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Language Teaching in 3D Virtual Worlds with Machinima:

Reflecting on an Online Machinima Teacher Training Course

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ABSTRACT

This article is based on findings arising from a large, two-year EU project entitled "Creating Machinima to Enhance Online Language Learning and Teaching" (CAMELOT), which was the first to investigate the potential of machinima, a form of virtual filmmaking that uses screen captures to record activity in immersive 3D environments, for language teaching. The article examines interaction in two particular phases of the project: facilitator-novice teacher interaction in an online teacher training course which took place in Second Life and teachers' field-testing of machinima which arose from it. Examining qualitative data from interviews and screen recordings following two iterations of a 6-week online teacher training course which was designed to train novice teachers how to produce machinima and the evaluation of the field-testing, the article highlights the pitfalls teachers encountered and reinforces the argument that creating opportunities for pedagogical purposes in virtual worlds implies that teachers need to change their perspectives to take advantage of the affordances offered.

KEYWORDS

3D Virtual Worlds, Collaboration, Immersion, Interaction, Language Learning, Machinima, Reflection, Second Language Acquisition, Video, Virtual Reality

1. INTRODUCTION

Focusing on the European Commission (EC) funded CAMELOT project (Creating Machinima to Enhance Online Language Learning and Teaching) (2013-2015), this paper discusses findings arising from two iterations of an online teacher training course that was designed to facilitate the production and field-testing of machinima and therefore to investigate its potential as a digital tool in foreign language education. The study includes analysis of participant reflections as they completed the course and maps participants' initial assessment of their machinima production skills against their end of course achievements.

A primary focus of the CAMELOT project was to raise the profile of machinima in education and language education in particular and to help to define it in ways that could aid meaningful adoption.

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Whereas Harwood and Uwins (2015) distinguish between machinima that derive from gameplay, artistic media and those that are produced to support teaching and learning related activities, Johnson and Pettit (2012, p. 32) describe machinima in terms of a creative process, as a "craft and art form". The neologism 'machinima' used in the context of this paper focuses on the creation of short videos that can be used for pedagogical purposes (Marino, 2004). As identified by Ng and Barrett (2013) and Middleton and Mather (2008), the production process of machinima uses similar techniques to those involved in the creation of real-world films. This includes the design, storyboarding, assigning of different roles and responsibilities within a production team (e.g. director, editor, actors and camera operators), as well as the use of venues, props and special effects (Snelson, 2010). Consequently, when involved in tasks and projects utilising machinima, this form of digital storytelling may enable language learners to develop what Gee calls "collaborative literacy" (2012, p. 38) and to use the target language in the process of creating user-generated content.

As the history of computer-assisted language learning (CALL) often makes clear, however, while technologies such as machinima hold potential for language learning, the pre-requisite for effective implementation of new pedagogical approaches is often effective teacher training; thus this is the main focus of this paper. Before turning to examine the findings from the CAMELOT teacher training course in more detail, the first section of the paper provides background and context for the paper with respect to relevant research in the field of 3D immersive environments and education.

2. REVIEW OF THE RESEARCH

3D Virtual learning environments are multi-user spaces that offer teachers and learners new ways of interacting and collaborating (Bell, 2009). When utilised in a pedagogical context, virtual environments such as Second Life (SL) or OpenSim (OS) can serve as an inspiring educational learning space for creating formal and informal learning (Panichi & Deutschmann, 2012). Compared with other 3D virtual environments, Warburton (2009) considers SL as the most popular, even though the number of users has declined in recent years and massively multiplayer online role-playing games (MMORPG), such as *World of Warcraft* have emerged as popular alternatives. In this context, the creation of machinima – or short user-generated video recordings of on-screen content from the virtual world or game – have become very popular.

According to Ng (2016), machinima are highly diverse and can include news, reviews, gameplay videos, gaming tips and tricks, story-telling, and drama. In the context of this paper, 3D virtual worlds (VWs) are defined in a more formal, structured way, as participants typically arrange to meet at a specific time and location in order to take part in planned educational events (Panichi & Deutschmann, 2012). 3D VWs provide teachers and learners with a variety of opportunities to experience and experiment with their creative skills and develop responsibility for their own learning process (Ferguson, 2011). Furthermore, VWs allow learners to attempt and complete tasks that may have been impossible or too dangerous to achieve in non-virtual environments (Falconer, 2014).

2.1. Defining Machinima

Many definitions of the term 'machinima' have emerged since it was first used in the late 1990s (Hancock & Ingram, 2007; Kirschner, 2005; Marino, 2004; Snelson, 2010). Lowood (2011) describes machinima as a kind of documentary recording of events taking place in VWs based on screen capture technology. According to Marino (2004) the term 'machinima' arose as a result of a merger of the words 'machine' and 'cinema' and was changed to machinima due to a misspelling. Whereas early machinima were typically associated with recordings in virtual environments created by gamers (Handcock & Ingram, 2007), Morozov (2008) and Ng and Barrett (2013) consider machinima as a technical tool for designing audio-visual narratives similar to real life film-making. Champion (2011) and Jenkins (2007) suggest that it can also stimulate music, dance and improvised theatre and is therefore closer to a form of theatrical performance.

Unlike Ng and Barrett (2013) who see filming as a simple technique that can be managed with little or no experience, Snelson (2010) considers machinima production as a complex process that requires specific skills. In order to get started with machinima teachers need to be acquainted with the 3D virtual environment and gain skills to navigate confidently. In addition, they need skills to record and edit footage, write dialogues for characters, identify locations, acquire permissions for filming, and find appropriate props (Middleton & Mather, 2008). The time required to create quality machinima should not be underestimated. However, as Rainbow and Schneider (2014) have shown, shooting machinima can be a much faster and cheaper process if the roles and responsibilities are done by a small group or by one person in place of a full production team.

2.2. Immersion in 3D Virtual Environments

Deutschmann and Panichi (2009) consider authentic communication with native speakers as the greatest benefit 3D VWs can afford language learners, as they can explore different cultures and countries such as visiting virtual Prato to practice Italian phrases or speak French in virtual Paris (Harwood, 2013). In order to be fully aware of the affordances of 3D VWs, learners need to immerse themselves in the environment (Bell, 2009), as students are more likely to learn effectively when emotionally involved in forms of experiential learning such as role-play, games, simulations and scenario-based activities (Falconer, 2014). Though the lack of nonverbal cues, such as body movements, facial expressions and culture specific hand gestures with avatars in virtual communication is often criticised (Conkey, 2010; Peterson, 2006), Sheehy (2013) argues that her learners feel less threatened and are thus more confident without these cues in virtual as opposed to real-life communication. These findings were supported by Jauregi et al. (2011) who claimed that "learners in 3D environments, who are used to their own and other people's alter egos in [the] form of their avatars, experience life-like social interaction, while at the same time engaging in meaningful learning" (cited in Schneider, 2016, p. 7). Thus, learners who are fully immersed in virtual learning often perceive it as real and experience the learning community as motivating, developing a sense of belonging as a consequence (Mennecke et al., 2011).

2.3. Learning and Teaching with Machinima

Creating machinima in 3D VWs presents new opportunities and methods for experiential learning (Thomas, 2015). Despite some technical and time-related challenges Warburton (2009) identified how the collaborative creation process has a positive influence on learners' motivation, rather like Thorne and Reinhardt's (2008, p. 1) notion of 'bridging activities' in which "students' digital vernacular expertise" can be "coupled with instructor guidance" to produce meaningful interaction. In this respect, the four stages of Kolb's Experiential Learning Theory (Healey & Jenkins, 2000), provide a holistic learning model that can be applied to machinima creation and use (Conkey, 2010). Following Kolb's model, concrete experience relates to learners' creation of machinima; reflective observation refers to learners' analysis and discussion of their machinima; and abstract conceptualization enables the comparison of newly gained knowledge with familiar concepts. During the active experimentation phase, learners experiment with what they have learnt (Rainbow & Schneider, 2014). Potentially the most rewarding use of machinima involves teachers in utilising them as a means for learner reflection and feedback (Wigham & Chanier, 2013). When teachers design machinima-based tasks that enables their learners to have the opportunity to analyse their own performance, learners may develop a sense of responsibility and raises awareness of the power of reflection (Galani, 2016). Harnessed as a visual form of feedback, teachers may thus use machinima to help learners to review and reflect on their performance and give them the opportunity to make improvements in their use of the target language (Dreher & Dreher, 2009).

In order to explore the potential of machinima in language education as highlighted above, the second part of the paper turns to explore qualitative data arising from teacher perspectives on a teacher

training course designed to teach instructors about the pedagogical and technical skills required to produce effective tasks and to integrate machinima in their language learning contexts.

3. METHODOLOGY

Coordinated by the University of Central Lancashire, CAMELOT started in December 2013 based on a grant from the Lifelong Learning Programme (LLP) of EUR489,000 from the European Commission. In order to equip teachers with the required skills to create machinima in 3D virtual environments CAMELOT designed and facilitated two iterations of a bespoke teacher training course, each focusing on the technical and pedagogical aspects of the machinima-making process. Each iteration took place over a period of 6 weeks and involved a total of 19 participating teachers. Table 1 presents a description of the content of the course focused on Second Life skills.

Table 2 shows a detailed overview of learning activities for week 1, demonstrating how each week combined reflection on the pedagogical skills and technological expertise required by participants.

The teacher training courses were facilitated through three online channels: via Moodle which was used as an asynchronous communication platform; Adobe Connect which was used for live online discussions, course presentations and instructions; and Second Life which was used for practising the skills needed to create machinima. The teachers registered from Bulgaria, the Czech Republic, Italy, Poland, Portugal, Spain, Sweden, Turkey and the UK. Participants included experienced language teachers, teacher trainees, a CLIL instructor and a Science teacher, all of whom had previous experience of teaching face-to-face and via online modes of delivery. Their teaching experience in Italian, General and Technical English, Physics, English and Media, Critical Thinking, Education for Security Didactics, Marine Ecology and Spanish ranged from a few years to more than twenty

Table 1. Overview of the teacher training course

Week	Content
1	Starting to get familiar with *Second Life* Considering why people use machinima in their teaching and/or learning
2	Learning to dress your avatar Changing avatars Mixing and matching avatar clothing Working with gestures and animations Using a holodeck Controlling light Starting to screencast
3	Moving around *Second Life* Controlling your camera Using the mini-map to get around Using the World Map Giving inventory items to others Making a lesson plan outline and storyboard
4	Finding places to film Requesting permissions Making landmarks Starting to film and edit your machinima
5	Working on your machinima Sharing and improving your machinima Evaluating machinima
6	Finishing all work A reflective task

Table 2. A detailed overview of week 1's learning activities in the teacher training course

WEEK 1 LEARNING ACTIVITIES	
Task 1.1	Introduce yourself
Task 1.2	Communication, Chat, Instant Messaging (IM), Computer-Assisted Language Learning (CALL), and making friends in Second Life (SL)
Task 1.3	Turn up the volume of individuals in a group
Task 1.4	Change the sound settings assignment
Task 1.5	Change the name above your head and make a profile
Task 1.6	How are you getting on in Second Life?
WEEK 1 REFLECTION	
Task 1.7	Reflect on the use of machinima in the language lesson
WEEK 1 DISCUSSIONS	
This forum is where you will respond to all of the week 1 tasks. Please look for my message with the topic heading	
PEDAGOGICAL READING	
Read the sample from "Making and Using Machinima in the Language Classroom", which looks at the pedagogies of Kolb, Lave and Wenger, and Lim regarding the use of a virtual world as a teaching medium. Even if you do not teach in a virtual world, reflect on these pedagogies in light of the course you are taking in Second Life. Follow the link below and the download the book extract	
Task 1.8	Extract: Making and Using Machinima in the Language Classroom

years in Higher Education, Primary or Secondary Schools, Vocational Schools, Technical Colleges and Adult Education Centres (Schneider, 2016). While a few participants had to learn Second Life skills from scratch, others already possessed skills which enabled them to start filming their first machinima. The main interests in the training courses were to explore stimulating ways for teachers to improve the quality of lesson materials and to make them more engaging for students. To analyse the engagement of teachers in the machinima production process and to explore the potential value of language learning in 3D virtual learning environments with machinima, quantitative and qualitative techniques were used to collect relevant data during the training courses. The qualitative tools - field notes based on observation, screen recording of online activities and semi-structured interviews with teachers - were collected arising from three training sessions in Adobe Connect, seven training sessions in Second Life and supplemented by documentation of all activities, and interactions and tasks in Moodle, which was used as a course management system and content repository.

The data collected in the second course iteration resulted from recordings of five training sessions in Adobe Connect, eleven training sessions in SL and documentation on Moodle. Self-assessment grids were used to allow teachers to reflect on their assessment of their own learning progress (Cohen *et al*., 2007).

The field-testing of machinima also took part over two iterations and consisted of 10 Skype interviews with teachers, students and other educators involved in machinima production lasting on average 30 minutes each were conducted, recorded and analysed. Given limitations of space, only qualitative data arising from the machinima teacher training course and the field-testing phases of the project will be analysed in what follows; a subsequent paper will explore quantitative data arising from questionnaires conducted during the field testing.

Given the nature and context of the research the different sources of data had to be carefully acquired via informed consent (Moschini, 2010). The field-testing events in this study, which involved universities, secondary schools and a commercial online school, were dealt with differently as the consent was obtained by local teachers testing machinima with their students. Participants' names

were kept anonymous in order to protect their identity unless agreement for publication had been reached. Avatars who accidently appeared in scenes also needed to give their agreement to be filmed and the practice identified by Boellstorff (2008), namely, that avatars' names and typed names on notecards indicates agreement, was used in the context of this study.

4. FINDINGS AND DISCUSSION

The narrative presented in the discussion section is divided into two main parts and aims to examine the complex, multi-layered and nuanced perspectives of the participating teachers involved in the study. The first section deals with data arising from two iterations of the machinima teacher training course, followed by a discussion of participants' evaluation of the role of machinima during field-testing. For both phases, qualitative data were coded arising from the interaction between trainers and trainees following a two-stage approach, using first open coding following by axial coding (Strauss & Corbin, 1990). Within the 'teacher training course' section, four themes were identified as a result of the coding process, including interaction during the course; reflections on the creation and use of machinima; immersing in 3D virtual environments; and identity and presentation of self. In section two on 'piloting ready-made machinima', two categories were identified: how to create and use machinima in 3D environments; and how to use machinima as a tool for reflection and feedback.

4.1. The Teacher Training Course

A needs analysis was carried out at the beginning of the CAMELOT project to determine teachers' interest in machinima as well as the potential for implementing machinima in 3D environments or in their physical classrooms. The data indicated that the majority of teachers had little experience with 3D virtual environments and no previous experience of creating machinima.

4.1.1. Interaction During the Teacher Training Courses

Data arising from course documentation revealed that participants on the training courses actively contributed to course related topics such as their first machinima production or shared questions about technical support in private discussions on Moodle outside the regular weekly task fora. It was also interesting to observe, that those participants interacting in such private discussions, were the ones most active in all other discussion fora (Schneider, 2015a). The mutual support available in the discussion groups was notable, as participants freely shared video footage they had taken in Dropbox (a collaborative web-based data repository) for others to use in their machinima film productions (Schneider, 2016). Based on field notes it was evident that peer feedback provided after their first machinima productions was very constructive and included many useful tips for improvements. Additionally, the encouraging feedback from facilitators triggered further interaction among the participants and thus an observable enhancement in the quality of completed machinima contributions was evident (Mennecke et al., 2011). The learners' analysis of their own and other participants' machinima also proved how well machinima could be utilised for reflection and feedback (Schneider, 2016). An example of constructive feedback is shown in the following comments by participant CR_T:

"Great:-) A successful machinima! Transitions, music, camera panning - there is a little bit of everything there, very well done. Did you use Camtasia? There is a narrow black line down each side of the screen, if you filmed at 1280x720 and made it in Camtasia, those black bars should not be there. It is something to watch for next time. I am pleased you added a title:-) If you want to, you can pull out the size of the box to fill the screen [and] that is something you could play with on the next one. A great first attempt!"

It was evident as Mennecke et al (2011) have argued that virtual environments encourage social interaction and a willingness to share more personal information. Thus, given the opportunity for collaboration, the study identified how social presence encouraged group interaction, mentoring and

mutual support, which resulted in the required motivation and trust between the participants necessary to complete the machinima training course on time (Savin-Baden, 2010).

4.1.2. Reflections on the Creation and use of Machinima

The teacher training sessions in SL provided opportunities to get hands-on practice, such as changing the appearance of avatars or experimenting with pose animations or different roles and characters. Furthermore, teachers gave and took advice for establishing the scenarios for filming, finding the required locations and props and acquiring permission to film. The teachers appeared to enjoy when planned activities did not work as initially intended, such as when, for example, one participant lost her hair when changing clothes (see Figure 1).

Such 'playful accidents' encouraged interaction between the participants as they shared jokes and comments, and in turn this appears to contribute to an atmosphere of mutual support and engagement which enabled them to share information, concerns and achievements in the wider peer group.

Course discussions about pedagogy and machinima productions took place in Moodle or Adobe Connect. These included participants' reflections on the use of machinima and presentations of machinima that they or other machinimatographers had created. To trigger such discussion, teachers were asked to watch a selection of ready-made machinima, take notes, summarise their thoughts and reflections and consider how and why they would use machinima for teaching. One experience all teachers shared was that their language learners appeared to be more engaged when they were a part of the machinima production process. All teachers involved in the training reported that they were highly motivated to immerse themselves in Second Life for their machinima production and that they had been exposed to experiential learning by exploring the virtual space for interaction as a result of experimenting with different roles and scenarios for filming (Peterson, 2012).

4.1.3. Immersing in 3D Virtual Environments

Immersing in a 3D virtual world is an important prerequisite to understand the affordances of these environments and their implications for participants' learning experiences. Based on researcher and participant reflections on the affordances of 3D environments the skills required to facilitate learning in VWs compared with non-virtual learning, it is evident that users of 3D VWs often replicate their non-virtual habits, conventions, norms and attitudes in their virtual environments (Thomas, 2010). In relation to this study, it was evident that the teacher participants demonstrated similar behavior, as they arranged and furnished their classrooms or built their houses with roofs and walls even though it

Figure 1. Letty's hair goes on tour

never rained in the rooms or became cold (Collins, 2008). Figure 2 shows how one participant built a Swedish style house in this way.

A further example is shown in Figure 3 which shows how participants designed a room consisting of conference tables to enable the formation of in-world discussion groups, even though avatars do not need to be seated (see Figure 3).

Similarly, students may argue that they cannot concentrate if others are standing, and this applies in the Virtual World as it does in real life (Savin-Baden, 2010).

The question in this case is how will the learning process be influenced if facilitators present their lessons while assuming a meditation pose or float in the air in front of the presentation board? (see Figures 4 and 5 for examples of this activity in Second Life). Will this be perceived as motivating, confusing or even irritating? As identified by Panichi and Deutschmann (2012), the design of 3D virtual spaces and environments influence learning events, just as students' and teachers' virtual representations of their own identity do through their embodied social presence in the shape of avatars.

Figure 2. A typical Swedish house on Kamimo Island in SL

Figure 3. People sitting around a conference table on Avalon Island

Figure 4. Facilitator lecturing in a meditation pose (@UWE 2013)

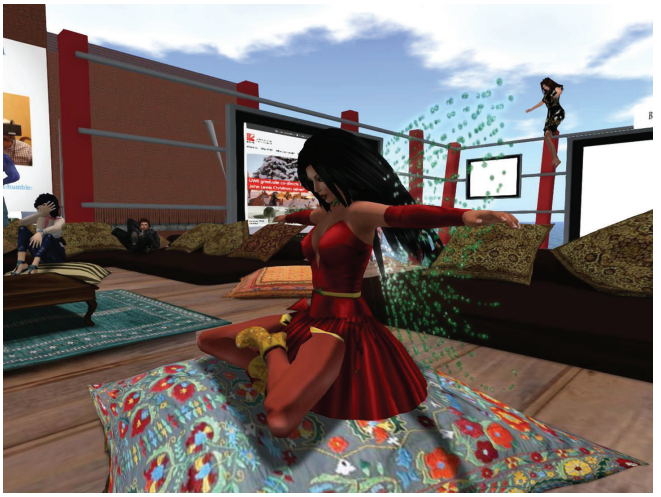


Figure 5. Teacher floating in front of the presentation board (@UWE 2013)

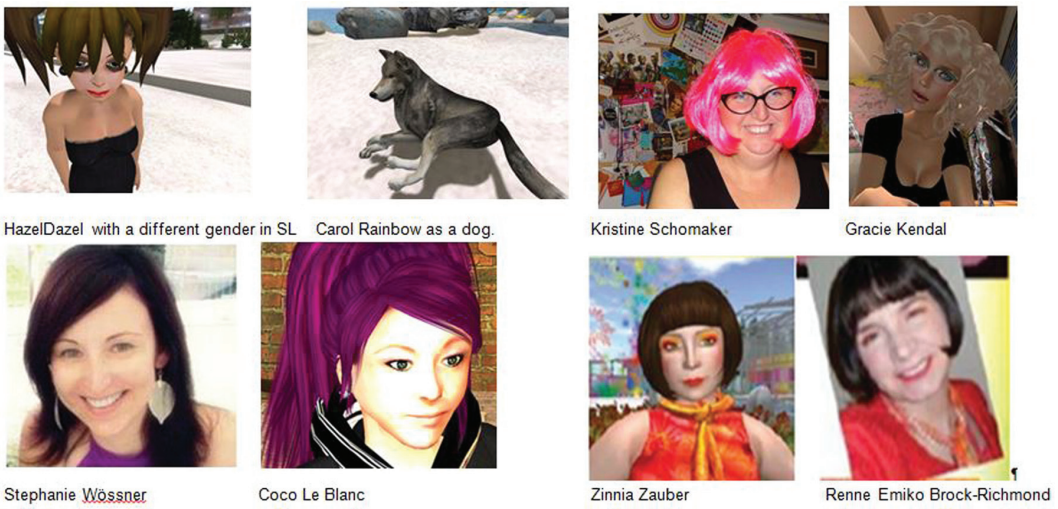
4.1.4. Identity and Presentation of Self

What makes people noticeable and different in a 3D virtual environment compared with their physical appearance? Though norms and patterns from the physical world will affect participants' behaviour in the virtual environments (Boellstorff, 2008), they may deceive themselves and others by revealing slices of their alter ego that might reflect what they want to be and not what they are or represent in the physical world (Goffman, 1959). Social conventions and personal attitudes thus play an important role in how participants are perceived in a 3D virtual setting and how they perceive others (Bullingham & Vasconcelos, 2013) (see Figure 6 as an example of different appearances of an avatar).

For some users, their avatar represents what they wish to look like in the physical world. Others choose their avatar according to their physical world appearance, using their image as a brand, whereas many others select their avatar to demonstrate something unusual, eccentric or even experiment by representing themselves as a different sex (see Figure 7).

Figure 6. Different appearance of self

Figure 7. Images of self



It is noteworthy in this respect that all participants actively involved in the teacher training courses in CAMELOT identified with their avatar or had developed a special relationship with it and distinctions between virtual and physical reality became blurred (Falconer, 2011). This took some teachers by surprise as the mood and emotions in the 3D virtual environment were perceived as very realistic, a phenomenon referred to by Baudrillard (1994) as hyperreality. For some participants, it was a novel experience to be able to share their feelings in the same way that they would in a non-virtual environment as they had not expected such an open, inspiring and collaborative community, where they could make friends and feel less inhibited compared with the physical world (Sheehy, 2013). Christine, for example stated that "Creating my avatar in SL was a fantastic experience which has also influenced my personal development. I feel really close to my avatar and I want to protect it. It was amazing how frightening the noise of the wolves were when I was working in the lab at night and what an emotional impact this had on me."

It was not therefore surprising that participants gained a significant sense of in-world belonging during the two iterations of the training courses despite communicating only through their avatars, as they perceived each other as real people in a physical world (Mennecke et al., 2011). This finding confirms the research of Savin-Baden (2010) and Falconer (2014), for example, who argued that feelings influence the way participants perceive their experiences in 3D virtual environments and the greater the immersive experience, the more this encourages emotional engagement, thus resulting in better learning. This notion is supported by Sheehy (2013) also, who emphasised the positive impact of 3D VWs on learning, identifying how her students felt more confident as they talked about sensitive or difficult subjects without being embarrassed. Arising from this, it is also evident that participants may blame their avatars for any in-world failure they experience.

4.1.5. Introverted Learners Feel More Confident in Virtual Environments

As indicated by Sheehy (2013), 3D VWs may motivate introverted learners to become more outspoken. Learners perceived as shy in the physical classroom often 'open up' in a virtual environment and become more confident, taking risks and daring to do things they would not have otherwise done in the non-virtual classroom (De Jong Derrington, 2013). This finding was confirmed by one of the teachers during the CAMELOT project:

"Using Machinima can help shy students to act their real selves by using a mask; or else it can help them in finding talents, abilities and competences they didn't know they had, while living a totally new and unexpected life in [a] fantastic world." (Cristina B.)

Another teacher who appeared very shy at the beginning of the training course and almost gave up after a couple of sessions in-world, was persuaded to stay and subsequently gained lots of confidence as the course progressed. She commented that "It was a new experience for me, like a culture shock, to be able to share my feelings even more freely than I do in real life" (Adriana S.), thus indicating that it had been a novel experience and that she was intrigued by how the virtual world enabled her to befriend other participants in Second Life. A similar experience was shared by a teacher who claimed that one of his normally shy students from the physical classroom acquired enough confidence to assume a supervising role in the virtual environment. Such phenomena are referred to as "dissociative anonymity" (e.g. "my actions can't be attributed to my person") which is one of the main factors influencing Suler's (2005) "online disinhibition effect".

4.1.6. Quality of Machinima

All machinima created as part of the teacher training course's curriculum were presented in the final course session. These included machinima covering a variety of genres, such as grammar practice, conveying information, providing instructions, sketches, storytelling and poetry for different language levels. Each machinima was analysed according to specific criteria via a process of peer review, such as the appropriate volume of speakers, frame size, music and sound effects, the scenario setting, the characters, dialogues, camera angles and avatar movements. This approach helped to provide some substantial feedback (Morozov, 2008) and the contributions were constructive and supportive and provided recommendations for further development (Schneider, 2016).

It was evident that creating machinima required a lot of time and practice (Morozov, 2008) and thus it could not be expected that novice teachers who were new to 3D immersive environments would become professional machinima producers after six weeks of training. Amsterdam recognized this when arguing that "What makes a great film … takes a lot of work. It is more than merely turning on your program to record" (Cited in Johnson & Pettit, 2012, p. 44). In her view the quality of the machinima depends on what a machinima is intended to be used for, as if you capture a wedding party, for example, it might have an important meaning to you, but not to others. The same applies if you want to demonstrate a piece of grammar in a specific language learning context or whether it is merely a recording of a noteworthy occurrence (Myers, 2014). Group discussions emphasized that teachers considered the creation process more important than the quality of the completed

machinima as long as the sound worked well and saw great value in the playfulness associated with the machinima production process.

In seeking a rationale for the use of machinima, the novice teachers hypothesized how their involvement in the creation of machinima and their level of enthusiasm about them (Wilson, 2012), meant that their learners would be more willing to accept poor quality machinima made individually for them rather than an "off-the-shelf" product that was flawless but generic. The quality of machinima only mattered when they were produced by others.

The machinima created during the teacher training course varied in quality depending on the initial skills brought to the course, participants' preconceived ideas about what made machinima acceptable, and their willingness to make improvements. The following images demonstrate the variety of genres produced and the different skill sets teachers finished the course with (see Figure 8 for an example of a machinima production).

The end of course evaluation was taken in different stages to make sure that all participants had a chance to contribute effectively (CAMELOT, 2015d). Participants were asked to revisit the self-assessment process they had completed at the beginning of the training course and assess their own progress since week 1. Those wishing to share their findings had the opportunity to discuss them in a discussion forum in Moodle. Further feedback was collected from focus group discussions in Second Life and in Adobe Connect. Overall, participants were satisfied with their machinima productions and the skills they had learnt.

Both iterations of the teacher training course were considered beneficial by participants, as the variety of activities provided challenging content for novices as well as the more skilled teachers. The majority of teachers felt encouraged to bring their students into Second Life, while others were keen to explore how to create machinima with their learners in 3D environments and to revisit places they had encountered during their training.

Challenges observed during the training courses included time issues (e.g., the duration of time and effort required to produce even a relatively short machinima) and technical difficulties (e.g., audio-related problems which resulted in poor quality recordings); the latter was solved by overdubbing the machinima with new audio recordings (Schneider, 2015b). Another challenge was the different language backgrounds of the participants. Though English was used as lingua franca to communicate, not all participants had the same level of English, and this occasionally caused misunderstandings. Despite the challenges, teachers reported that their English had improved significantly during the course through collaboration, and reading and listening to dialogues during the filming sessions (Tsou, 2011; Schneider, 2015b). Though all teachers were highly motivated and engaged in the training and

Figure 8. Excerpts of Machinima Productions *Note*: **For video examples of machinima, see [https://www.youtube.com/watch?v=GopJmoH3-s4&feature=youtu.be]**

creation of machinima, not all intended to use machinima in their teaching. However, they were eager to apply their newly gained experiences and knowledge from the virtual to the physical classroom to enhance their teaching.

4.1.7. Using Machinima in 3D Environments

The majority of the teachers involved in the teacher training courses used their machinima in the physical classroom or took their students into 3D virtual environments to create machinima with them. This confirmed the research of Bomirska (2015), for example, who used machinima successfully as an assessment tool for listening comprehension and motivating learners to develop their speaking skills. She used a machinima "Daredevil Dave's Dream" (Rainbow, 2015) and evaluated her students' linguistic performance by adopting an approach in which they were first required to watch machinima without sound, prior to engaging in a task in which they had to retell the story or create their own stories and record them (see CAMELOT, 2015e). Overdubbing an original machinima with new voice recordings was a technique other teachers also successfully applied to their teaching with machinima. Producing a recording collaboratively helped the learners to practise and visualise unfamiliar vocabulary and work on their intonation and pronunciation (Galani, 2016). Using these techniques, Bomirska (2015) identified how machinima could be used as a tool for learners to enrich lessons by engaging learners' creativity as co-producers of learning content. Likewise, Myers (2014) found machinima to be an effective tool for 'off-the-cuff' demonstrations of key learning points involving grammar or vocabulary. Language practitioners who adopt such an approach and emphasise the importance of the creative process in the language classroom, argue that machinima do not have to be of a similar quality to filmic productions, as long as they provide learners with a space to play and discover meaning collaboratively and use the target language.

4.2. Piloting Ready-Made Machinima

Overall, creating their own machinima was considered too demanding for teachers not involved in the training due to the time commitment and levels of technical and digital literacy, institutional support and general understanding necessary to use them in an actual language course (Schneider, 2016). However, these teachers were keen to pilot ready-made machinima that had been produced by other film makers and to use them with different sized groups of learners and language levels as they had been tailored to their specific needs.

Ready-made machinima were created for and used by 6 institutions from CAMELOT partner countries in the Czech Republic, Holland, Germany, Poland and Turkey. The language level and focus of the lessons included general English, English for Specific Purposes, English for Engineers (Health and Safety), CLIL (maths in English) and general German. Teachers using ready-made machinima reported that they benefited from them when all resources and lesson plans were also made available as this saved valuable time and effort. Everyone agreed that it was important to use machinima to target the specific learning outcomes identified in their lessons. Points of criticism, however, included the argument that it was not necessary to have machinima created for them as there were enough good quality videos to choose from on the web; nevertheless, searching for videos at the required level on YouTube or other video-sharing sites was considered a time-consuming task for teachers who already had a heavy teaching load. In terms of the technology, several teachers and learners remarked on their avatars' missing facial expressions and gestures and this lack of sophisticated graphics attracted the most significant amount of criticism vis-à-vis machinima production overall. Nevertheless, some teachers had observed how their learners felt attracted by the novelty of using machinima in the classroom and this was a result of their familiarity with virtual characters from computer games (Jauregi *et al*., 2011).

4.2.1. Using Machinima as a Tool for Reflection and Feedback

Using machinima as a tool for giving and receiving feedback was considered an ideal means for reflection. As Dreher and Dreher (2009, p. 449) have argued, machinima offer learners an "opportunity for critical reflection." Learners can replay their videos and this may "permit a deeper level of reflection upon what has been done and how to improve what has been learned" (Schneider, 2016, p. 41). Feedback through machinima does not only help learners to improve their performance and re-shoot the dialogues (Thomas & Schneider, 2017) but also allows them to review their interactions and reflect on their performance as often as they wish to (Middleton & Mather, 2008, p. 217). The potential "added value" of utilising machinima as a tool for feedback is that they may help learners to develop an awareness of their performance by analysing, critiquing and discussing it (VirtualPREX, 2012).

The field-testing of machinima conducted during the CAMELOT project could only be carried out within a limited time span and with a small number of courses. It is therefore impossible to generalize from teachers' reports on this occasion to what extent the use of machinima helped learners to learn better with rather than without them. This will require future research using an experimental design and quantitative approach in order to determine the significance, if any, that may result from the machinima-based lessons involving students of different proficiency levels and backgrounds. This paper has made a start in this direction by identifying a research agenda and by adopting a more ecological approach that has sought to examine what happens during an online machinima teacher training course from a continuing professional development point of view.

5. CONCLUSION

This paper investigated qualitative findings arising from a teacher training course on machinima production from the CAMELOT project, the first largescale, multinational project to explore the role of machinima in language education. Based on a highly innovative approach involving the groundbreaking use of video-based learning, the paper highlighted teacher perspectives on the benefits and opportunities of machinima as well as the pedagogical and technical affordances that they faced when learning to use the genre.

The main findings drawn from the qualitative data underlined that the teachers identified machinima as a potentially powerful tool to aid their learners' language learning development and to stimulate interaction and feedback. Teachers commented favourably on the use of machinima as a visual form of feedback and how it may be used to enable learners to review and analyse their performance and develop an awareness of constructive criticism. Furthermore, teachers suggested that machinima may be used to engage their students in an immersive 3D environment and encourage learners to be more interactive and outspoken compared with their performance in the face-to-face classroom. In this respect, their students' identity may play a significant role. The teachers identified how learners may feel safer in a virtual class than in a physical class as they can hide behind their avatar. They may be addressed, but not embarrassed when making mistakes in a foreign language. It is evident that the teachers enjoyed the experience of assuming different roles and characters and this performative element was encouraged by the technology as it is challenging or impossible to replicate in the traditional physical setting of the language classroom. The teachers demonstrated how they could collaborate effectively in an immersive world after a relatively short period of time, develop their interpersonal skills and learn pedagogical and technical skills required to design and make elementary machinima for language learning purposes.

In the case of piloting the ready-made machinima, despite its obvious benefits and higher quality, it was often criticised by the teachers who were not able to relate to the characters, storyline or content; it would need to undergo a process of personalization if it is to yield more potential.

Building on this study, further research is required to investigate the influence of both ready-machinima and machinima created by teachers for a specific purpose in relation to students' learning

outcomes and performance in the target language. As the teachers indicated, though there appears to be significant potential in producing educational machinima in the field of foreign language learning, its use is still considered to involve a steep learning curve for novice instructors as a result of the technical skills required.

With the advent of recent developments in the area of virtual and augmented reality, in particular the use of browser-based recording and editing tools, it is possible that creating machinima will become less challenging in the future for non-expert teachers. The CAMELOT project's groundbreaking contribution to this emerging field of video-based learning underlines that it is a subject worthy of further exploration from language teachers who utilise both formal and informal language teaching contexts, and in this respect, the article has contributed to identifying a future research agenda for the use of machinima in language education.

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