

VIRTUAL WORLDS IN EDUCATION: AVATAR, ST.ART AND EUROVERITY ACTION-RESEARCH INITIATIVES

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ABSTRACT. This paper gives an overview of the educational potential of virtual worlds and draws on the results of the AVATAR “Added value of teaching in a virtual world”, the ST.ART “Street Artists in a virtual space” and the Euroversity projects, all funded with support by the European Commission under the Lifelong Learning Programme. These action-research projects deal with the technological, pedagogical, cultural and motivational benefits of using virtual worlds in educational settings and provide a framework for the implementation of virtual worlds in education.

KEYWORDS: *E-Learning, E-moderating, Virtual worlds*

Why virtual worlds?

A virtual world is an online community or computer-based simulated environment where users can interact with one another and use and create objects. Virtual worlds or interactive 3D virtual environments, allow users to inhabit through their avatars, a 3D graphic representation, and communicate through text, graphical icons, visual gesture and sound.

Virtual worlds represent a powerful media for instruction, offering a wide scope of tools for social interaction and innovation in learning, to encourage student participation. Virtual worlds have the ability to adapt to different learner needs and can overcome the limitations of a traditional classroom setting where certain tasks can be difficult due to cost, location or other physical constraints. The educational use of virtual worlds promotes learner empowerment by allowing students to personalize their learning pathways, through virtual mediations and their avatar, which can create new learning experiences and reflection.

Although virtual worlds have been around for over 20 years, their real potential and use for educational purposes has grown in the last 5 years, including replicating universities, museums, art galleries and science labs for tutoring and mentoring. According

to the article *Serious Virtual Worlds*, “the lines between virtual worlds, games and social networking are blurring significantly leading to the assertion that over the next five years the majority of young people under 18 will have avatars and be using these kinds of applications daily and therefore have different expectations about how education may be delivered to them” (de Freitas, 2008). While major research studies on the benefits of virtual worlds in terms of participation, learner control, educational standards and quality assurance are still underway, the development of virtual world education in the next 5-10 years has the potential to radically change the face of education.

Which virtual world to choose among the myriad?

Virtual worlds technologies are not without their obstacles. Currently, we assist to an explosion of virtual worlds technologies and each of them exists into itself; “travel” between them as a single user or identity is largely not possible and each world implements a different combination of toolsets, communication features and resources. Diametrically opposite to the web, which is based on standardized protocols that work across many platforms, virtual worlds technology are still largely based on closed and proprietary systems.

Existing virtual worlds are internally consistent, but in most cases the content or resource created within one environment cannot be exported or imported into other worlds. This closed-world paradigm puts educational institutes or individuals in the position to have to choose the virtual world that better fits their educational needs. This lack of interoperability seems to have reached critical mass and we can expect to see the development of open standards and protocols for virtual worlds to be boosted and implemented in the near future. In the meantime, education institutions are forced to choose the virtual worlds platform to be used. From an educational perspective also the way how virtual worlds technologies integrate with existing e-learning platforms must be considered. Actually, most virtual worlds platforms are proprietary and the technical standards that allow interoperability between different systems have not yet been developed.

Facing a myriad of possibilities offered by virtual worlds, a number

of strategic and legal issues need to be considered. Although some worlds like Second Life grant intellectual property rights to content creators, other worlds do not, and existing platforms may not satisfy the legal requirements essential to some content creators. The AVATAR, ST.ART and Euroversity projects have been also forced to weigh these issues carefully, to understand the implications of their choices and to conduct rigorous analysis in order to drive their decisions.

In the AVATAR project a research and comparative analysis have been conducted on existing virtual world platforms assessing the quality of their teaching/learning features and functions. The analysis focused on essential and desirable criteria and also on the user friendliness of the platform and the important aspect of access for pupils below the age of 18. The main existing platforms included in the analysis were: Second Life Main Grid, Second Life Teen Grid, Active Worlds, Open Sim, Unity3D, Blue Mars, Sirikata and There.com. Upon completion of the analysis, the virtual world that most optimally supported the educational design of the AVATAR project, namely Second Life Main Grid, was the one selected for the subsequent phases. This had the advantage of being a more stable development platform and of allowing users to take advantage of the rich educational resources which already exist in-world.

In the START project the choice to use the virtual world Open Sim, has been driven by the requirement of a stable permanent virtual world suitable for people below 18 and the ability to restrict access only to participants, i.e. secondary school teachers and their students. This was to recreate the real didactic context in terms of social environment, where the educational relation between teachers and students is not affected by external interactions. Additionally, Open Sim is an open source software and this allow institutions to customize the software to their needs.

Learning perspectives on virtual worlds teaching and learning activities

When deciding to introduce a new digital tool, such as a virtual world, into teaching and learning activities, one is not just adopting that tool but adopting a certain perspective on teaching and learning and a new set of roles for teachers and pupils that accompany this

perspective.

This means that one cannot just transfer teaching and learning activities from one context, the traditional classroom, to the new context, the virtual world. How the features of the new context can be applied to best support the fulfillment of the specific learning outcomes of the course must be considered (Barker, 2010).

The use of new technologies as a support to training involves new active and collaborative teaching models that reduce traditional methods. The use of virtual worlds offers the possibility to use different communication codes at the same time: visual, verbal, perspective. Inquiry and project-based learning activities use a graphical 3D application that builds on the students' curiosity and motivates students to reflect on what they are learning.

Campbell's study shows that teaching and learning activities in virtual worlds help pupils develop competences that can be used in other contexts as well be in school projects and/or their future work life (Campbell, 2009). The study was conducted with a group of pre-service educational students as part of a final year course in educational technology. They completed a problem-based learning experience in Second Life that allowed the students to explore the virtual world as well as to develop a course that could be taught to a high school class. It is suggested that manipulation and problem-solving skills that the students evolve when learning basic Second Life related skills are transferable to other activities. Other results referenced are the improvement of communication, teamwork, creativity and leadership skills.

The Six Learnings Framework (Lim, 2009) presents six lenses through which curricular interventions might be analyzed and evaluated, and suggests that learning goals in virtual worlds can be maximized only if there is a mutually respectful relationship between school managers, teachers and developers. The six lenses outlined by Lim are: learning by exploring, learning by collaborating, learning by being, learning by building, learning by championing, learning by expressing.

AVATAR: the added value of teaching in a virtual world

The AVATAR is a 24 months project co-funded by the European Commission - Education, Audiovisual and Culture Executive Agency, Lifelong Learning Programme Comenius (project number 502882-LLP-1-2009-1-IT-COMENIUS-CMP) coordinated by the interuniversity consortium FOR.COM. The aim of the project is to contribute to enhance the level of ICT use in education by providing secondary school teachers with relatively new methodological and pedagogical tools.

In the first project phase, research and comparative analysis have been conducted on existing virtual worlds platforms assessing the quality of their teaching/learning features and functions. As described above, the analysis also focused on the user friendliness of the platform and the important aspect of access for pupils below the age of 18. The virtual worlds that most optimally supports the educational design of the project, namely Second Life, has been selected for the subsequent phases of the project. During this phase, learning theories and best practice within the field of virtual worlds teaching and learning was also studied to learn from existing practice. Best practices and tips for teaching in Second Life, didactic methods, learning perspectives and educational case studies were compiled.

Phase two of the project was to design a course for secondary school teachers on teaching and learning in virtual worlds based on the results of phase one.

The course is based on 3 main learning perspectives, namely collaborative learning, learning through reflection and learning by doing. These pedagogical dimensions correspond closely with a course curriculum for secondary school teachers designed to be delivered both through an e-learning and a v-learning platform. The course work actually revolves around:

- group activities that allow participants to learn from each other creating a learning environment that facilitates both informal and formal learning;
- activities that encourage participants to reflect on their own learning experiences enabling them to set and pursue personal learning goals relevant to their specific situation;

- practical work that lets the participants explore virtual worlds and gain first-hand knowledge of the potentials and pitfalls of virtual worlds teaching and learning.

The course covers educational design in virtual worlds and the management and construction of virtual objects and learning environments. The course is divided into two main parts: the first dealing with teaching theoretical knowledge (e.g. the methodology of virtual world teaching, overview of the most common V-platforms and their features, how to engage and stimulate students) and practical knowledge (e.g. basic skills for constructing V-objects and how to realize an efficient V-lab and materials); and the second part where teachers realize and experiment the project work with small group of their students (Christensen, 2010). The course learning outcomes are relevant to European Qualifications Framework (EQF) Level 5.

From the technical point of view, an E-learning and a V-learning environments have been implemented as an essential step in the course preparation. Individual builds/locations have been built in Second Life as part of the AVATAR project estate.

A pilot experience has been launched in January 2011 in the E-platform and V-Platform both with teachers from secondary schools. Almost 120 teachers from all partner countries (i.e. from Austria, Bulgaria, Denmark, Italy, Spain and United Kingdom) have been selected for the experimentation phase.

Just like the Web, Second Life tends to be shaped by a permissive, anarchic culture which cuts against the organized, substantive, and deliberative activities. The project challenged this larger culture by creating a roadmap of tasks rather than a collection of learning objects, adopting the consolidated Gilly Salmon's Five-stage model for teaching and learning online (Salmon, 2004) and expecting participants to commit for a reasonable amount of time during the pilot phase (approximately five hours a week, for 17 weeks).

During the Course, periodical lessons have been carried out in real time in-world on topics related to the basic and advanced construction of 3D objects. Additionally, a number of guest speakers have been invited to hold seminars during focused on Second Life, its culture and how it has and can be used in educational contexts.

ST.ART: Street artists in a virtual space

The ST.ART is a 24 months project co-funded by the European Commission - Education, Audiovisual and Culture Executive Agency, Lifelong Learning Programme Comenius Project (project number 503230-2009-LLP-IT-COMENIUS-CMP) coordinated by Università degli Studi Guglielmo Marconi.

As the title suggests the pivotal topic around which the project unfolds is street art. Street art is art made in public spaces. It has developed out of the graffiti tradition of the 1980s and over the last decade it has become one of the most popular and controversial art forms in the contemporary scene, reaching also the mainstream. Given its background and origins Street art gives rise to a variety of interpretations: it is considered by some as a plague while for others it is an artistic expression or a tool to communicate dissent and expressing concerns. For these reasons most of the young people do not know the nuances of street art forms and they are not totally aware of the liable boundaries existing between street art and vandalism. In this context the main aim of ST.ART project is to have students (16 to 18 year old students in secondary school, especially in art schools) better know street art, its origins, roots and latest developments and understand the difference between aesthetics, street art forms and vandalism. ST.ART wants to produce innovative learning materials which deal with curricular topics but go more in details and merge together the theoretical and the practical aspects: i.e. the contents, that integrate the latest art trends with current art curricula and an innovative technological system, which creates a new Virtual Learning Environment. ST.ART's educational objectives are to improve students' basic and transversal skills as for example:

- communication in English with their peers;
- digital, social and civic competencies, sense of initiative and entrepreneurship, cultural awareness and expression;
- creativity thanks to the development of the art project work in Open sim.

In order to achieve its objectives the ST.ART developed a new and innovative Virtual Learning Environment, made up of two settings:

- an E-learning environment with a training area that uses the common tools of a modular learning platform to favour students' content learning;
- a virtual 3D world (based on the Open Sim environment) where art works are performed; the 3D world includes a social area where students can have open discussions.

As first step, ST.ART partnership carried out a Comparative research on current art curricula, defined by the Ministry of Education (or any other relevant institution) in the countries involved in the project i.e. Italy, Austria, Malta and Lithuania. The research aimed at defining whether in the schools addressed, Street art is a topic included in official modules within the curricular planning of contemporary art history classes. The research pointed out similarities and differences existing in legislative/education frameworks about street art forms. The second phase, the ST.ART learning activities, has been implemented in three different and parallel sessions:

- the first one is the e-learning environment where the students have access to the theoretical information about street art. The lectures are mediated by the teachers who have the role to keep the students actively involved in the course.
- In the 3D virtual world, which is the second session, students carried out a project artwork. The activities in Metropolis foresaw some synchronous lectures to be held by the Mayor of the city. The lectures were mainly discussion groups through which the Mayor gave students insights for discussion about correct behaviour in the city, a draft legislation, how to perform street art legally. The discussion engaged the students thus favouring social interaction within Open Sim. They saw the law changing from a draft into a final document to be used in Metropolis and this made them more committed to the design of contents and implementation of activities. One of ST.ART's expected results was to create an active educational community in Metropolis. In order to encourage students from different countries and different schools to interact with their peers and behave in compliance with the regulation agreed upon, Metropolis has been divided in 5 different areas: each area is characterised by a colour and a background theme. They became part of a multinational

and multicultural group.

- The third session was represented by the social area, within the 3D Virtual world, where the students could interact with peers, in a collaborative way, exchange ideas, opinions, views, teach each other and learn from each other.

The e-course started in January 2011 providing students with basic information on the main topic (street art). At the same time was held the first synchronous lecture in Open Sim, in order to introduce students and teachers to the simulated reality of Metropolis. Over the time, in the subsequent synchronous lectures in the immersive world students started their practical activities: drafting the regulation on correct behavior in Metropolis, building their own artworks to show in the Art gallery and uploading pictures from the real world to start an open discussion with their peers.

The user friendly interface of the technological tools allowed users to connect with one another and to identify themselves with their own avatars, to increase motivation, to reinforce the skills previously acquired and to enhance their overall learning experience. The school teachers, previously trained, played together with the students since it was essential for the teachers to communicate with students in a common language in order to be able to still lead and shape students' learning. As teachers played, they helped the narrative unfold, motivate students with appropriate feedback and highlight key concepts embedded in the virtual scenario. This social interaction and the relationships that developed, in this immersive virtual reality, between students and among students and others, creates a community of learners (Swan and Shea, 2005).

The Euroversity network: towards a pan-European virtual worlds university

The Euroversity is a 36 months project co-funded by the European Commission - Education, Audiovisual and Culture Executive Agency, Lifelong Learning Programme KA3 ICT - Network (project number 518944-LLP-2011-UK-KA3-KA3NW) coordinated by the University of Hull.

The aim of the project is to establish a network designed to collaboratively share good practice in virtual worlds, with the wider

community of interested organisations/individuals across disciplinary boundaries, and at different levels of education. This good practice will inform the creation of a good practice frame work which will help to guide those new to virtual worlds in understanding how to make best use of virtual spaces in learning and teaching. This will include helping to capitalise on the benefits of 2D/3D virtual world course delivery.

To date the use of virtual worlds for educational purposes is not mainstream in online and distance education programmes, and only occasionally encountered in face-to-face education. Some of the reasons for this have been identified by the network participants and can be summarised as follows: technical and environmental obstacles, resistance to virtual worlds in both teachers and learners based on prejudice and preconceived ideas about the environment and the prevalence of the “transfer of knowledge” paradigm over the “transformation of knowledge” paradigm which is still mainstream in most educational contexts in Europe.

All partners in this network share the view that the affective dimension of 3D learning environments is a powerful educational tool. In particular, the type of learning that can take place in these environments is deemed to have greater transformational power than 2D online learning environments and allows, for example, for greater exploration of cultural issues and identity than in current face-to-face education. The affective impact of virtual worlds and their creative transformational power are highly valued by mental health professionals, counsellors, artists and diversely able communities active in virtual worlds. In the sciences, virtual worlds are being used to promote creative thinking and deeper understanding of physics, astrophysics, chemistry and biology for example. Virtual worlds are also used for research in neuroscience and for rehabilitation by physiotherapists and, as such, are also a tool for development and research as well as a medium.

The network is the result of the coming together of partners from other ongoing and past EU funded projects in the field of online education and the applications of virtual realities, including the AVATAR and the ST.ART projects.

The new output that this network will provide is a wider choice of resources than in previous projects. The end user, be it a student or a teacher/educator or trainer and service provider will experience and/or gain awareness of different contexts for online

communication and learning so that they are ultimately in a position to make more informed and better choices both for their own learning and development and for those communities for whom they in turn are service providers.

The network brings together partners with diverse subject backgrounds, such as language education, linguistics, intercultural education, science, computer engineering, digital design and architecture, management and economics, communication and media studies, gender studies, letters and the humanities in general. The project has the following core objectives:

- The sharing of experiences and collection of community knowledge through the collection of existing materials and the creation of an experiential video bank capturing approaches to key stages in the initiation, design and delivery of courses in online virtual worlds.
- The transformation of the collective experiences of teaching and learning within virtual worlds into a good practice framework.
- The evaluation of the good practice framework in new course contexts. This will result in a re-drafting of the framework to take into account the analysis of findings made in these new contexts.
- Exploitation of existing resources from within the network of project partners.
- Dissemination of the projects activity across multiple national and international contexts, ensuring the growth of the network and widespread use of the good practice framework.

The Euroversity project involves nineteen partners from ten countries, including USGM and FOR.COM, in the development of an advanced network of experienced practitioners in virtual world education delivery.

Conclusions

It is unfortunate that we often talk and think about virtual worlds in education as a kind of technology-application rather than as an exciting new laboratory, or as an open sandbox to test new theories and educational activities, or as a way to step into our collective and individual knowledge in a way that we have never been able to do before.

In a time when our modern educational system is under fire for being disconnected from the real world, many secondary school teachers see virtual worlds as a tool that might help them to connect students to the real-life education through the technology of the metaverse. Part of this enthusiastic approach comes from the unique characteristic of virtual worlds: they give students the ability to play, to practice, to be creative and imaginative, and to do things that they don't or can't or can't yet do in real life. Virtual worlds move beyond authentic real-life learning.

The added value of teaching in a virtual world points towards cultural, linguistic, interpersonal and motivational. The experiential learning process involves a high level of interaction, which evolves as students and teachers participate in on line activities such as discussions, collaborations and content sharing.

Virtual worlds, embedded in an appropriate pedagogical approach, seem to contribute to enhance collaborative learning, learning by reflecting and learning by doing approach as well as learner autonomy and social empathy. The combination of this positive attitude, together with the educational potential of virtual worlds, can lead to very motivating, enriching and satisfying learning and teaching experience.

All URLs checked
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