

Training Pre-Service English Language Teachers with 3-D Machinima

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ABSTRACT

Training foreign language teachers for 21st century requires the consideration of digital skills as well as the change of focus from more structural foreign language instruction to more discourse oriented foreign language instruction. In this context, pre-service language teachers need to learn language teaching methodology and instructional technologies likewise. Thus, when those pre-service language teachers start their careers in classrooms, they could function effectively and could bring diversity for their learners. In this study, the aim is to introduce pre-service language teachers with 3D Virtual Learning Environments where they can produce their 3D digital narratives that could also be labeled as Machinima. Some 89 prospective teachers attended the activities around this study, who were later evaluated by triangulated data collection methods of both quantitative and qualitative nature, such as reflective essays, questionnaires and semi-structured interviews. Those teachers mainly reported positive experience views with the end-product machinima like having learnt another perspective for language instruction, gaining self confidence for their prospective job, learning about a useful tool which they can utilize as a compensation in their teaching. However, they also reported some problems like technical issues that hindered the production of their group machinima.

Keywords: machinima, teacher training,

INTRODUCTION

Foreign language teachers of the 21st century need to understand that structure based instruction needs to be replaced by more discourse oriented foreign language instruction (Canagarajah, 2005). This methodological upheaval in foreign language field could be enhanced by integrating technology. Thus, when those pre-service language teachers start their careers in real classrooms they could function effectively and could bring diversity into their classrooms for their learners. Given the hours the in-service teachers teach and other matters like lesson preparation and evaluation, namely the workload should make it very difficult for those teachers to learn new skills. However, new skills are actually needed for the changing nature of learners and other teaching materials. So to say, it is easier to learn and be equipped with new skills while those individuals are still at universities. In this respect, pre-service language teachers should learn new language teaching methodologies and instructional technologies likewise. In this context, this study aims at introducing pre-service English language teachers with 3-D immersive virtual worlds and machinima, thus train them for 21st century skills that they will need to implement in their professional lives.

Theoretical Background

The word “machinima” is a neologism derived from combining the words “machine” and “cinema” in 1999 by Anthony Bailey. Machinima stems from the creative productions of videogame players, in particular by using a software feature called “demo recording” (which was developed by id Software and was available for the videogames *Quake* and *Doom*) that enabled the user to record sequences of game action (Hancock & Ingram 2007, p. 12) These movies then became more elaborated and were shot from the player’s perspective. Development in 3D engine software technology, new games with more sophisticated graphical environments and the increase in the processing power of PC’s and affordable *professional grade video editing software* have opened the doors of what is possible today in creating, record and edit machinima (Morozov, 2008, p. 5902). Current machinima making tools can create models of objects or places from scratch. These tools enable custom scripting of object behavior and allow anyone to sit in a virtual director’s chair.

Technology enhanced learning environments like Second Life (SL) are user-centered systems that enable multiple simultaneous participants, represented by an avatar (the realistic animated virtual body that is provided) to participate in virtual experiences “*that incorporate modelling and mentoring about problems similar to those in real world contexts*” (Dede 2004). 3D VLEs are created to represent a place, or event to help understand a certain topic, incident or time period. They provide an ideal platform for the types of activities that “*epitomize dynamic, active engagement.... and have the ability to leverage aspects of authentic learner conditions that are hard to cultivate in traditional classroom settings*” (Dieterle & Clarke, cited from Muldoon & Kofoed, 2009, p.

2244). 3D VLEs allow educators to immerse their learners into the subject matter (Wilson, 2011). Machinima production in the virtual environment Second Life (SL) results in objects that have an asynchronous value. The lessons in SL could enable students to learn “procedural language, problem solving, discussion, social pragmatics, storytelling, and code-switching between different genres of writing” (Lansiquot & Rosalia 2008, p. 2661).

The multi-user virtual world “Second Life” offers the freedom to “*customize sets, props and camera angles that can be found in in SL*” (Middleton 2008, p. 207). Second Life “... *offers a range of functionality that makes it better suited than either “pure gamers” or “pure machinima” platforms for machinima development in games as The Sims. Key activities to be performed in SL are collaborative groups role-play, using paper-slip stories and point of view activities*” (Lansiquot & Rosalia 2008, p. 2661) and theme based instruction (not just necessary conventional step-by-step lessons).

Middleton (2008, p. 216) defines Machinima as “*self-contained, highly granular digital videos*”. Machinima are *digital visual narratives* that are produced by real-filmmaking techniques in a studio-like environment (mostly in an interactive and immersive 3-D multi-user virtual world) where software tools and resources are available to help to develop original digital content. Machinima are able to “*represent any conceivable object or sequence or event, while incorporating rich narrative structures, as well as graphical and text-based content, using visual and aural modalities (through images, music subtitles and voice-overs)*” (Morozov 2008, p. 9). Machinima, whether they are seen as new media genre, a form of digital literacy or semiotic (symbolic, representational) domain, can be seen as a medium of creative expression where “anybody can record and edit unique visual experiences incorporating 3D character models and objects, set designs, graphical textures, camera angles, special effects, weather filters, custom lighting, ... with unlimited variations on plot, settings, and characters (Morozov, 2008 p. 5899).

According to Kelland, Morris and Lloyd 2005 (pp. 72-94), the four most common machinima production techniques are: “*straight recording*”, the “*puppetry approach*”, “*recamming*” and “*scripting*”. The first one is merely recording the activities of the avatars. The second one entails manipulation of avatars to perform actions based on a screenplay. Recamming is based on puppetry approach as re-recording the actions by adding additional avatars, changing lights or moving cameras. Scripting is programming avatars to perform in specific ways.

Furthermore, machinima is related to a number of other *semiotic domains* like videogame, filmmaking and animation. Gee (2003) defined semiotic domains as “*any sets of practices that recruits one or more modalities (e.g. oral or written language, images, equations, symbols, sounds, gestures graphs, artifacts, etc. to communicate different types of meanings*” (in Morozov, 2008, p. 5901). To analyse engagement with machinima, it is useful to apply a set of characteristics of effective learning of a given semiotic domain. Originally developed for video games, 4 characteristics can be formulated:

1. Learning and experience the world (see and act on) in a new way
2. The potential to join and collaborate with a new affinity group
3. Developing resources for future learning and problem solving in the semiotic domains to which the game is related
4. Learning how to think about semiotic domains as design spaces that engage and manipulate people in certain ways and, in turn, help create certain relationships in society among people and groups of people, some which have important implications for social justice (cf. Morozov, 2008, p. 5902).

Viewed as a *semiotic symbolic representational domain* machinima could be used to develop digital literacy, as well as 21st century literacy. Machinima could enhance new ways for language instructors to create their own learning materials. Machinima could be used for training teachers to teach in contexts which often lack multimedia materials for instruction. Machinima can be created and integrated with other media for as little as human preparation as well as effort. Furthermore, it can be used for attainment of fluency by enabling the visualization of cohesion and rhetorical organization as much as grammar and vocabulary.

Machinima is seen by some researchers already as *stand-alone* medium that can be used as medium for original creative and communication by users (Morozov 2008, Lansiquot & Rosalia 2008, Koenraad et al. 2013). Machinima has no bearing to be considered as an off-beat videogame feature used only for amusement and beyond that, learning with Machinima goes beyond from conventional *form focus issues* and *memorization support* (vocabulary, language chunks and grammar patterns) that traditional computer mediated learning technologies provided. The digital technology of machinima facilitates to solve the educational dilemma

that “the abstract knowledge taught in schools and university is not retrievable in real-life situations because traditional approaches (lectures and tutorials) ignore interdependence of situation and cognition” (Herrington & Oliver 2000, p. 23, cited in Muldoon & Kofoed 2009, p. 2243). The technology of machinima facilitates “apprenticeship-style learning” in the classroom (Muldoon & Kofoed 2009, p. 2243). The characteristics of this learning model are: engagement in domain related practice, ownership of inquiry, coaching and modeling of thinking skills, collaborative and social learning, motivating learning context.

The results in applying machinima in various educational research and projects are encouraging and confirm some of the characteristics mentioned above:

- Muldoon & Kofoed (2009) state in their investigation with accounting education a “significantly increased level of engagement and active learning” (p.1)
- In the VITAAL Project it became apparent that “pupils were enthusiastic and they have noticed an increase in motivation, more time on asks, and less inhibition (Koenraad 2013, p. 3517)
- The NIFLAR project showed positive results, students reported as most positive points “increased confidence and less inhibitions when speaking and acquisition of cultural knowledge” (Koenraad 2013, p. 3520)
- The CAMELOT Project evaluation of the teacher training course with machinima revealed that “a positive course outcome was the sense of community developed during the training through collaborative engagement in the process of creating machinima, which was considered as most effective and rewarding. As a result, participants were eager to continue working in virtual environments and actively involve their learners in the process of creating machinima in future lessons.” The process of achievement when producing a machinima, being part of the team, either filming or playing a role was considered as more important than the product itself, as the experience of active participation, fun and collaboration, which learners can recall, is essential if they are to learn effectively (Camelot Project, 2015). In terms of the evaluation in the end of the project, some teachers argued that they were were eager to apply the machinima they produced in their own teaching contexts, indicating that it gave them more control, as well as the ability to adapt them to the personal context of their learners (Thomas & Schneider, 2018, p. 7).
- Butler (2012) postulates that using Machinima in legal education not only engages students in active learning, but also facilitates flexibility in their studies and there are other benefits especially for those that rely on traditional passive lectures in their teaching and learning approaches.
- The research reported in the study of Muldoon & Kofoed, (2011) covers accounting education with machinima and reports that students appreciated the technology-enhanced learning environment, which resulted in significantly increased level of engagement and active learning. Findings revealed that the development of higher order thinking skills is best facilitated in authentic contexts that represent the values and practices of the discipline.
- Barwell, Moore & Walker (2011) report on the incorporation of “machinima”, as part of an interdisciplinary and collaborative project where the focus is not on the mastery of the tools or the acquisition of predetermined knowledge in art education, but on the development of learning engagement.
- Middleton & Mather (2008) think that the educational value of Immersive Virtual Worlds (IVWs) seems to be in their social immersive qualities and as an accessible simulation technology. To them, student-generated production models the learning value may be found in the production process itself.
- Meyers (2014) presents that understanding *children's digital play in immersive virtual spaces*, specifically those with limited communication affordances, demands new methods and approaches that move beyond interviews and participant observation.
- Conkey’s (2010) study addresses the effectiveness of machinima based *soft-skills education* using avatar actors versus the traditional video teaching application using human actors.
- Johnson & Runo (2011) did a study designed to show educators and others the potential of making machinima that moves beyond the mundane to a new level of *storytelling* that will captivate audiences, especially *students*.
- In his work, Harwood (2013) proposes that machinima is a *practice-based approach to learning digital creative practice*. He suggests that machinima is ‘*digital clay*’ that has the potential to add value to *practice-based learning in a connected world*.

- In Hui-Chun Hsiao's (2013) view combining visual game scenes, actions and narrative, Machinima, a by-product of the digital game, has been seen as a *storytelling form of artistic expression and creation*.
- In her PhD thesis, Horlescu (2017) investigated the Technological Pedagogical Content Knowledge (TPACK) of language teachers who were engaged in the digital literacy practice of producing a multimodal ensemble with machinima. Her findings suggest that teachers possess digital literacies as they enact the affordances and overcome the constraints of digital technologies through synaesthesia, spontaneous improvising and coaction. (Horlescu, 2017 p. i)

As seen from the research and projects there is very little research on using Machinima in teacher education let alone foreign language teacher training. For teacher education the inclusion of computer mediated communication in voice-enabled multi-user 3D VW in networked interaction projects can be considered as a powerful experimental learning opportunity. The modern digital semiotic domain is a fertile ground for excellence for internationalization, collaboration and project learning. The digital semiotic domain of machinima possesses incredible potential for enabling effective learning experiences. It can enable the development of digital and 21st century literacy skills. The technology of machinima is growing up fast and can soon be mature enough to invade the mainstream environment, many already produced impressively designed and produced machinima on various scientific subjects illustrate the great promise for this new media genre.

Some negative effects of learning via machinima in VW are on the one hand the “*extraneous cognitive load*”, thus risk of diverting focus of attention away from object of learning, on the other hand the insufficient network bandwidth and computational power to use the 3-D environment” (Lu 2011, p 671). Koenraad (2013) reported organizational problems (pupil online presence and teamwork) and technical issues (voice functionality, AW-interface skills)

THE STUDY

The Research Design

As the research design, the case study design, that is one of the qualitative research designs, was chosen as it is appropriate to the nature of the research. Case study is an empirical research method that studies a current phenomenon within its real life framework and examines situations in a multifaceted, systematic and in-depth manner (Yıldırım & Şimşek, 2005: 277; Patton, 1990: 384; Cohen and Manion, 1997: 106). Case study includes the following the stages: the limitation of the situation, determination of the research case, research the data set, the creation of findings, comments and writing the results (Denzin and Lincoln, 1996: 103; Bassey, 1999: 66). In the study, single nested case design, which is one of the case study patterns, was used. In this design, it is essential to approach more than one category in a single theme (Yıldırım & Şimşek, 2005: 291). In this study, “the use of machinima in foreign language teacher training” was examined by accessing the sub items of communication and forum records. The structural validity of case studies is ensured by the establishment of a chain of evidence on the data collected; its internal validity is made clear by presenting the results and presenting evidence of inferences in a form accessible to others; external validity is obtained by proposing a theory or conceptual model based on the results obtained; reliability is obtained by presenting the processes followed in the research clearly (Yıldırım & Şimşek, 2005: 288). In our study, evidence was provided by making excerpts from the data obtained from the use of machinima in foreign language teacher training and its validity was provided in this way; reliability was obtained by explaining the steps followed in our study in detail. One of the data collection techniques used in case studies is documents (Robson, 2001: 159). Machinima videos and the reflective essays used in our research are documents as well. Document analysis involves the analysis of written materials containing information about the facts and events that are intended to be investigated. It enables the analysis based on a broad time frame about the research problem, the creation of a large sample through access to various written materials, is superior in terms of the original recording of the data by the individual and not by the researcher (Yıldırım & Şimşek, 2005: 187-190). On the other hand, the availability of the material saves the process of data collection from the subjectivity of the researcher (Mayring, 2000: 36-37). The single nested case design that is one of the patterns of the case study design was chosen to elaborate on the students' views and see the impact of the machinima production on the pre-service foreign language teachers' development. In the search for solid data to observe the development of those in question the framework of qualitative research design proved valuable. The results constituted a rich data from which the conclusions could be drawn easily. Themes and their subsequent categories were distilled from the data set and they presented a meaningful link with the experience and the learning process that led to this study.

The classroom and school context

The study was conducted at a leading state university in Istanbul, Turkey. The study was implemented for a whole semester during a Drama class offered at English Language Teaching Department. The ELT department has over 400 students of whom some 89 participated into the study. All of the students graduate to become foreign language teachers throughout Turkey. The students who took part in the study are junior students, in their 3rd year of study. They take up Drama class in their 5th semester. The drama class is a 4 credit-hour class that consists of 2 theoretical and 2 application credits. The drama class met 2 times in a week as classes A and B; students from class A attended Wednesdays and class B attended on Fridays. During theoretical part of the lesson, the students were introduced to a historical survey of the genre Drama that included plays and information from antiquity to modern times. For the application part of the lesson students were introduced to the 3D virtual learning environments, avatars, video capture, recording and editing tools available in the market for free. Furthermore, the students were grouped on friendship basis to work on their productions during the application part each week. This engaged them to work on different aspect of the final product, the machinima, each week. They worked on screenplays, avatar costumes, background and recording designs, recording and adding sounds as well as their final production. Each group was expected to submit a final production machinima created in Second Life, a 3D virtual environment. The final project constituted 50% of the students' final course grade. Additionally, as part of the final project, participants were asked to write a reflection essay, fill in an online questionnaire, and some of the participants from different groups were asked to participate in a semi-structured interview regarding their experience on the 3D VLEs and their production. The study discussed in this paper focuses on examining the reflections and views of those pre-service teachers who collaboratively designed and produced a machinima on Second Life.

Participants

89 third-year prospective teachers enrolled in the course during the 2018-2019 fall semester. They were separated into two classes, A and B depending on their students' ID numbers, being even or odd number. Among those, 21 groups, varying between 4 and 6 members in each group, were formed. For the final product machinima, each group was asked to determine a teaching objective, write a screenplay, choose avatars and costumes for their avatars, design the environment for recording, do the role-plays and recording, do the editing and add the music and sounds, and finally write a lesson plan based on their material. The study continued for 12 weeks from the introduction of the assignment until the final product. Hence, the potential participants of the current study were the members of the twenty-one groups (n=96) who were asked to reflect on their experience through a written reflection paper. However, the number of the final participants contained 89 prospective teachers in addition to those who did not provide reflections (n=7). Although these prospective teachers actively use Facebook for social networking purposes, at the time of the study they did not have any prior teaching experience on Facebook. Additionally, they had utilised the platform only to receive announcements in their previous two courses.

Procedures

The planning and implementation of the study continued for 12 weeks. In the first week, students were provided with an orientation on what they were supposed to do as a final product, the machinima genre and 3D VLEs. At the first week after the orientation they were asked to make groups on friendship basis. On the third week, the participants were asked to get familiar with 3D VLEs; for this the course instructor met the students online on Istanbul University Virtual Campus on Second Life, introduced them with the environment and the opportunities and helped with the avatar design and dressing the avatars. In the meantime, in the first four weeks of the lesson, in the theoretical part 3 plays were studied. Oedipus Rex by Sophocles, Medea by Euripides and Macbeth by Shakespeare. The learners were given also historical information on the genre and the drama traditions of Greeks and English. Thus the theoretical preparation of the learners on screenplays was ensured. Then the learners started working on their screenplays in their groups and this continued for another 2 weeks. After the study of two more plays A Doll's House by Ibsen and Waiting for Godot by Becket, the learners studied papers discussing the use of Drama texts in the classroom, material design and lesson planning with plays and drama based tasks at different language levels in the context of foreign language teaching. In accordance with this, the learners were asked to plan for their machinima production and its place in the foreign language learning. They learnt about recording software, editing software and sound adding solutions. In the eighth week they chose and designed the environment for their machinima, started doing their recordings, the editing and writing their lesson plans. The learners were given 3 weeks to complete. In the last, twelfth, week all the machinima were viewed during the lessons and were evaluated on the given criteria, as these final products constituted the %50 of their final course grade.

During the production stage, one of the lessons, on week 10, was conducted at the faculty computer lab where there were 40 desktop computers for student use, also wireless internet access for those with their own laptops.

The instructor of the ELT department and 3 junior students from Computer Education and Instructional Technologies department helped with the technology, recording and editing. After the collection of all machinima, they were uploaded to a Youtube channel and a website was designed to publish all the production and lesson plans. The name of the website is “teacheranima.com” and the same name was used for the Youtube channel.

Qualitative data: Prospective teachers’ reflective essays on their machinima production process

Reflection is an important tool for indicating learners thinking skills such as problem-solving, critical analysis, synthesising, determining patterns, and evaluation. Letting students immerse in their thinking and contemplate about their learning experience could help them realise what they have acquired during the learning process. The use of metacognitive strategies in learning also suggests that students must use self reflection as a tool to earn awareness and process on the learning itself and the process (Chamot et al., 1999). Our research aimed at exploring the reflections of prospective teachers who learnt how to teach by learning the 21st century digital skills as well through the proeduction of machinima. The pre-service language teachers were not provided with a structured format to generate their reflections. They were given only one guiding question that is “*What have you learnt from the machinima assignment?*”. We have collected 89 reflective essays, 74 online questionnaires and 12 semi-structured interviews.

Data analysis

The data that was obtained were analysed by thematic analysis which ensure the voice of the participants, epistemologically. Another aim is also to specify the experience and the meaning they make out of this expeience clearly (Braun & Clarke, 2006). For this study six-stage process recommended by Braun and Clarke (2006) for thematic analysis was used; first the entire data set was scanned various times by two researchers, with the eventual analysis involving familiarisation, generating and reviewing codes, searching for themes, and reviewing sub themes. The first phase for the review stage was to specify if all the coded extracts for a theme were coherent. The second criterion is the distinctiveness of each of the main themes and involves being capable of articulating what is the essence of each of the themes. Lastly, the codes that contributed to a theme were checked for internal consistency. After a considerable amount of recursive analysis, the main themes and their sub-themes were defined and named. In order to ensure the reliability of the collected data, two experts decoded 112 data selected among participants` reflections (89 in total) on their reflective essays.

For the analysis of qualitative data, the reflective essays were first recorded. The participants were given information about the research and their approval was obtained. After approval, the data was read several times and the first codings were made around the research question. Then the encodings were categorized according to similarities and differences. Similar categories were brought together to reach themes. In the second part of the analysis, seven themes and their categories and sub-categories were reached. Finally, the coding table was prepared in order to facilitate the analysis of the themes and categories and the data were analyzed again.

Limitations of the Study

Students who participated in the study were asked to communicate with the researcher were asked to do so by social media, however not all of the participants had social media accounts and from time to time communication was not as efficient. Forming the groups to produce machinima on friendship seemed viable in the beginning but after some time the groups had to be reformed as members of the groups would have hard time working with each other. The production of the machinima took longer for some groups as not all of the students had their own computers, and the computer lab of the faculty had to be arranged for them in the evening hours. This arrangement proved to be working but some students had problem with staying at school after working hours. The triangulation of the data seemed successful however the data was immense and having only two researchers to examine the data created great workload.

FINDINGS

After their experience with Machinima on 3-D VWs in their Drama Class the pre-service language teachers were asked the question “*What have you learnt from the Machinima Assignment?*” to obtain their views on their experience. The findings of the analysis of the reflective essays have been given in the following Table 1.

Theme	Categories
Experience	Good, hard, enjoyable, challenging but fun, awesome, nice, great, fabulous, best, wonderful, unforgettable, compelling but unforgettable, different, amusing, difficult, entertaining, valuable, important, very exciting, real, entertaining and informative.
Collaboration	Complicated and painful, useful, have good harmony, plays an important role, collective work, groupwork, good friends, a great pain, compromise, stronger

	relationship, work together, beneficial to work together, difficult to find time, proud of ourselves, proud of product, collective and mutual product, working in a group is really hard, responsibility.
Learning	Learnt a lot, relationship, materials design, contextual, learning by doing, many applications, Second Life, 3-D Virtual Environment, script writing, Camtasia, technical knowledge, editing, voicing, recording, new techniques, new perspectives, inductive, imagination, authentic, technical skills, digital literacy.
Technology	Complicated, many apps, technical problems: wifi, internet connection, computer, avatar, voice over, microphone, editing, sandboxes to build, places to record, recording and camera controls, time consuming, limitations like copyrights and money.
Professional Development	Self-efficacy, self-confidence, increase in motivation to be a good teacher, self-esteem, keep up with the new technology, educational material, expert on machinima, help in the occupation, enrich the materials and the lesson plans.
Resource	Limitless, task, helps learn a language, practice new language, teaching language, more effective way to transfer information, realia, authentic, contextualized way.
Creativity	Increases creativity, transform our feelings and thoughts into a creative –our worn-product, creative materials in the class.

Table 1. Analysis of the Reflective Essays Regarding Machinima

The analysis of the reflective essays revealed seven themes, these are: Experience, Collaboration, Learning, Technology, Professional Development, Resource and Creativity. Each theme was observed to be expressed within many categories. Each theme has also been linked to the categories in the Table 1.

Experience

The pre-service English teachers have agreed that the the experience they acquired in the process of making machinima was hard, challenging, different, difficult, compelling but on the other hand it was also good, enjoyable, fun, nice, great, fabulous, best, awesome, wonderful, unforgettable, amusing, entertaining, valuable, important, very exciting, real, entertaining and informative. Some marked that it was challenging but fun, and compelling but unforgettable. These comments indicate that the pre-service English teachers experienced some difficulty in the process but definitely had very good time while producing their machinima. The students asserted that producing machinima was an engaging experience.

- *In process of machinima, there were hard times but I do not remember any time as joyful as like that. (P1.)*
- *The whole experience made us proud and I am still watching sometimes without getting bored. (P2.)*
- *However, for our experience while trying to use it I can say that it was fun but at the same time challenging. (P3.)*
- *All in all, this process was both entertaining and also informative for all of us. (P4.)*

This is in line with the findings of Koenraad (2013), Butler, (2012) and Muldoon & Kofoed (2009) who have indicated that machinima provides engagement in domain related practice, ownership of inquiry and motivating learning context. The following examples are extracted from the reflections of the students and they represent both the theme and the categories summarized in Table 1.

Collaboration

Some of the students who reflected their opinions about the collaboration aspect of their task have indicated that the group work had been hard, complicated and painful, a great pain, and difficult to find time to work together. Yet some other revealed that it had been useful and beneficial to work together. Positive aspects that they indicated were that group work played an important role, it was a collective work, they made good friends and created stronger relationships in the process, they were proud of themselves and their mutual product as well as they learnt responsibility and how to compromise. These reflections can be verified with Morozov (2008), CAMELOT Project (2015) and Barwell, Moore & Walker (2011) indicating that machinima makes it easier to work together and create social and collaborative context. The students expressed multiple prsepectives of collaboration in their reflections, these are visible below:

- *We had good relationship after class. We do not know each other before but now we are good friends. We had good harmony with our friends. We enjoyed by doing our work. On the other hand, discipline was a first factor for us to make a good work. (P5.)*

- *It's also useful for teachers or even undergraduate students like us in terms of working cooperatively.*
- *I think relationship between us got stronger due to this task. (P6.)*
- *I realized that working with a group is really different from working alone. Being together increases the creativity and pace. Each of us had a work to do. We both learned and enjoyed. (P7.)*
- *Secondly, I realised that, it's not always possible to work with everyone. What I mean is, you should be careful in each step when you're working with your friends, because some of them may not be concerned, or may leave you alone in the middle of the work. (P8.)*
- *As I said above, cooperation, understanding and reliance is most important needs to work as a group. We did it. (P9.)*
- *My experience with machinima was just "a great pain" not because it was difficult but because it needed a group work. Once again I understood that working with a group is painful for me. (P10.)*
- *I would say, we all learned how to use Second Life and Camtasia to some degree, but most of all, we learned how to compromise and work together. (P11.)*
- *I learnt lots of things; firstly, group work is the best for this kind of work if you are beginner because the more people the more creativity and the less anxiety. (P12.)*
- *Firstly, to create it, we have to be in a group and spend our much time to work together. To success this common work situation, we had to take our friends needs into consideration and this is the hardest one. I mean finding common spare hour, day or a common place is really hard. (P13.)*
- *Apart from these we as a group learnt the responsibility among the group members. Each person in the group try to do their best of their duty. So we learned how to create something in collaboration. (P14.)*

As is seen from the reflections, the students found the collaboration difficult and complicated, however they also expressed that they were proud with their mutual products and that the groupwork was necessary for beginner level machinima production. Muldoon & Kofoed (2009) characterize the machinima as enhancing "apprenticeship-style learning" thus enhancing coaching and modeling of thinking skills as well as collaborative and social learning. Koehler et al. (2011) persists that communication and collaboration are the ability of individuals to use effectively digital tools to discuss and come to conclusion together. They help students' communication and cooperative learning skills. In this respect, they are 21st century skills.

Learning

Since machinima is related to a number of other *semiotic domains* like videogame, filmmaking and animation, Morozov (2008, p. 5902) summarizes characteristics of effective learning of a given semiotic domain as "*learning and experience the world (see and act on) in a new way*". Viewed as a *semiotic symbolic representational domain* machinima could be used to develop digital literacy, as well as 21st century skills. The digital semiotic domain of machinima possesses incredible potential for enabling effective learning experiences. This is evidenced by the reflections of pre-service language teachers. Majority of the participants indicated that they learned a lot and that this project was an opportunity for learning by doing. When the categories were analyzed to explain what "a lot" means it is observed that the students explained it as learning about relationships while working in groups, learning materials design for foreign language teaching, learning many applications like Second Life, learning about 3-D Virtual Environments, Camtasia, script writing for role-plays, learning technical knowledge and skills like editing, voicing over, recording, new techniques, new perspectives, digital literacy. Some of the participants asserted that learning via machinima was inductive and authentic in nature and required using the imagination while learning.

- *Because the Second Life has many opportunities as I said above, it arises the imagination of the user. It was like an inspiration for me. The users have always a chance to think, imagine, discover themselves. You can also learn the meaning of point of view while shooting the machinima. (P15.)*
- *Lastly, I, sincerely say that, it was one of the most motivating and delightful school project for me. (P16.)*
- *It is absolutely learning by doing. Many forms, structures and moral lessons can be taught via it. It creates a real life atmosphere, it touches feelings, it provides an inductive learning environment, it really relaxes the doers. (P17.)*
- *Machinima isn't just a task for us, we obtained more things. Being together, laugh, entertain, information, happiness, dramatization, success, applaud, friends, creation of something are our words for machinima. (P18.)*

- *However, it was great pleasure to develop our technical skills and gain 3D virtual environment experience. (P19.)*
- *We learned how to add fragments, cut out unwanted scenes, add credits at the end and use “fade-in/fade-out” effects. (P20.)*
- *We learned how to cut and add the video on screen saver program. We have learned how to write on it and how to add music to our machinima. So I believe that now I can shoot a play with Second Life and add extra features to it like subtitles and music and use it in my language classes as an authentic material. (P21.)*
- *I learnt Camtasia so well that I helped any roommate from a different university to edit a video. (P22.)*
- *We learnt to create and use visual material, how to work effectively as group and how to use SL and Camtasia. (P23.)*
- *But all of us learned how to use Screencast-O-Matic, movie-maker, select music for a film and especially use Second Life. It was amazing experience for me. After this time, I could make montage, ... I know where I will select outfit from, I know the features of movie-maker. (P24.)*
- *Because it needs lots of time, technical knowledge and also a place where we will be able to do this. (P25.)*
- *First of all, I learnt using Camtasia for editing, adding voices, music and other stuff. For Second Life, now I’m able to use, command my avatar effectively and appropriately. Let’s say more effectively. Sometimes my friends act and record, sometimes I had to act and record because of either technical problems or the roles. (P26.)*
- *To sum up machinima is a useful tool in teaching and with this study my technical knowledge has increased. (P27.)*

Trilling and Fadel (2012) think that 21st century requires people to be technology literate who are capable of using digital technology tools and social networks efficiently with the purpose of accessing, managing, evaluating and creating information. The reflections of the participants above show that they feel confident that they acquired some digital and technical skills to make them proud members of the contemporary society. ICT Literacy and Media Literacy are also part of the 21st century skills which are referred to as in the reflections of the students. They have indicated that with the knowledge and skills that they learnt during the machinima task they can find different solutions in the creation of machinima that is a form of media to represent information. According to Middleton & Mather (2008) the educational value of Immersive Virtual Worlds (IVWs) seems to be in their social immersive qualities and as an accessible simulation technology. To them, student-generated production models the learning value may be found in the production process itself.

Technology

The participants confirmed that technology required to create machinima was complicated and they were confronted with many technical problems during the creation process. Among those problems they pinpointed poor wifi and internet connection, poor computer quality which hindered their access to 3-D VWs, difficulty in controlling the avatars, voice over, microphone problems, editing, sandboxes to build, places to record, recording and camera controls, limitations like copyrights and money, as well as that the creation was time consuming. These comments and reflections are confirming Lu’s (2011) and Koenraad’s (2013) studies who are reporting technical issues like “insufficient network bandwidth and computational power to use the 3-D environment”.

- *However, it was great pleasure to develop our technical skills and gain 3D virtual environment experience. (P28.)*
- *When I first saw samples of machinimas, I thought creating one would be quite hard. Because it demands a high level of digital literacy to cope with it. (P29.)*
- *Rather than Camtasia, we used Screencast-O-Matic to take the film then we organized on Moviemaker. (P30.)*
- *We faced with many technical problems, we handled with some of them but still our machinima isn’t sufficient from the technical aspects. (P31.)*
- *It was a difficult process, as well because most of us couldn’t direct our avatar. The other problem we faced with was the echo of the voice then we learned to reduce it from the settings. (P32.)*
- *The shooting stage was really hard stuff for us. Many technical problems occurred related to voice and places. (P33.)*
- *You can have problems while using Second Life because there is no sandboxes that allow you to transform your items like clothes. Most of the items are not free but you can earn or buy Linden dollars for a minor charge. (P34.)*

Professional Development

Majority of the participants reported greater self-efficacy, self-confidence and self-esteem after completion of the task. They also reported increase in motivation to be a good teacher, that they believe they can keep up with the new technology, they are confident that they can create educational materials, and this experience will help them in their occupation and will enrich their materials and their lesson plans. All of these reflections are linked with professional development and a sense of achievement. The participants also reported creating machinima for other lessons and contexts and confidence that they can use this skill in their future professional lives.

- *To sum up, machinima has help me to develop my technical skills and also I learned new ways of preparing teaching materials. (P35.)*
- *We know that we can use it in our classes. (P36.)*
- *This machinima experience provides me on opportunity to bridge my methodological knowledge on real-virtual application, covering the lacks between knowledge and skill. (P37.)*
- *We added lastly voice as story telling and so that we can use it with another language thanks to voice narration. Anyway, I have learnt so much from this project and I have impressed so much that I have recorded one more machinima for my lesson plan project in Specialization in Language Teaching class as an original and self-made material. (P38.)*
- *A lot of technical information about machinima is obtained for me. I learnt how to create and use machinima in language learniFng as an educational material. (P39.)*
- *In my opinion, I may be expert on machinima. (P40.)*
- *I will show you all of my gain when I become a teacher, a teacher who is satisfied with her job. (P41.)*
- *So, when I will be a teacher, surely I will use machinima in my education. Now, I feel myself a 3-D cinema maker. (P42.)*
- *Right now I feel confident both about machinima and the Second Life. At least, I am not afraid of it. If we had much more time and saw much more examples, we could create more successful play. The most important part is that, when I become teacher I can use machinima in a more effective way rather than other ways. I think it will be very interesting and useful for students. They are already better at technology than us. With technology integrated ways language teaching can be easier in the future. (P43.)*
- *Also it improved me in terms of using technological materials like sound effects, camtasia, which will help me in my occupation. In addition, I learned how to apply technology (Second Life, Camtasia, Machinima) to my class. Preparing motion Uma makes me feel that I'm following technological improvements, which is essential for us. It makes me think that I'm not behind that improving technology. (P44.)*
- *As a teacher, I can prepare a video and I can put it into pre-task. My students can watch it and then can work for the while task stage. I can say that Machinima program can enrich our teaching materials and can enrich our lesson plans, so learning how to use it is a big win. (P45.)*
- *In addition, I saw that I can prepare and create my own lesson materials for my students. And Lastly, I think that I can do better assignments after that. This assignment improved me. (P46.)*
- *Although we have many difficulties such as technical problems, unavailable places, Limited time, we could produce and you thing which we haven't done before. Learning new things is outcome of the machine, and we can use it in our future professional lives. (P47.)*
- *Firstly, as a prospective teacher, getting such technological competence Will make me one jump ahead of others. With the help of it, I believe that I will begin leaving behind the problems like shy students who do not like to speak or act. (P48.)*

Resource

As a form of a task the machinima was reported to be a limitless resource. The participants asserted that it can help learn a language, practice new language, teach language and is more effective way to transfer information, is a form of realia, is authentic and helps teaching in a contextualized way.

- *In SL, we used limitless sources, actually. We found houses, ballet schools and costumes for free. We changed the weather according to the scenario. We made our characters put up or loose some weight. We used animal voices, when Mike was fighting with his wife. To show, Mike was happy, we made him smile using gestures and mimics section in SL. (P49.)*
- *Second life is a 3D virtual world and while I was preparing my work I met with foreign people and talked to them. I can also make a company with other people from different country. It also helps us to improve our English. If I work on it I can discover more things and share with my students in future. (P50.)*

- *This gives the student the opportunity for autonomous learning. We are in technological/digital era. Keeping children in learning environment such as class is a hard stuff but SL gives the opportunity of being outside the classroom but in a learning environment. (P51.)*
- *I think machinima is a great way of designing materials for a lesson. Because you shape your own characters, place and plot. You can even shoot short films. You can employ it as a listening task with or without subtitles or you can make students present the same story as a role-dramatizing that makes learning more memorable. There can be many more task related to this machinima. (P52.)*
- *All in all, I learned that Second Life and machinima have great opportunities for language teaching and makes lesson more enjoyable. (P53.)*
- *Instead of books and many traditional approaches, using Second Life exactly would be more effective way to transfer information. While I was watching the videos in the class, I'd realized it one more time. (P54.)*
- *By using machinima, we created more motivating material for language classes. We experienced technological devices actively. Moreover, we learned how to take a video from virtual environment and its technical knowledge (cut, paste, import media, recording the screen, adding transitions, music, sound effect and so on). We bought things from SL market... I don't know. It more reflective to present our experiences by using machinima. (P55.)*
- *We always talk about presenting our students with realia, what could be more real than a 3-D world material. (P56.)*
- *This way they would learn it in a contextualized way. (P57.)*
- *Secondly, we as teacher need to use this kind of stuff in our class for the sake of authenticity, learning, teaching and creativity. (P58.)*

Creativity

According to the reflections obtained in the end of the study, machinima increases creativity, transforms the feelings and thoughts into a creative – own – product, and is a creative material for the class. Machinima as a by-product of the digital game, has been seen as a *storytelling form of artistic expression and creation* in Hui-Chun Hsiao (2013) by combining visual game scenes, actions and narrative.

- *It increases creativity or critical thinking skill. (P59.)*
- *It lets students to be creative the most important issue. (P60.)*
- *We had a chance to transform our feeling and thoughts into a creative –our own- product. (P61.)*
- *While making our Machinima “known unknown” a machinima about cultural awareness, I discovered that there are many great opportunities for us to prepare creative materials in our class. (P62.)*

Creativity and innovation are also among the 21st century skills according to the (P21 Framework for 21st Century Learning), thus the comments of the participants provide the fact that the machinima task increases and allows for creativity in the learning process. Yeni (2017, p. 97) postulates that in her work “*qualitative and quantitative data results show that teacher-training programs in Turkey focus mostly on theory*”. She has developed “21st Century Skills Material Design Teacher Training and Professional Development Program” and her findings indicate that after the training her in-service language teachers improved their creativity and created their own materials as well as shared the materials they had prepared and started using 21st century digital skills in their own classes (Yeni 2017, p. 95).

CONCLUSIONS

All of the themes that were found to be central in the reflections of the students were observed separately in other research in the literature. For instance, findings of Koenraad (2013) and Butler, (2012) indicate that machinima provides engagement in domain related practice, ownership of inquiry and motivating learning context. Thus machinima provides engagement and motivation in education as well as teacher training. The research reported in the study of Muldoon & Kofoed, (2011) that has been conducted in accounting education with machinima confirms that students appreciated the technology-enhanced learning environment, which resulted in significantly increased level of engagement and active learning. Barwell, Moore & Walker (2011) stress that incorporating “machinima” for education helps the development of learning engagement. The findings of our case study are also in line with Johnson & Runo (2011) who did a study designed to show educators the potential of machinima and they argue that machinima is a new level of *storytelling* that could captivate the students. The majority of our participants proposed that machinima production was both challenging but fun, and they used more positive adjectives when they defined the experience that they had during the task.

Machinima production requires students to collaborate as production takes a lot of resources and necessitates a lot of knowledge on the side of the learners. Likewise, in his work, Harwood (2013) suggests that machinima is ‘digital clay’ that has the potential to add value to *practice-based learning in a connected world*. The CAMELOT Project evaluation revealed that “a positive course outcome was the sense of community developed during the training through collaborative engagement in the process of creating machinima, which was considered as most effective and rewarding (Thomas & Schneider, 2018). Participants of the study indicated a strong support for the collaborative nature of the task, and they also confirmed the development of strong bonds among themselves. However, some of the participants also indicated that collaboraton on such a task is more difficult and complicated. In addition to positive experience and collaborative nature of the machinima task, the participants also mentioned about hiw much they learned from the task. They stressed that they learned by doing, they learned many apps, technical knowledge, and digital literacy for designing foreign language materials. To Middleton & Mather (2008) student-generated production models the learning value that may be found in the production process itself. In this respect, Muldoon & Kofoed’s (2011) findings also revealed that the development of higher order thinking skills is best facilitated in authentic contexts that represent the values and practices of the discipline.

Participants reported many drawbacks from the machinima task, especially regarding the technology. They put forward that the technology required to create machinima is complicated, computer specifications and Internet connection are troublesome, it is time consuming, and there are limitations like copyright issues and money. These have been confirmed by the studies of Lu (2011) and Koenraad (2013) as well. However, Koç (2005, p. 13) stresses that “*interactive, self-directed learning and higher order thinking can be fostered by technology, and that technology can have the greatest benefit when the environment is conducive to such experiences.*” The problems and the drawbacks could be a source for learning and development of the teachers as the problem solving process to complete a task could enhance a valuable experience to support the teachers in their careers.

Likewise, the participants confirmed that their self confidence, self-esteem and self-efficacy has definitely increased. Machinima task helped with increase in motivation and enrichment of the language classes. Horlescu (2017) found out that the teachers who used machinima in her professional development training developed digital literacy which helped overcome the constraints of digital technologies through synaesthesia, spontaneous improvising and coaction. Our study reveals that the pre-service English language teachers believe that machinima can be used as a task for language learning where learners can practice language, machinima can cater for transfer of linguistic information as well as authentic and contextualized language practice. Last but not the least, according to out thematic analysis machinima increases creativity, transforms the feelings and thoughts into creative products to be used in the class. Hui-Chun Hsiao (2013) thinks that Machinima, a by-product of the digital game, has been seen as a *storytelling form of artistic expression and creation*. As seen from the pre-service student responses, using 3D Machinima in the training of the pre-service English language teachers enhances many affordances like good experience, collaboration, learning, technology knowledge, professional development, obtaining a good resource and creativity. In summary, training pre-service teachers with machinima enhances learning by doing as well as many other benefits as stated above. The process of producing Machinima presents a constructivist environment in which the pre-service language teachers can develop internal cognitive connections and rely on them in their professional lives.

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