (DVD/M)	Visual cues…he's more aggressive in DVD
		Not facing each other in SL
Interview 15	NO'R - (DVD/M)	Can't see expressions in Machinima – it's better
		No expressions (SL)
Interview 16	KF - (DVD/M)	Avatar just tells the message
		Recipient seems nonchalant (SL)
		Relate to DVD a lot more
Interview 17	NK – (DVD/M)	You can judge more their facial expressions (DVD)
		I was watching facial reactions (DVD)
		Hard to say if facial reactions added to it (DVD)
Interview 18	KH – (DVD/M)	He wasn't looking at her, wasn't facing her (DVD)
Interview 20	CR (DVD/M)	You could see facial expressions (DVD)
		Some situations where facial expressions would be necessary (DVD)
Interview 21	GR – (DVD/M) SL	Saw facial expressions (DVD)
		No expressions (SL)
		Need facial expressions in management
		Was watching their body language (DVD)
Interview 22	AF – (M/DVD) SL	Can't see facial expressions in SL

		Need facial expressions in SL
Interview 23	EL – (DVD/M) SL	DVD has facial expressions
		Need facial expressions SL
		Would use SL for issues that need only voice
		Where body language is needed than use only DVD
Interview 24	BM – (M/DVD) SL	No body language in SL
		Was paying attention to the body language (DVD)
		Big flaw in SL if body language was needed
		To see body language is important in management
		situations (SL)
Interview 25	DO'R – (M/DVD) SL	Don't get the body language (DVD)
		Real accents, not digital (SL)
Interview 26	MR – (DVD/M) SL	Facial expressions in DVD
		Less facial expressions in SL
		No emotions in SL
Interview 28	JH – (DVD/M) SL	Don't get facial expressions in SL
		Boss is looking at her (DVD)
		Facial expressions important (DVD)
Interview 29	CR – (M/DVD) SL	Gestures were the only difference between the two
		Noticed they were not looking at each other (SL)
		Harder to identify gestures in SL
		You have to deal with other people's reactions and
		body language (DVD)
Interview 30	LK – (DVD/M) SL	Not looking at her (SL)
		Not turned towards her (SL)
Interview 31	DFB – (M/DVD) SL	SL boss does not look like a boss
		SL does not express emotion
		Their mouths are moving but that's all (SL)
		Lack of body language is not a barrier to understanding
		(SL)

Interview 32	BS – (M/DVD) SL	No eye contact in SL
		Less movement and gestures in SL
		Lack of eye contact is not distracting (SL)
		Boss physically turned to her (SL)
		Eye contact is less of an issue in SL

Table 15 Concept Card - Disposition

Participants were unanimous that facial expressions and body language was absent in the Machinima sequences. Less unanimity abounded as to what this absence meant. Those participants who preferred DVD (a minority) also explained the presence of facial expressions and body language as important criteria in deciding their preference. On the other hand the majority of participants, those who preferred Machinima, saw the absence of facial expressions and body language as a liberating factor which enabled them to focus on the message of the sequence.

Discussion

The pre questionnaire uncovered a significant level of consensus between the 32 participants of the study. There was considerable agreement regarding their levels of management skills and their lack of knowledge and ability in Second Life. Most seemed open or neutral to the possibilities of Second Life and DVD in terms of management training for the future. In this section differences have emerged in terms of age and preferences between participants, however the numbers are too small to draw conclusions. Follow up questions revealed that this element could have less to do with age than with socialisation, experience and previous exposure to management training materials. It is plausible that participants with such experiences have come to accept and to trust DVD as an established medium in management training events. The emergence of Machinima did not reveal itself to them as a viable and credible alternative. It may also be unwise to dismiss completely the age factor in this issue. A generation effect may exist between the 35 plus group and the younger members of the sample. These younger members have grown up with reality TV and the gradual destruction of typical role models in society. They are consummately familiar with gaming technology and, accordingly, a credibility issue does not exist with this medium. Rather, these younger participants viewed the 'acting' in DVD sequences as being less 'real.'

The semi structured interview process revealed a set of five inter-related themes which emerged from the coding of relevant issues offered by participants. These were

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1. Realism
2. Attention
3. Learning
4. Distraction
5. Disposition

The theme of realism was somewhat interdependent with the other themes. This theme was age and/or experience related in that participants' earlier socialisation seemingly influenced their predisposition towards the medium. Some of those who had been exposed to management training and development initiatives in their earlier career seemed to trust the DVD medium and to perceive that these modelling sequences represented 'reality.' In the younger, less experienced participants who had little or no work experience the DVD sequence seemed 'contrived' and staged.

The themes of attention, distraction and disposition were linked to realism in that depending on medium preference, participants paid attention to, or were distracted by elements in the sequence. Participants who felt the DVD sequence was unreal were 'distracted' by the earring worn by the manager or by the mode of dress or mannerisms of the actors. Participants in this grouping also felt that the modelling in the DVD seemed 'staged' and unreal. This response evokes sociological questions beyond the scope of this paper. Are younger people eschewing role models of the past? Has a decade of reality TV reconfigured what is real in the minds of young people? These questions do not lie within the purview of this paper but do provide interesting questions for future research.

Findings

Participants preferred Machinima. In terms of simple reactions these data show participant preferences for Machinima in contrast to DVD in the case of management learning sequences. Some issues of age and previous experience do emerge but in general the Machinima medium was the preferred final choice in 23 out of 32 participants. Some effect of recency was identified in the real world field work. A majority of participants continued on from the most recently experienced medium and chose that medium for their first choice. Ultimately, however, a preference for Machinima asserted itself in both real world and Second Life for the participants' second choices.

Participants learned equally well from both media. The acceptance by all of the effectiveness of both media to teach management learning objectives was a significant outcome from the discussions. Participants seem to view both DVD and Machinima media as equally effective in transmitting a learning sequence. In no instances during the interviews did any participant report a lack of understanding in relation to the intended message. This is significant as there are considerable differences between both media in terms of visual presentation to the learner. The literature refers to the power of body language in delivering a message (Merabian, 1981). However this research found that Second Life, with its absence of body language, facial expressions and nuances of non verbal behaviour fared equally well as DVD in communication and understanding of a message. Participants observing Second Life seemed to be none the poorer for having to pay attention to the verbal message without support from body language, facial expressions etc.

Participants were able to focus more on the message in Machinima. Participants reported being distracted somewhat in DVD - paying attention to non verbal communication such as body language, facial expressions, and appearance etc. This was much less likely to occur in Machinima and perhaps partly because participants in unanimity were unable to detect facial expressions or body language in the Machinima sequences. Paradoxically the absence of these features seems to have been an advantage in that it did not create distraction for them. Most, indeed, reported that the absence of such distractions enabled them to focus more on the message of the sequence.

Machinima is more 'real' than DVD. Repeatedly participants referred to the issue of reality when describing DVD. For most participants, DVD was seen as lacking in reality – being contrived and/or staged. Seemingly the attempt of DVD to convey reality by using human actors, striving as it did to replicate organisational life, fell short of the expectations of the participants. DVD, which attempted to recreate a 'real' and plausible representation of actual organisational life was unable to approximate the expectations of the youthful audience, raised on reality TV and World of Warcraft. Machinima seemed to escape the high standards of expectations that participants placed on the DVD medium. Participants seem to accept that Machinima was not trying to approximate a reality but merely to convey a message. As such, Machinima provided none of the distractions of DVD and in contrast was particularly efficient and effect at delivering the message.

Conclusions, Reliability and Validity and Future Research

Conclusions

This research has explored perceptions of participants in respect of learning sequences in Machinima and DVD. Participants were exposed to these sequences both in real world and in Second Life. The outcomes of this research suggest that participants prefer Machinima as a delivery mechanism in significant numbers. Additionally, participants perceived that both media worked equally well as a learning medium but that Machinima held certain advantages. DVD contained certain distractions in terms of body language, facial expressions and appearance whereas the absence of these distractions in Machinima allowed participants to concentrate on the message of the learning sequences. The research question and hypotheses of the study were as follows:

RQ: How do learners perceive Machinima in contrast to DVDs in management training in Second Life and real world?

The design and execution of this research showed that participants react favourably to Machinima learning sequences across a range of criteria. In certain key areas, themes emerged which detailed how and why this preference occurred. The following hypotheses were posited at the outset of this research and how the research has dealt with these is as follows:

H 1.   Subjects will pay attention to different elements in DVD and Machinima media

In general this hypothesis was supported as the majority of participants attended to different elements of these two media. In particular, participants remarked on the body language, facial expressions and appearance of the human actors in the DVD sequences. In contrast, participants attended to the absence of such non verbal cues in the Machinima sequences.

H 2.   Subjects will report intimidation in DVD sequences in contrast to Machinima

This hypothesis was not supported as intimidation was not reported in either DVD or Machinima sequences.

H 3. *Subjects will report lower distraction by visual elements in Machinima than to DVD*

Hypothesis 3 was strongly supported as an overwhelming majority of participants reported distraction in DVD sequences and none in Machinima sequences.

H 4. *Subjects will report distraction by facial expressions and appearance in DVD*

This hypothesis was strongly supported with many participants reporting distraction by facial expressions and appearance.

H 5 *Subjects will report a higher affective reaction to Machinima sequences than DVD*

This hypothesis was supported in that 23 out of 32 participants chose Machinima as their ultimate choice for viewing management learning sequences in preference to DVD.

H 6 *Subjects will experience these media differently in Real and Immersive Virtual Worlds*

This hypothesis was not supported. The choices expressed by participants in each environment did not differ significantly. No participant, who viewed the management films in the Second Life environment reported being aware of anything other than the experience of 'watching a film.' No one expressed any consciousness or awareness of the environment in which they were viewing the films.

Reliability and Validity

The generalisablity of findings is usually discussed in quantitative research where sample sizes are generally much higher than that in this study. In qualitative research the objective of the study is typically to explore and explain the rich experiences of small numbers of individuals without hoping to generalise to a wider population. There is however, a potential that the sample in this study is heterogeneous, having come from many university disciplines and beyond. The age range is a wide spread and the national culture profile comprises 5 nationalities. Accordingly, although it is not possible to declare that these findings are generalisable to the wider world, a cautious and moderate generalisation may be appropriate.

It is possible to suggest that this research offers some inspiration to those educators who are exploring the use of Second Life and other immersive worlds in search of improved ways of learning for students. The consensus among participants suggests that Second Life may be an

appropriate medium for future research and that its potential for ultimately superseding DVD as a means of modelling in management training is currently under-researched.

Reliability and validity are key terms in positivistic research and are frequently used in qualitative research also. However, these terms are somewhat problematic in interpretivism (Easterby-Smith, Thorpe, & Lowe, 1996). Reliability means that similar observations will be made by other researchers on other occasions. Validity means that the researcher has gained full access to the meanings and knowledge of informants. In seeking reliability in qualitative research the researcher must ensure thoroughness, remain honest, careful and accurate. To promote validity the research ensured that the method is logical to the guiding questions, that the interview method was capable of uncovering accurate perception and that there was self awareness on the part of the researcher.

In qualitative research the use of the terms reliability and validity can be used in different contexts. On the one hand they may be used in a way similar to that of quantitative research. Mason, in her text on qualitative methods suggests that:

Reliability, validity, and generalizability are different kinds of measures of the quality, rigour and wider potential of research, which are achieved according to certain methodological and disciplinary conventions and principles (1996:21)

Mason further argues that validity concerns 'whether you are observing, identifying, or measuring what you say you are (1996:24).

This position is somewhat contested in the case of authors who contend that it is not appropriate to consider qualitative research in the same way as we do quantitative studies and that the former should be evaluated according to other criteria. Lincoln and Guba (1994) suggest alternative means of evaluating qualitative research and propose alternatives to validity and reliability – trustworthiness and authenticity.

The current study cannot be measured in line with quantitative research but may be reviewed using some of Lincoln and Guba's advices. Trustworthiness comprises four criteria which have counterparts in quantitative research – credibility, transferability, dependability and confirmability. Accordingly, qualitative research such as this study relies on the reader's acceptance that the

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study has been conducted with reasonable rigour and accurate attention to the canons of qualitative practice.

This study has credibility in that it has been conducted according to the canons of good practice. Informal member validation suggests that the account within the study represents accuracy to its participants. Transferability refers to the generalisability which is redolent of quantitative studies. Qualitative studies require that there should be enough description to allow others to judge whether the findings can be transferred to other situations. In this case there is sufficient description to allow for these judgements. In terms of dependability Lincoln and Guba have proposed this idea in contrast to reliability in quantitative research (Lincoln & Guba, 1985). Complete records in this instance have been kept to allow peers to act as auditors to the process. This includes description of procedures, interview notes and data analysis decisions etc. Confirmability suggests acting 'in good faith' as a researcher (Bryman & Bell, 2007:414). It should be obvious to the reader if the researcher has allowed personal values to sway the approach used.

Future research

Research should be considered into the potential for Machinima to be considered as a replacement for DVD in management training. Sufficient encouragement arises from this study to suggest that Machinima contains none of the distractions of DVD that are recorded in this study. In addition, many organisations seek to utilise training materials with diverse audiences. Future research could consider whether Machinima overcomes some of the challenges in such situations such as the appearance of role models, the meaning of body language gestures and facial expressions and how these non verbal signals fail to travel well across national and cultural boundaries. Machinima could offer the potential for exploring if key message could be conveyed without the distractions of DVD based role models.

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Appendix 1 Script for Films

The Reprimand

Leader chooses to express a constructively delivered reprimand message.

Shane: 'Aoife, you were over an hour and half late this morning

Aoife: 'oh right, I forgot to come and see you……………..' (trails off)

Shane: 'as a result we kept the Accountants waiting '

Aoife: 'oh, right'

Shane: '…….and I'm disappointed about that'

Aoife: 'ok, sorry'

Shane: 'try and get here on time, or let us know if you are going to be late'

Aoife: 'will do, ok'

The Poor Performance Interview

Mags: Neil, I want to talk to you about submitting your reports on time. You've been late for three of the last four deadlines and I've spoken to you about it but there's been no change. Now you know that it's critical for everyone to pull together on this one because clients depend on you and I depend on you and my boss depends on me. So, what's the problem?

Noeleen 'I've been struggling to juggle some of my caseload recently

Mags: 'So you're under a bit of pressure'

Noeleen: 'That's right (warming) you know I'm covering some of Siobhan's cases and it's time-consuming. So I can't seem to juggle the client time and the paperwork and I'm totally exhausted now'

Mags: 'so you're worn out with all that you have to do'

Noeleen: 'right, I'm at the end of my tether at this stage and now I'm in trouble over it all

Mags: 'no Noeleen, you're not in trouble but let's see what we've got. You are focussing on the clients but you are running late on clinics and you are not getting enough time afterwards for paperwork and that's what's making your reports late' (Caption SUMMARISE)

Noeleen: 'right, that's it all right'

Mags: 'ok Noeleen so what are your options?'

Noeleen: 'what do you think I should do?'

Mags: 'I think this is better coming from you Noeleen. What you do you think?'

Noeleen: 'Right, I could stay late to do the paperwork……..

Mags: 'Hmmmmm'

Noeleen: 'or I could stick to the timetable with the clients and protect time twice a week for paperwork

Mags: 'which do you think will work?'

Noeleen: 'I think sticking to the timetable would get me through'

Mags: 'When will you put this into place, Noeleen?'

Noeleen; 'I can start today'

Mags: 'so what about next month's report?'

Noeleen: 'don't worry; it will be in on time'

Appendix 2 The Shot List

The Shot List

REPRIMAND

ANDY CROWE

TADGH HICKEY

Wide Shot/Two Shot

C/U Andy Dialogue

C/U Andy Noddys

POV O/S Tadgh talking Andy Listening

C/U Tadgh Dialogue

C/U Tadgh Noddys

POV O/S Andy talking Tadgh listening

AND x 2

POOR PERFORMANCE

NORMA SHEAHAN

EILIN O'DEA

Wide Shot/Two Shot

C/U NORMA Dialogue

C/U NORMA Noddys

POV O/S EILIN talking NORMA Listening

C/U EILIN Dialogue

C/U EILIN Noddys

POV O/S NORMA talking EILIN listening

AND x 2

Appendix 3 – Interview Template

| Interview No. | Name: | |
| | Location: | Sequence: |

Welcome and relax the participant. Thank them for coming. Ensure that they are seated comfortably. Provide refreshments. Ensure that they have completed the pre-questionnaire. Check the sequence that they must follow making sure that there will be no delay when it comes to playing the first sequence.

Provide a brief introduction as to the purpose of the research. Be brief. Tell them that you will show them a learning sequence in one medium and then the same sequence in another medium. After this is over you will explore with them how they have experienced the sequence. Following this discussion you will offer them the opportunity of watching a second sequence. For this sequence they will be able to watch it in one medium only. They will choose the medium. You will then discuss with them why they made such a choice. They will watch the sequence in their chosen medium and discuss what their experience was. Finally they will be asked if they had an opportunity to watch a third sequence in what medium would it be in.

1. *What is your reaction to these sequences?*
2. *What did you see in watching the first one?*
3. *What did you see in watching the second one?*
4. *What did you learn?*
5. *How do you contrast both?*
6. *What do you see as the differences between them?*
7. *In what ways are they different as learning tools?*
8. *What did you pay attention to?*
9. *What did you take away from each of them?*

Offer Choice

1. Why did you choose as you did?
2. What is your reaction to the sequence?
3. What did you see in watching it?
4. What did you learn?
5. How do you contrast it now with the other medium?
6. Do you see any new differences between them?
7. What did you pay attention to this sequence?
8. What did you take away from it?

Offer a third choice but don't give it (it's an 'if' question)

1. Why did you choose as you did?
2. What do you expect will happen in future?
3. Will this affect the way people learn?
4. How has this altered (if at all) how you see these media?
5. What recommendations would you make for its use in training in future
6. Why?

Appendix 4 – Interview Extracts

Fintan Lalor – DVD Machinima, 1ˢᵗ choice, Machinima, 2ⁿᵈ Choice Machinima

The DVD looks like a standard setting

DVD was not handled well

Behaviour does not look right or wrong on DVD

Boring DVD does not get my attention at all.

I caught more on the Machinima

I'd rather watch the Machinima

The cartoon is more playful

I absorb more with Machinima

The DVD looks one dimensional

It seems like the DVD is using a single camera

There is a special effect in the Machinima

I paid more attention to Machinima

I kept asking in the DVD 'is that their real feeling?'

The Machinima is new looking

The DVD is too familiar

Interview 2 - James Brennan - DVD- Machinima, 1st choice Machinima, 2nd Choice DVD

DVD Looks like a bad scene from a soap

DVD looks the same as a lot I've seen

Sounds a bit cheesy, DVD

Too concise (the DVD)

Not too bad since it's short, bored if it was longer DVD

There is a sameness about it (DVD)

Easy to figure out where it (DVD) was going

There are stereotypes on it (DVD)

DVD is static learning

The DVD does pass you by a bit

Second life background looked professional

More interesting Machinima

First time I've seen this.

We are used to screens

Does not make a difference Machinima

DVD is over played

This is not what happens in real life (DVD)

I can see their faces clearly (in DVD) but not in SL

People are so familiar with DVDs – want something different

Interview 3 - Carolina Alfaro – DVD – Machinima, 1st Choice Machinima, 2nd Choice Machinima

You know they are not real (in the DVD)

Cannot happen in real life (DVD)

They look as if they don't believe what they say (DVD)

Bad actors (in DVD)

Trying hard to make you believe them (DVD)

Oh God not another video is what I felt when I saw this.

I paid more attention to Machinima because of the technology

This is a novelty…cool…exciting.

I noticed the voices were the same

With real actors you get distracted.

With Machinima I wasn't distracted; I already knew it was a computer

I didn't have facial cues that I was analysing to see if it was real.

I don't 'believe' (in DVD)

Scenarios are false… (in DVD)…even though it's the same scenario)

I noticed it was the same voices but it let me concentrate on the interaction

Interview 4 – Sarah Gibbons – DVD – Machinima, 1st Choice Machinima, 2nd Choice Machinima

It was contrived (DVD)

I did not believe it (DVD)

She was a bad actor (DVD)

I take that more seriously (Machinima)

Acting is not real (DVD)

A bit hustly bustly (DVD)

DVD is distracting

Attention is difficult (DVD)

Body language is distracting (DVD)

Little bit boring after a while (DVD)

DVD is not real

Cues are not there to distract in Machinima

DVD is forced

No cues in Machinima

DVD not serious

I know it's a video

After a while Machinima could be distracting