AVATAR-The Course
REPORTS FROM THE FIELD:

RECOMMENDATIONS FOR USING THE 3D VIRTUAL ENVIRONMENTS FOR TEACHING:
Why, How and Use cases

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ABSTRACT

The AVATAR project included a global course for teachers, which was delivered remotely over a period of four months. The course had nine modules, distributed via e-learning and v-learning platforms. One module supports creation of new teaching material by course participants and its piloting with their students. The course was created in English language, however to support the learning curve of multilingual and international groups, several modules were moderated in national groups.

This paper details the rational behind the course, documents two case studies of completed projects within a virtual world, highlights the challenges and notes the successes, and culminates with conclusions and recommendations of running courses and lessons within an online 3D virtual world.

Keywords: Avatar; v-learning; 3D virtual world; teaching material

INTRODUCTION

Highlighted in the EUN report on “Games in Schools” (EUN, 2008) one of the main reasons for Game-Based Learning (GBL) being under utilized as an education resource is the lack of teacher/trainer skills in developing and utilizing games and GBL resources to assist them. Digital games, Virtual Worlds, and their appropriate use for education vary considerably.
Taxonomies of commercial game types or genres and lists of recommended platforms and virtual environments have been made available from past EC projects (Pivec, Koubečk, & Dondi, 2004; Pivec, 2008), but teachers and trainers cannot be expected to know how to integrate these virtual environments into their lessons to achieve the desired learning outcomes.

The digital technology can take a considerable amount of time to learn, often with the students knowing more about it than the teacher. Part of the process of choosing and utilizing a digital game for learning or learning within a virtual world, includes the identification and consideration of constraints in the learning setting, computer skills of both students and teachers, and the knowledge of how the desired learning outcomes would be realized. Other issues include technical requirements, licensing policies, sustainability, and more.

Some commercial educational games such as “Chemicus”, “Physikus”, and “Informaticus”, by Heureka-Klett (2002), a German software engineering company, have the quality of recreational games and include defined learning outcomes. These games employ an interface very similar to the popular commercial adventure game “Myst” from the game publisher UbiSoft (2007), and provide an interactive storyline that transports the player into a virtual world of fantasy and creates an immersive environment. Reese (2007) suggests that these virtual worlds have the potential to create a player immersion (Kearney & Pivec, 2007) and cites the concept of flow from Czikszentmihalyi (1990). Reese advocates that virtual worlds should be used as an alternate space for learning because of this immersive quality. Calleja (2007) agrees with Reese and promotes a game experience model to incorporate the concepts of both immersion and presence, to further the understanding of social significance and personal values of digital environments.

Game-Based Learning can successfully supplement traditional teaching, by providing a motivational environment successfully aimed at the appropriate target audience. Sorensen and Meyer (2007) reviewed a Game-Based language course (English as a foreign language) introduced into primary schools in 2006 in Denmark. The online world of “Mingoville” (2009) contains 10 missions in which players complete activities focused around vocabulary, spelling, and word recognition. Aimed at children aged 5 to 14 years, the product is written in Adobe Flash to be easily accessed via a web browser and has now been translated into 31 languages. Mayer and Bekebrede (2006) successfully implemented Game-Based Learning using simulations. Their games titled “Containers Adrift”, the planning and design of an inland container terminal, “Ventum On Line”, the simulated management of a wind farm, and “SIM MVZ”, the planning of infrastructure for a 2nd port in Rotterdam, are all successfully utilized at the Delft University of Technology. Burmester, Burmester, and Reiners (2008) also created simulations of Container Terminals using the virtual environment of Second Life. They suggest that the blended learning approach taken by the University of Hamburg allows for a richer environment for the students and a safer one than the real alternative when teaching terminal logistics and management.

They conclude that although the virtual world of Second Life suits their purpose at the present, they have structured their resources as to be able to port them to other virtual worlds or digital game environments in the future.

As suggested in all of the above examples, digital environments and virtual worlds are often used to provide the motivation necessary to learn, be it as drill and practice for homework, or as a safe experiential environment to supplement the structured lesson.
Clark (2004) maintains that commercial recreational game designers are successful because they focus only on engaging the player and making the game fun to play. He states that it is the design of the interactivity that provides the motivation necessary to invoke the repeated and persistent re-engagement by the player. This can be achieved at an emotional level or an intellectual level, but for the player to learn in the virtual environment, Clark argues that the design must include action and consequence and learning can then be achieved through reflection, especially when a moderated debriefing is utilized.

The EUN report on Games in Schools (EUN, 2008) also suggests that the lack of ICT use in teaching is a predominant issue in secondary schools throughout Europe. The AVATAR course discussed in this paper aimed at enhancing the level of ICT use in education by providing teachers with relatively new methodological and pedagogical tools, and was offered to teachers in secondary schools in Austria, Bulgaria, Denmark, Italy, Spain and the United Kingdom. The course included approximately 100 hours of learning activities broken down into group activities, individual study, planning and carrying out the project work with students.

**AVATAR-THE COURSE**

The course was delivered through both an E-Learning and a V-Learning platform comprising a mix of tutorials, individual and group activities, and practical tasks. Second Life was chosen for the virtual world and subsequently used for the course delivery to the participating teachers. Groups of teachers from each of the participating countries were moderated by national moderators (virtual world experts), who communicated with them in their native languages. Participants also partook in transnational activities and reflection in English.

The overall learning objectives of the AVATAR course were for the participants to:

- develop skills and confidence in using various social internet resources as well as massively multi-user online worlds such as Second Life
- develop a deeper understanding of these environments and their uses with regard to learning scenarios
- gain knowledge of teaching methods, best practices and educational design usable in virtual worlds
- identify and reflect upon the efficacy of the outcomes of different learning activities carried out in-world
- design strategies, activities and resources for learning different subjects in virtual worlds
- integrate virtual worlds as an innovative means in their daily teaching
- experience virtual worlds with their students
- evaluate the educational use of virtual worlds in their classrooms

To achieve these objectives the course was offered in nine Modules with activities as follows:

1. **Introduction Module**
   Access to the E-learning platform and course overview
2. **E-Learning Platform Introduction Module**
   Socialization and getting to know the functions of the E-learning platform
The course spanned four months, and covered educational design of virtual world teaching, the management and construction of virtual objects and learning environments, and examples of learning activities in virtual worlds. During the course, the teachers developed project work and use it directly in their classroom with their students. The project work incorporated a practical application of knowledge and skills gained during the course, with regards to the creation of a virtual-world learning environment and learning activities for a specific subject.

**CASE STUDY-LEARNING ENGLISH AS A FOREIGN LANGUAGE IN SECOND LIFE**

The first case study included 30 students aged 16 to 17 years, and was carried out in weeks 12 to 14, Spring 2011. The 30 students were spread across three 10th grade classes. The 10th grade is optional, and therefore many 10th grade schools have creative and practical subjects that allow students to get a feel of different trades and professions.

The purpose of this project was to work with English as a foreign language within the virtual world of Second Life. One of the goals of learning English as a second language is to give students the opportunity to speak the language. The teachers behind the project felt that a virtual world would be the perfect setting for language teaching because the students could “hide” behind their avatar and thus overcome some of the embarrassment that might be involved. Also, it was believed that Second Life would provide more realistic communication situations (speaking, reading and writing/chatting) than speaking English with your fellow Danish students. Another important goal of the project was to enable the students to pay virtual visits to sights in the UK and the US, so as to intrigue them and create a desire to see the places in real life. A secondary purpose of the project was to pose creative tasks to the students that would allow them to work with digital audio and video as part of the subject “junior computer driver’s license”.

During the first week of the project, the students were given an introductory course to familiarize them with the relevant functions of Second Life and to give them time to create an avatar. The students were given the assignment to visit different places in Second Life all relating to Berlin and to create a photo story with music and text. This exercise was linked to an actual study trip to the city of Berlin. The second and third weeks of the project were devoted to the Robin Hood Quest which is available in Second Life at the British Council Isle. The students worked in groups to solve the riddles and tasks in the quest. They had to use English when communicating with each other and when seeking help from the guides (their teachers and teachers from Austria and Italy who were also engaged in the AVATAR course) in Second Life.
Again the students were asked to create a photo story with English texts and with music. It turned out that only by collaborating could the students solve the tasks of the quest, which made the project very successful.

Some students felt that the Robin Hood Quest was very difficult, and they had much help from their teachers and fellow students. However, the students quickly got a good grasp of how to navigate within the Virtual World and how to change their appearance etc., due to their prior knowledge of Virtual world games such as the World of Warcraft. This prior knowledge of online computer games also meant that some students behaved offensively towards other avatars. However, they were soon introduced to netiquette to amend their behavior. With regards to the goal of learning English as a second language, the students spent time communicating in English and were able to understand the English language instructions that they received.

They thus had a lot of practical training and appeared to have fun in the process. However, it was mostly the reading, understanding and writing (chatting) skills that the students were practicing and less their oral English. When communicating with each other, the students used Danish probably as a result of the very complex tasks they were facing. As a side effect of the project, some students formed a band and chatted with avatars from other countries.

**Challenges and Reflections From This Project**
The Robin Hood Quest appeared to be an ideal task for language teaching. However, it turned out to be too complex a task to solve the riddles involved. Using existing resources in Second Life is not always easy and hence it is recommendable to contact the institution behind the resources you wish to use, and get the necessary documentation and information before using the resources with your students. Also, the students would have gained more if they had worked in groups across the countries in the AVATAR project. This proved not to be possible within the timeframe. It would also have been ideal to carry out the project in the autumn i.e. in the beginning of the semester.

Finally, mastering Second Life was not as easy as hoped. The teachers pointed to a steep learning curve for themselves and those students without online game experience. It is not a plug and play educational product.

Links and further information from this case study are as follows:

- The Robin Hood Quest
- The aim of the quest is to free Maid Marion. In order to free her, a code is needed. The code is obtained by solving different tasks and solving a crossword puzzle.
- British Council Intro film: http://www.youtube.com/watch?v=Sty91tJZyqA

The student films are available here:

- http://www.youtube.com/watch?v=sVx_ZHSzNfg
- http://www.youtube.com/watch?v=Jxi4qZDUuJA
- http://www.youtube.com/watch?v=hVpKJCFzXXc
- http://www.youtube.com/watch?v=ocCc1ksCMpU
CASE STUDY—WHAT & HOW CAN I DO?

This project work was designed and carried out by Claudia Malta teacher of Italian Literature and History with her students of class 4ª B Mercurio, Technical School “Giuseppe Ginanni”, Ravenna, Italy. The project work involved 17 students aged 17 to 18 years during the period April 1 to May 7 of 2011. The length of the project in total was 24 hours, 8 curricular and 16 extra-curricular hours. The goal is of the project work was to create a Bazaar within Second Life containing 3D objects created by students. This project focused on competences rather than disciplinary contents. It aimed at enable the students to gain:

- Knowledge (Italian, English, Computer, Civil Law);
- Skills (how to use the computer, learn new ways of using the computer, create things using computers, create things based on their own ideas, use technology to contribute to the surrounding community and to collaborate);
- Attitudes (the fields of study of students are Business, Finance and Software design: some of them have purchased an ECDL Skill card);
- Competences (communication, problem-solving, cooperative-learning)

The outcomes and purpose of this practical experiment were related to Europe 2020 strategy, Digital Agenda (IP/10/225) and to the eight key competences for lifelong learning (Recommendation 2006/962/EC of the European Parliament and Council). The purpose of the project work, in terms of the learning outcomes for pupils, revolved around 3 core themes:

Core theme COMMUNICATION
- decode verbal and non verbal messages efficiently
- use ICT for communicating

Core theme COOPERATIVE LEARNING
- compare with peers representation of a setting or a specific theme
- interact using an efficient role as to achieve a common goal

Core theme PROBLEM SOLVING
- define goals and expected outcome of a problem
- analyze the context, evaluate available strength point and detect challenges
- define strategies, role of involved actors, and deadline for the solution of a problem
- recognize and valorize successful results, appreciate and analyzing even smalls improvements.

The project work itself consisted of two phases that had been preceded by an internal communication targeting students, teachers (colleagues) and the technical staff of the school. This communication was aimed at motivate students, inform colleague and technicians of the educational potentials of virtual worlds, and inform participants of the AVATAR project and of the idea for the project work.

Phase One: Preparatory Phase
The length of this phase was 8 curricular hours. Main tasks of this phase were:

- Creation of the Second Life accounts for the students.
- Creation of the students’ Avatars.
Phase one consisted of an introduction to virtual worlds and their educational possibilities. Students’ virtual existence as Avatars in Second Life was opened with basic instruction on how to change appearance, how to move around and communicate. The students were very positive regarding their involvement in the project even though they did not have previous experience in SL. The main characteristic of this phase was that all students had “a willingness to participate”. Spending time on the virtual island, students visited all the buildings of the estate and started building their own objects.

In order to facilitate the student’s stay in SL, the teacher defined some rules (in addition to the Conduct by users of Second Life by Linden Labs). Due to the total number of pupil’s aged 16-18, the confined setting of the island was the ideal place for these activities. Students started to be creative, learning digital competences and shaping 3d objects by using and modifying textures and scripts available in the Resource Centre.

Phase Two: Laboratory Phase
The length of phase two was 16 extra-curricular hours. Phase two was carried out at school on Fridays from 16:00 to 17:00 (after the normal lessons) and Saturdays (students do not have lessons on Saturday) at school and/or at home.

The main steps of phase two were:

- Lessons (in Italian) on Regulatory text and instructional/procedural text.
- Group activities for the students, on texts were to:
  - read, summarize, analyse (regulatory texts);
  - read, analyse, use as resources to produce things (instruction/procedural texts)
  - create and present, in a small Bazaar, the 3d objects (created by students)

During this phase a number of frontal lessons and dialogues took place in-world in the open-air classroom of the AVATAR project’s estate. Next was the operative part of the project (focused on problem-solving) with the aim of acquiring basic skills to interact with objects in SL and to realize “interesting” 3d object, realistic in terms of dimensions, with an eye to aesthetic and using scripts. Some students were creative and others had been determinate and persistent facing some personal challenges (e.g. how can I put an umbrella in the right direction in the hand of an avatar?)

Challenges and Reflections from This Project
Many of the colleagues at school were interested in the progress of the project work: the ICT responsible, the board of teachers and even the Didactic Manager entered SL to see the Bazaar. The students became the “Avatar group” of the school and some pictures of their in-world activities were placed on the bulletin-board in the hall of the school. A wider report was also published in the school institutional website. The project work is still open. Students do not want to leave their avatars and there are plans for a ”second half” i.e. continuum of this project, that will be carried out next school year. The teacher is considering using this experience during the next year for the thesis that students will design for their final exams. The work in SL with the students has never been a “cold” and impersonal didactic unit with students drawn along the module. The project work was very constructive and collaborative. The teachers believe that the project contributed to built skills, in particular in terms of problem solving and pointed towards personal attitudes and giving value to them.
"I believe that a similar experience may be transferred to many different contexts, using guided tours and more activities instead of scripts, if students less skilled with ICTs are involved.

A real problem may occur in many schools: connection to the internet and technical capacity of computer at school. The collaboration of the technical staff of the school and their involvement since the earliest stage of the activities is highly recommended for a successful result of the project works.

I just discovered the potential of teaching in virtual worlds. I believe that there are many opportunities for teaching virtual in many disciplines, like mathematic, chemistry, physics, etc. and there are many ways for motivating and good working educational pathways.” Claudia Malta, Teacher for Italy.

TRANSFERABILITY OF THE ACQUIRED COMPETENCES

Competences acquired within the AVATAR experimentation phase described in previous chapter have been transferred in a video used by a group of students to apply for the competition Enterprise – European Business Game, developed together with a teacher of Business Economy in the same school. The Enterprise project has foreseen a guided set-up of an enterprise, starting from an idea for a product or service to be put on the market. The AVATAR group identified in case study 2, realized a video in SL for the commercialisation of a carpet that, once stamped, activates the lights of cabinets or showcases so that the power consumption is limited to the time that people look at the cabinets.

The AVATAR Group has been placed sixth and the video has been fundamental for this success. The video can be seen at: http://www.youtube.com/watch?v=AbmEFaR_VKU Another group of students from the same class, won the national award and they are now working for the European competition in the end of June 2011. These have been the most exciting moments of the project: in a few weeks students acquired competences that that were able to use in a different context and with a great creativity.

UNEXPECTED DEVELOPMENTS AND OTHER CHALLENGES

One of the teachers involved in the AVATAR course, from a small traditional rural community, experienced a massive attack by parents because of using Second Life in her teaching. (Parents were not opposed to SL but were questioning application of teaching with technology as opposed to traditional teaching methods, and were concerned that new methods might be less effective.) A meeting with teacher, parents and head of school was organized to discuss these issues. The teacher turned to the AVATAR project community for support and advice how to handle this issue.

The subsequent meeting went well with the parents giving their full support for experimental work. The teacher and school used this momentum to organize an info day in their city, involving all teachers of the school, other schools, parents and of course students, presenting and informing about her work and innovative teaching practices.

They also invited regional office for education and distributed some press releases. The local seminar was very successful with more than 100 teachers and pupils attending.
Other teachers enrolled in the AVATAR course found a very creative way of interdisciplinary contextualized learning and furthermore, collaboration and working on problem solving with students of different grades and age. They challenged younger children to create two-dimensional drawings of their surrounding natural environment. Then, the teachers built a model world in SL with those drawings and presented them to the students of 17-18 with the task to develop a sustainable and ecologically acceptable solution for this environment, including observation research, modeling, analysis and synthesis in this learning experience. This approach demonstrated the concept of engaging students of different ages working on the same problem in a 3D virtual environment. However, at the same time it calls out to use virtual worlds without age limits (e.g. open sims or active worlds) in educational environments when working with minors.

Finally, some teachers experienced difficulty when working alone in SL with larger groups of students. Although the students very much enjoyed the virtual world experience, some teachers found the work load unmanageable without technical assistance and at times stressful.

**RECOMMENDATIONS AND CONCLUSIONS**

In this paper we wanted to give you an insight of the discovery journey of the AVATAR course - how we defined the curriculum and course work for teachers, what was their feedback, their use cases, and the results from the experimentation phase where teachers created and carried out lessons with their students.

Experience and feedback from the piloting of the first 8 modules course are listed in form of “Recommendations for Successful Intercultural and Interdisciplinary Delivery of an E-Learning Course”.

- Choose carefully the platform and technical environment, so it supports all planed activities and is easy to use and to handle.
- Allow for sufficient time for activities and consider appropriate scaffolding of participants
- Organize repeating synchronous activities/events to bust and maintain motivation and participation
- Provide as much support and material as possible in various languages
- Provide national discussion groups as to reduce the language barer
- Create activities to support mixed interdisciplinary and international teams

Factors to success are listed as follows:

- Introduce the students to netiquette, so that they can interact with other avatars in the virtual world without causing offence.
- Support the students in-world by offering note cards with SLURLs, instructions etc.
- Provide a framework of modules and deadlines that explain the task.
- Several teachers took part in this project. This meant a lot in terms of supporting each other in the process of getting to know Second Life and in terms of supporting the students’ in-world. The group of teachers counted both English and Computer Science teachers.
- Virtual worlds add an international dimension to language teaching.
- The AVATAR course proved to be virtual competence development for the participating teachers.
Inform colleagues (teachers) and your didactic manager of the activities that you will carry out in-world, they will contribute to motivate students.

Involve the technical staff in your school at an early stage of your project, they will help you with all the technical problems (open Firewalls, install Viewer, etc).

Valorize the work of your students.

Finally, we leave you with a quote from one of the participating teachers.....

“What a night - and all the hard work behind! And one can prepare and prepare -and then things don’t work out! Well, it is like in RL- you cannot control it! So what is the dif. in SL?”

Comment from Jens Nerido, teacher from Denmark, posted on the AVATAR forum, May 2011


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In September 2011, Cristina started working at the International Projects, R&D Office of FOR.COM in Rome. Cristina holds a position as Project Manager and she currently manages the AVATAR project, writes EC supported projects in the field of technology enhanced learning and explores the learning potential of virtual worlds. Cristina is CriS Simmering in-world.

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AVATAR estate in SL


