

Actors and avatars: why learners prefer digital agents

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Abstract

Purpose – The purpose of this study is to compare learner experiences of recorded instructional videos (DVDs) with Machinima.

Design/methodology/approach – In this exploratory study, sets of learning sequences in management skills training were delivered to 32 learners using both methods, and learner reactions were gathered using post-event interviews.

Findings – Analysis of learner responses showed that participants prefer Machinima as a learning delivery mechanism. Participants also reported being better able to concentrate on the message of the Machinima learning sequences.

Research limitations/implications – The sample was not representative, being a convenience sample derived by open invitation from cohorts of two master's degree programmes conducted at the School of Business, Maynooth University, Maynooth, Co. Kildare. The age range of the participants was significantly skewed toward a younger age grouping. No learning test was given to assess the teaching efficacy of the methods. Implications for practice include using Machinima to model desirable behaviours to trainees. Future research should extend the research to other settings.

Practical implications – 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.

Originality/value – Originality of the study stems from the potential replacement of DVD with Machinima in learning.

Keywords Second life, Modelling, Virtual reality, Machinima, Media in education, Teaching/learning strategies

Paper type Research paper

1. Introduction

1.1 Using new technology

We constantly strive, with new technology, to see how it may enable us to improve how we have done things up until now and not by its “new unique characteristics and potential” (Winn, 2005). A century ago motor cars were little more than horse drawn carriages with engines. In more recent times, PowerPoint emerged as a digital version of an old style overhead projector. 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 as learning media in both real and IVWs. 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 IVWs 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 and 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; Dickey, 2005; De Freitas, 2006). This study facilitates learner comparison between two distinct media from vantage points in both Second Life and in real world. DVD in management training using human actors is contrasted with sequences using avatars that are made on virtual film sets in IVWs using Machinima.

1.2 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 and Baldwin, 1986, p. 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 (Campbell, 1971a; Campbell *et al.*, 1970; Goldstein, 1980; Campbell, 1971b). 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 and 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 (Gist, 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 and Davis, 2003).

In spite of general agreement regarding its effectiveness in training, there are significant drawbacks to the use of video in training (Gist, 1989). One of the most powerful of these issues concerns the cost of developing video-based forms of modelling of desired behaviours. Production costs are considerable and some of these artefacts resemble truncated television dramas with attendant production costs (Keys and 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 *et al.*, 2010). This issue is related to the sophistication and perceived skill of the model being presented. Learners may perceive that the standards being portrayed are unattainable. Alternatives to this medium should be considered.

Alternatives to DVD may include the concept of gamification. Gamification is an approach to instruction that enables learning using game elements, mechanics and game-based thinking (Kapp, 2014). Gamification has the potential to have a significant impact on today’s learners, helping engagement increased productivity (Erenli, 2013).

Gamification may be used to help learners stay engaged, if educators are enabled to restructure and reorganize their lessons creatively (Yueh-Min and Ting-Ting, 2011; Kapp, 2014). As a result, students will be motivated to broaden their minds and improve their skills.

The concept of presence is also studied in immersive spaces and typically experienced in virtual worlds. Gorini *et al.* (2011) examined how the virtual experience could be optimised by manipulating emotional and cognitive factors. Their work suggests that a combination of immersion and narrative create an effective virtual reality experience by contributing differently to increasing the sense of presence (Gorini *et al.*, 2011).

Machinima, as an alternative to DVD, offers presumed advantages. Until now, the overall rationale for the use of Machinima in training programmes has focused on the benefits for the executive educator, as 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. 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.

There is considerable support, with some reservations for the use of virtual environments as valuable tools for educators (Barbalios *et al.*, 2013). These enhancements may be recognised as advantageous to learning and the sense of presence of the learner. In terms of learning, virtual environments show improvements in learning acquisition and retention (Hwang and Hu, 2013). In medical education, virtual practice proves superior to other educational methods (Consorti *et al.*, 2012). In addition, in the virtual world, the environment, the tools and avatars offer a sense of something much more than spectacle, a sense of presence (Girvan *et al.*, 2013). The user becomes immersed in the environment. One reservation is expressed by Beltrán Sierra *et al.* (2012) suggesting that students tend to get distracted in Second Life. The current study will examine this issue also. Given that teaching in IVWs may perhaps present a viable opportunity for learning desired behaviours in management training, the following exploratory research question was proposed for this study:

RQ1. How do learners perceive Machinima in contrast to DVDs in management training in Second Life and real world?

Using Machinima in IVWs is an alternative means of delivering management training which may overcome some of the disadvantages of DVD. With Machinima, intimidation of learners may not be present. In Second Life, the absence of body language, mannerisms and facial expressions may remove from the learner potential distractions in the obligatory search for credibility and may allow the learner to concentrate in an undistracted manner on the message being presented. IVWs, such as Second Life, offer, therefore, significant opportunities to examine how learners perceive these environments in contrast to the same activities in the real world. Accordingly, there are some research statements (RS) that emerge from this research question as follows:

RS1. Subjects will pay attention to different elements in DVD and Machinima media.

- RS2. Subjects will report intimidation in DVD sequences in contrast to Machinima.
- RS3. Subjects will report lower distraction by visual elements in Machinima than to DVD.
- RS4. Subjects will report distraction by facial expressions and appearance in DVD.
- RS5. Subjects will report a higher affective reaction to Machinima sequences.
- RS6. Subjects will experience these media differently in real and IVWs.

2. Method

2.1 Participants

This research used a convenience sample of 32 students drawn from two business masters programmes at Maynooth University – MSc in Business Management and MSc in Strategy and Innovation. Of all, 19 were male and 13 female. They were computer literate in the sense that to join the programme they had to be able to use the university’s IT applications for student support and basic MS Office applications. Accordingly, the age range of the participants was significantly skewed toward a younger age grouping. The following table contains the descriptive data from this survey (Table I).

2.2 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 required 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.

2.3 Data collection procedures

Data were gathered by online questionnaire and interview process. 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.

Age bands	20-25 (56%)	26-30 (21.88%)	31-35 (6.25%)	> 35 (15.63%)
Gender	13 female (40.63%)		19 male (59.37%)	
Education	Honours undergraduate (100 %)			

Table I.
Descriptive data of participants

The core objective of the research is to understand perceptions of learners who have used Machinima in training in comparison to traditional video. 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. Following the conduct of the semi-structured interviews, the data were subjected to examination to seek to identify patterns and themes.

In all, 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 20 minutes 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 (1: strongly disagree, 5: strongly agree) set of options for the participants to choose from. The questions/statements posed were as follows:

- Please state your name.
- Please state your age.
- My skill levels with computer technology are excellent.
- My knowledge of Second Life is comprehensive.
- My knowledge of management skills is excellent.
- I believe that the use of avatars in training (e.g. airline safety displays) is a positive development.
- I believe that it is possible to learn management skills, attitudes and behaviours from traditional management training videos.
- 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 establish pre-conceptions and biases regarding the media concerned. It also was designed to elicit any 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 that iteratively informs the observation process. In parallel, the research questions inform the semi-structured

interviews also and ultimately the findings. The process of the research can be seen in Figure 1.

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 pre-conceptions 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 were noted. There followed semi-structured interviews leading to data analysis in this section and findings in the following section.

3. 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:

- data which has been gathered “In world”;
- data gathered in “real world”;
- data gathered from Machinima first, traditional DVD second sequence;
- data gathered from traditional DVD first, Machinima second sequence;
- demographic data, age, gender;
- computer literacy, self report, Likert scale, “very illiterate” to “very literate”; and
- previous management training (in the skills demonstrated in the sequences).

After the first set of four interviews, there was an inductive development of further codes. These new codes were based on responses in the early interviews. This approach

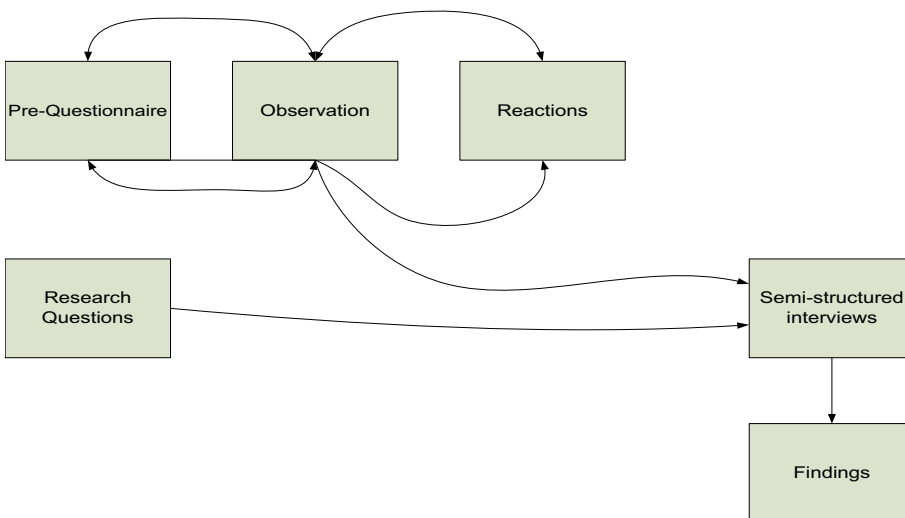


Figure 1. Data gathering process

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 four interviews comprised a pilot test and also enabled a review of questions, plus an initial gathering of data and a test coding of the 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. 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 and Bell, 2007).

4. Results

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; and the concept cards which represent the themed ideas which emerged from the coding of the semi-structured interviews.

4.1 Pre-questionnaire

In all, 31 respondents completed the survey out of 32 potential participants. The questions, in the form of statements, in the survey were developed from the research questions and hypotheses. Participants were invited to respond to a five-point Likert scale ranging from strongly disagree, disagree, neither agree nor disagree, agree, to strongly agree. The purpose of the pre-questionnaire was to elicit demographic and attitudinal data that may be relevant to the results of the survey.

4.1.1 Results of pre-questionnaire. The results of the survey provided interesting information regarding the sample.

The survey suggested that the group were technologically literate. The mean of the responses to the statement, *My skill levels with computer technology are excellent*, was 3.45 and the standard deviation was 0.88. This score suggests a group with a high self-efficacy regarding computer skills, and the low standard deviation suggests a low spread of responses and considerable consensus. The group did not have a strong knowledge of Second Life. The mean of the responses to the statement, *My knowledge of Second Life is comprehensive*, was 2.19 suggesting a high level of disagreement and that this group perceived itself to have a low level of knowledge of this immersive world. The standard deviation of 0.98 also suggested a low spread of responses to the question and reasonable consensus. The group had a high level of self-efficacy regarding management skills. The mean of responses to the statement, *My knowledge of*

management skills is excellent, at 3.7 suggested that the group, as management postgraduates, felt that their knowledge of the skills of management was superior. Again, the low SD of 0.88 suggests consensus and an absence of outliers in this statement.

The group commenced the study in a positive frame of mind towards the use of avatars in training. The mean of the responses to the statement, *I believe that the use of avatars in training is a positive development*, was 4.06 which suggested a warm welcome for avatars in training from the group in advance of the study. The low standard deviation of 1.06 suggests conformity in this statement also.

The group was also accepting the use of video in management skills training. The response to the statement, *I believe that it is possible to learn management skills attitudes and behaviours from traditional training management videos*, suggested that group was equally well disposed towards learning by video, given that the mean in response to this question was 3.91. The low standard deviation also suggested conformity in the group and a low spread of responses. The sample members responded positively to the use of avatars in Second Life in management skills training. The response to the statement, *I believe that it is possible to learn management skills, attitudes and behaviours from avatars in Second Life* learners, was positive in anticipation of being able to learn from avatars, given that the mean for this question was 3.88. A low standard deviation of 1.01 suggested conformity of responses.

Participants responded rather positively in terms of their computer technology skills, and with the exception of the scores for the question on Second Life, the standard deviations in the above table seem to support this. Although there was no test applied, all participants, being members of a masters' degree programme, had to display significant skills to engage with university IT and applications systems and to deliver course work appropriately. This removed any potential effect of a lack of technological skill on the findings of the research. Participants demonstrate a significant ignorance of Second Life and only one individual strongly agreed that his/her knowledge was comprehensive. In this instance, there was little likelihood of a negative or positive predisposition towards Second Life among participants. The question regarding the participants' knowledge in relation to management skills attempted to assess the ease by 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. Participant responses suggest that they could easily comprehend the presented material. Participants were also asked to what degree they were accepting of 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. The pre-questionnaire also examined 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. In a similar manner, 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.

4.2 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 [Table II](#).

In Group A, 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 six out of eight cases, participants chose to watch Machinima for their first choice. Of these, five 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. Interview 2 who 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 ([Table III](#)).

In Group B, 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 six out of eight cases, participants chose to watch DVD for their first choice. Of these, two chose to stay with this medium when the second choice was offered. The four 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

Table II.
Group A real world,
DVD – Machinima
order

Interview no.	Name	Location	Allocated sequence	First choice	Second choice
1	FL	Real world	DVD – Machinima	Machinima	Machinima
2	JB	Real world	DVD – Machinima	Machinima	DVD
3	CA	Real world	DVD – Machinima	Machinima	Machinima
4	SG	Real world	DVD – Machinima	Machinima	Machinima
5	JC	Real world	DVD – Machinima	DVD	DVD
14	DB	Real world	DVD – Machinima	Machinima	Machinima
15	NO'R	Real world	DVD – Machinima	Machinima	Machinima
16	KF	Real world	DVD – Machinima	DVD	Machinima

Table III.
Group B real world,
Machinima – DVD
order

Interview no.	Name	Location	Allocated sequence	First choice	Second choice
6	SO'B	Real world	Machinima – DVD	Machinima	Machinima
7	GV	Real world	Machinima – DVD	DVD	Machinima
8	CG	Real world	Machinima – DVD	Machinima	Machinima
9	PD	Real world	Machinima – DVD	DVD	DVD
10	GM	Real world	Machinima – DVD	DVD	Machinima
11	LK	Real world	Machinima – DVD	DVD	Machinima
12	EB	Real world	Machinima – DVD	DVD	DVD
13	TS	Real world	Machinima – DVD	DVD	Machinima

and had excellent technological skills. Interview 6, who chose Machinima at first and second invitations, was in the age category of 35 years plus. Interview 12 who 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.

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 16 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 (Interview 6) who had expressed a preference for Machinima in her first and second choices had had no exposure to such materials (Table IV).

In Group C, 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 five out of eight cases, participants chose to watch Machinima for their first choice. Of these, four 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 three 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 of below 30 years. The eighth participant (Interview 18) was in the age category of 35 plus (Table V).

In Group D, 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 three out of eight cases, participants chose to watch DVD for their first choice. Of these, two chose to stay with this medium when the second choice was offered. The one remaining participant opted for Machinima for the second choice. This participant (Interview 20) was in the age category of 31-35 years. Of the five 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

Interview no.	Name	Location	Allocated sequence	First choice	Second choice
17	NxK	Second Life	DVD – Machinima	Machinima	Machinima
18	KH	Second Life	DVD – Machinima	Machinima	Machinima
19	BF	Second Life	DVD – Machinima	DVD	DVD
21	GR	Second Life	DVD – Machinima	DVD	Machinima
23	EL	Second Life	DVD – Machinima	DVD	Machinima
26	MR	Second Life	DVD – Machinima	Machinima	DVD
28	JH	Second Life	DVD – Machinima	Machinima	Machinima
30	LK	Second Life	DVD – Machinima	Machinima	Machinima

Table IV.
Group C Second Life,
DVD – Machinima
order

technological skills. Interviews 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 the present contradictory data. 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 and Bell, 2007, p. 587). The data from this process are shown in the next section.

5. Discussion

5.1 Concepts and concept cards findings

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 that must be used 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 and 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 [Appendix](#) and are described below

5.1.1 Concept card realism. An early concept which emerged following initial coding was that which has been termed as *realism*. Realism refers to the degree to which the participants felt that the sequence they were viewing felt “real” or “false”. The theme or concept of realism refers to how “real” the sequence felt to each of the participants. There were differences among participants. Among 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

Interview no.	Name	Location	Allocated sequence	First choice	Second choice
20	CR	Second Life	Machinima – DVD	DVD	Machinima
22	AF	Second Life	Machinima – DVD	DVD	DVD
24	BM	Second Life	Machinima – DVD	DVD	DVD
25	DO'R	Second Life	Machinima – DVD	Machinima	Machinima
27	RK	Second Life	Machinima – DVD	Machinima	Machinima
29	CR	Second Life	Machinima – DVD	Machinima	DVD
31	DFB	Second Life	Machinima – DVD	Machinima	Machinima
32	BS	Second Life	Machinima – DVD	Machinima	Machinima

Table V.
Group D Second Life,
Machinima – DVD
order

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.

5.1.2 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 [Appendix](#). 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 the features of the actors, such as dress, facial expressions or emotion.

5.1.3 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 [Appendix](#). 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.

5.1.4 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 [Appendix](#). 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.

5.1.5 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 [Appendix](#). Participants were unanimous that facial expressions and body language were 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.

5.2 Inter-participant agreement findings

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:

- (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.

5.3 Participant preference findings

5.3.1 Two-third 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.

5.3.2 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.

5.3.3 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, 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. This finding conflicts somewhat with Beltrán Sierra *et al.*’s (2012) assertion that students tend to get distracted in Second Life.

5.3.4 *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.

5.4 *Research questions and research statements findings*

The research question and hypotheses of the study were as follows:

RQ1. 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 research statements were posited at the outset of this research and how the research has dealt with these is as follows:

RS1. Subjects will pay attention to different elements in DVD and Machinima media.

In general, this statement 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:

RS2. Subjects will report intimidation in DVD sequences in contrast to Machinima.

This research statement was not supported as intimidation was not reported in either DVD or Machinima sequences:

RS3. Subjects will report lower distraction by visual elements in Machinima than by DVD.

RS3 was strongly supported, as an overwhelming majority of participants reported distraction in DVD sequences and none in Machinima sequences. This issue will be repeated in this section. It is significant that Beltrán Sierra *et al.* (2012) identified distraction in Second Life as an issue for learners:

RS4. Subjects will report distraction by facial expressions and appearance in DVD.

This research statement was strongly supported with many participants reporting distraction by facial expressions and appearance. Earlier research had suggested that learners were subject to distraction in Second life (Beltrán Sierra *et al.*, 2012). However,

counter-intuitively, in this study, the distraction was noted only in the DVD sequences: for viewing management learning sequences:

RS5. Subjects will report a higher affective reaction to Machinima sequences.

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

RS6. Subjects will experience these media differently in real and IVMs.

This research statement 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. In addition, as stated earlier, there was no difference in experience in terms of distraction between real and immersive worlds, something which had been encountered in earlier research in respect of Second Life (Beltrán Sierra *et al.*, 2012).

5.5 Implications for future research

This paper suggests that future research in this area may produce significant results. This study contains an implication that multi-disciplinary research into ICT learning through alternative technologies, including gamification and other technology-enhanced learning methods. This may be done using joint research initiatives.

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 messages could be conveyed without the distractions of DVD-based role models.

The limitations of the study concern the sample. A small sample size of 32 participants limits the generalizability of the study which future research may rectify. The convenience aspect of the study that saw it located within a master’s programme at a liberal arts university signal the requirement for future research to consider other locations.

5.6 Significance of the results

The results provide encouragement for practitioners involved in management and executive education to use Machinima for modelling purposes. Because the results suggest that learners will experience less distraction using Machinima than they will in DVD learning situations, it is possible that Machinima may prove to be a more effective medium for delivering modelling in management education. In addition, as participants in the study also had a greater affective reaction to Machinima, it is like that learning practitioners will find little difficulty in achieving acceptance of Machinima among learners.

6. 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. Gender did not seem to influence preferences. The research supports earlier work which offered considerable support for the use of virtual environments as valuable tools for educators (Barbalios *et al.*, 2013). This study also noted positive learner perceptions in respect of improved learning as has been noted in earlier research (Hwang and Hu, 2013). Earlier research by Girvan *et al.* (2013) seemed to offer something of an advantage for virtual worlds in education practice; however, this research suggested that both virtual and real environments functioned equally well.

References

- Aldrich, C. (2005), *Learning by Doing: A Comprehensive Guide to Simulations, Computer Games and Pedagogy in E-learning and Other Educational Experiences*, John Wiley, Pfeiffer, San Francisco, Chichester.
- Barbalios, N., Ioannidou, I., Tzionas, P. and Paraskeuopoulos, S. (2013), "A model supported interactive virtual environment for natural resource sharing in environmental education", *Computers & Education*, Vol. 62, pp. 231-248.
- Beltrán Sierra, L.M., Gutiérrez, R.S. and Garzón-Castro, C.L. (2012), "Second life as a support element for learning electronic related subjects: a real case", *Computers & Education*, Vol. 58 No. 1, pp. 291-302.
- Blascovich, J., Loomis, J., Beall, A.C., Swinth, K.R., Hoyt, C.L. and Bailenson, J.N. (2002), "Immersive virtual environment technology as a methodological tool for social psychology", *Psychological Inquiry*, Vol. 13 No. 2, pp. 103-124.
- Bryman, A. and Bell, E. (2007), *Business Research Methods*, Oxford University Press, Oxford.
- Buggey, T. (2007), "A picture is worth: video self-modeling applications at school and home", *Journal of Positive Behavioral Interventions*, Vol. 9 No. 3, pp. 151-158.
- Campbell, J.P. (1971a), "Personnel training and development", *Annual Review of Psychology*, Vol. 22 No. 1, pp. 565-602.
- Campbell, J.P. (1971b), "Personnel training and development", *Annual Review of Psychology*, Vol. 22 No. 1, pp. 565-602.
- Campbell, J.P., Dunnette, M.D.L.E.E. and Weick, K.E. (1970), *Managerial Behavior, Performance, and Effectiveness*, McGraw-Hill, New York, NY.
- Consorti, F., Mancuso, R., Nocioni, M. and Piccolo, A. (2012), "Efficacy of virtual patients in medical education: a meta-analysis of randomized studies", *Computers & Education*, Vol. 59 No. 3, pp. 1001-1008.
- De Freitas, S. (2006), "Using games and simulations for supporting learning", *Learning, Media and Technology*, Vol. 31 No. 4, pp. 343-358.
- Dickey, M. (2005), "Three-dimensional virtual worlds and distance learning: two case studies of Active Worlds as a medium for distance education", *British Journal of Educational Technology*, Vol. 36 No. 3, pp. 439-451.

- Erenli, K. (2013), "Gamify your teaching – using location-based games for educational purposes", *International Journal of Advanced Corporate Learning*, Vol. 6 No. 2, pp. 22-27.
- Girvan, C., Tangney, B. and Savage, T. (2013), "SLurples: supporting constructionist learning in Second Life", *Computers & Education*, Vol. 61, pp. 115-132.
- Gist, M.E. (1989), "The influence of training method on self-efficacy and idea generation among managers", *Personnel Psychology*, Vol. 42 No. 4, pp. 787-805.
- Goldstein, I.L. (1980), "Training in work organizations", *Annual Review of Psychology*, Vol. 31, pp. 229-272.
- Gorini, A., Capideville, C.S., De Leo, G., Mantovani, F. and Riva, G. (2011), "The role of immersion and narrative in mediated presence: the virtual hospital experience", *CyberPsychology, Behavior & Social Networking*, Vol. 14 No. 3, pp. 99-105.
- Hwang, W.-Y. and Hu, S.-S. (2013), "Analysis of peer learning behaviors using multiple representations in virtual reality and their impacts on geometry problem solving", *Computers & Education*, Vol. 62, pp. 308-319.
- Kapp, K. (2014), "GAMIFICATION: separating fact from fiction", *Chief Learning Officer*, Vol. 13 No. 3, pp. 45-52.
- Keys, B. and Wolfe, J. (1988), "Management education and development: current issues and emerging trends", *Journal of Management*, Vol. 14 No. 2, pp. 205-229.
- Marsh, B., Mitchell, N. and Adamczyk, P. (2010), "Interactive video technology: enhancing professional learning in initial teacher education", *Computers & Education*, Vol. 54 No. 3, pp. 742-748.
- Mason, J. (2002), *Qualitative Researching*, Sage Publications, London.
- Merabian, A. (1981), *Silent Messages*, Wadsworth, Belmont, CA.
- Middleton, A.J. and Mather, R. (2008), "Machinima interventions: innovative approaches to immersive virtual world curriculum integration", *Alt-J*, Vol. 16 No. 3, pp. 207-220.
- PCMag.com (2011), *PCMag.com Encyclopaedia* (accessed 13 January 2011).
- Savin-Baden, M. (2008), "From cognitive capability to social reform? Shifting perceptions of learning in immersive worlds", *Alt-J*, Vol. 16 No. 3, pp. 151-161.
- Taylor, P.J. and Darlene Russ-Eft, D.W.L.C. (2005), "A meta-analytic review of behavior modeling training", *Journal of Applied Psychology*, Vol. 90 No. 4, pp. 692-709.
- Wexley, K.N. and Baldwin, T.T. (1986), "Management development", *Journal of Management*, Vol. 12 No. 7, pp. 277-294.
- Winn, W. (2005), "What we have learned about VR and learning and what we still need to study", *Virtual Reality International Conference, Laval France, 20-24 April*.
- Yi, M.Y. and Davis, F.D. (2003), "Developing and validating an observational learning model of computer software training and skill acquisition", *Information Systems Research*, Vol. 14 No. 2, pp. 146-169.
- Yueh-Min, H. and Ting-Ting, W. (2011), "A systematic approach for learner group composition utilizing U-learning portfolio", *Journal of Educational Technology & Society*, Vol. 14 No. 3, pp. 102-117.

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)

Table A1.
Concept card –
realism

(continued)

Data source	Individual	Quotation, opinion
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)

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
Interview 2	JB – (DVD/M)	DVD is too familiar 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, then 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)

Table AII.
Concept card –
attention

(continued)

Data source	Individual	Quotation, opinion
Interview 19	BF – (DVD/M)	<p>You could see anguish on her face (DVD)</p> <p>The facial movements and expressions . . . came through better in the first video (DVD)</p> <p>Bit of a shock on her face (DVD)</p> <p>Attend more towards the wording, dialogue (SL)</p> <p>Paid more attention to face, demeanour (DVD)</p> <p>Face to face speaking to each other (DVD)</p> <p>I was solely concentrating on dialogue (SL)</p> <p>I was trying to read the employee, her reactions, how she was actually taking information in (DVD)</p> <p>In SL, just listening to the dialogue</p> <p>Paid attention to the body language (DVD)</p> <p>SL paid more attention to tone</p> <p>Tone of voice of employee, came across better in SL because I was only paying attention to dialogue</p> <p>Focus more on the phrasing and tone in SL</p> <p>Message in SL because there's not a lot of visual you listen more and pick up on tone better</p>
Interview 20	CR – (M/DVD)	<p>More emotion and see his annoyance (DVD)</p> <p>The first one I paid attention to the voice (SL)</p> <p>Second one you can see the human features because it's actors (DVD)</p> <p>DVD I paid attention to what I saw</p> <p>You could see facial expressions (DVD)</p>
Interview 21	GR – (DVD/M) SL	<p>Paying attention to how they were saying (DVD)</p> <p>Concentrated on the voice (SL)</p>
Interview 22	AF – (M/DVD) SL	<p>Was paying attention to what was going in on the facial expressions (DVD)</p>
Interview 25	DO'R – (M/DVD) SL	<p>Was paying attention to her in SL</p> <p>DVD, just the way it is, it's boring</p> <p>Heard the message the first time (don't need it again) (DVD)</p>
Interview 26	MR – (DVD/M) SL	<p>Paying attention to the actor (DVD)</p>
Interview 27	RK – (M/DVD) SL	<p>I paid attention to the male (SL)</p> <p>In DVD, I paid attention to the female</p> <p>I was working out the characters in SL</p> <p>Paid attention to the tone of the interaction (SL)</p>
Interview 28	JH – (DVD/M) SL	<p>I paid attention to the girl – red dress (DVD)</p> <p>I paid attention to the boss (DVD)</p> <p>Not focus on the background in SL</p> <p>Sport boss (SL)</p> <p>Analysing dress in DVD</p> <p>Focus on the message in SL</p> <p>In SL, features are simplified</p>

(continued)

Table AII.

EJTD
39,9

760

Data source	Individual	Quotation, opinion
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 AII.

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)

(continued)

Table AIII.
Concept card – learning

EJTD
39,9

Data source	Individual	Quotation, opinion
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

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Table AIII.

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
Interview 7	GV – (M/DVD)	Noting is distracting from the message in Machinima 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
Interview 8	CG – (M/DVD)	Since it's about listening and reflection, I pick the avatar 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

(continued)

Table AIV.
Concept card –
distraction

Data source	Individual	Quotation, opinion
Interview 16	KF – (DVD/M)	<p>Could end up missing something you should see (being distracted in DVD)</p> <p>Rather than concentrating on the message (DVD)</p> <p>DVD evokes more than the issue at hand</p> <p>You have to exercise more control as a learner (DVD)</p>
Interview 17	NK – (DVD/M)	<p>Opportunity to be distracted (DVD)</p> <p>Earring took me off the topic (DVD)</p> <p>Bit strange that earring (DVD)</p> <p>Would not expect that (earring) (DVD)</p> <p>Listened more to what they were saying (SL)</p> <p>Earring distracted (DVD)</p> <p>Can concentrate more on message (SL)</p>
Interview 18	KH – (DVD/M)	<p>Concentrate more on the technique more in SL</p> <p>I found myself distracted by trying to read the human beings rather than listen to the message (DVD)</p> <p>Personally, I wasn't distracted by their facial expression (SL)</p> <p>However I was distracted by his belly (SL)</p> <p>You are still distracted by the 'pretend' people (SL)</p> <p>You begin to evoke stories and get distracted from the message (DVD)</p> <p>The fact that you are trying to make a story somehow distracts you from the message (DVD)</p> <p>It's taking away from the message (DVD)</p> <p>I did not feel distracted in any way (SL)</p> <p>There's no colour in it . . . no distraction (SL)</p> <p>W</p>
Interview 19	BF – (DVD/M)	<p>Drifted away from dialogue in (DVD)</p>
Interview 24	BM – (M/DVD) SL	<p>Began to watch things other than the dialogue (DVD)</p> <p>You are able to listen to what they are saying (SL)</p> <p>You don't pick up on the body language but you definitely listen to what they are saying (SL)</p> <p>Have to focus on what is being said (SL)</p> <p>If safety was needed, you'd be able to listen closely to the message (SL)</p>
Interview 25	DO'R – (M/DVD) SL	<p>Could concentrate on the message (SL)</p> <p>Can concentrate on the message (SL)</p> <p>Nothing to distract you (SL)</p>
Interview 26	MR – (DVD/M) SL	<p>These aren't the greatest actors</p> <p>You focus in SL</p> <p>Less is being offered to you (SL)</p> <p>You focus on the message (SL)</p> <p>Could not concentrate on actors' message because of body language (DVD)</p> <p>Harder to focus on DVD because of distraction of body language (DVD)</p> <p>Not paying attention sometimes (DVD)</p>

Table AIV.

(continued)

Data source	Individual	Quotation, opinion	Why learners prefer digital agents
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	765
Interview 31	DFB – (M/DVD) SL	Earring is a distraction (DVD) SL is engaging	

Table AIV.

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 Can't 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
Interview 11	LK – (M/DVD)	Can't see her emotions in SL 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

Table AV.
Concept card –
disposition

(continued)

Data source	Individual	Quotation, opinion
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 language cues to show upset in SL These things (body language) get the message across No hand movements in SL
Interview 14	DB – (DVD/M)	Mags was angry – you can tell from her face (DVD) 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)

(continued)

Table AV.

Data source	Individual	Quotation, opinion
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 AV.

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