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*The Call Triangle: student, teacher and institution*

## Combining face-to-face learning with online learning in Virtual Worlds

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### Abstract

This paper focuses on the development of videogame-like applications in a 3D virtual environment as a complement to the face-to-face teaching and learning. With the changing role of teaching and learning and the increasing use of *blended learning*, instructors are increasingly expected to explore new ways to attend to the needs of their students. In recent years many educational institutions have started integrating into their teaching protocol the use of e-Learning platforms such as Moodle, WebCT, Blackboard or Virtual Worlds (VWs) such as Second Life (SL). The aim is not only to provide students with motivating and meaningful content and media, but also to provide them with attractive learning tools, able to enhance and guarantee a successful autonomous learning process. Nevertheless, based on our own teaching experience over the past years, we would argue that neither traditional e-Learning platforms such as Moodle, WebCT or Blackboard, nor VWs, completely meet the expectations and needs of (our) students with regard to autonomous learning. This is why the purpose of our analysis is to explore further possibilities by designing highly interactive and motivating online learning materials, including the use of videogame-like applications and a specific 3D virtual platform (OpenSim). We thus intend to provide students from the very first stage of their foreign language acquisition process with highly interactive learning environments, not only in the face-to-face learning, but also in autonomous online learning. The latter is considered to be complementary to, rather than different from the dynamics involved in face-to-face learning. Furthermore the paper includes an empirical evaluation of five language learning sessions during which several sets of students played the videogame-like application we had designed for the purposes of our research.

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Keywords: Virtual Worlds; motivation in education; foreign language learning; Opensim; videogame-like applications; blended learning.

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### 1. Introduction

In recent years videogames and Virtual worlds (VWs) have attracted the attention of many people from very different fields and have become quite popular (De Freitas, 2007). Whilst videogames are still mostly related to the entertainment sector, VWs are being employed in very different areas such as education, research or industry. Private individuals may use VWs, (e.g. Second Life (SL) or Active Worlds) as social networks, to get in touch with people worldwide, whereas many companies and universities consider VWs to be powerful tools to be employed for advertising, training or even holding conferences. This research is mainly interested in the use of VWs as educational platforms and intends to explore their potential when combined with videogame features. The reason is, that while educational platforms such as VWs provide very interesting tools from the teacher's, but not necessarily from the

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students' point of view, videogames usually offer great potential to increase student motivation and learning (Chang & Chou, 2008), (Gee, 2007), (Malone, 1981a), (Malone, 1981b), (Lunce, 2006), (Prensky, 2001). This enhanced motivation can be explained by the fact that videogames are fun and highly entertaining because they are task-based. Furthermore they stimulate cooperation and competition by focusing on the achievement of goals; they provide players with real-time feedback on their failure or success and they encourage players to explore, experiment and take risks in problem solving (Aldrich, 2009), (Jenkins, Klopfer, Squire & Tan, 2003), (Malone, 1981a), (Prensky, 2001). The above mentioned features seem to be very interesting in terms of foreign language teaching and learning as they support the key principles of teaching established in recent years by many researchers (Dörnyei & Ushioda, 2011), (Ellis, 2003), (Krashen, 2003), (Lightbown & Spada, 2006), (Purushotma, Thorne & Wheatley, 2008). Such principles include, among others the need to motivate learners through meaningful and learner-focused issues; to provide learners with comprehensible input through context-based learning; to provide learners with opportunities for real and meaningful interaction through task-based and goal-oriented activities as well as cooperative learning. Moreover these principles underline the role of failure in successful language acquisition and last but not least, the importance of encouraging learners to experiment and take risks while communicating in the target language. There are though still other aspects, which sometimes make videogames less appropriate or, even, inadequate. Drawbacks may occur because videogames are usually not embedded in a Learning Management System (LMS) or Online platform which both store data on players' actions and behaviour during the game. Consequently, it is extremely difficult for teachers to trace the learners' development and task performance and it is almost impossible to give students the support they might need in order to succeed in their further learning (Torrente, Moreno-Ger, Martínez-Ortiz & Fernandez-Manjon, 2009).

## 2. Method

### 2.1. *OpenSim as a Virtual E-Learning platform*

The OpenSim platform is open source software that can be used, with the appropriate software modules, as an E-Learning platform. Therefore we designed on top of the OpenSim platform a virtual platform, which we called VirtUAM (Virtual Worlds at the Universidad Autónoma de Madrid) and which allowed us to design the mentioned videogame-like application. VirtUAM is comprised of four different modules: a grid of computers hosting the 3D environments, a Web portal to provide users with access to information and data, several background databases and finally a statistical module (Rico, Martínez, Alamán, Camacho & Pulido, 2011). In the VirtUAM-platform users can build their own virtual space with an almost unlimited number of objects to interact with. Additionally the platform can be accessed only by registered users. In this way we can prevent external users accessing the VW-learning environment and thus interfering in students' task performance. Furthermore, VirtUAM provides teachers and administrators with the possibility to modify and adapt the program, in line with the teaching purposes and students' individual needs. Such modifications might aim at storing the players' behaviour within a database system or, even, at including a mechanism which could detect individual learner problems and focus specifically on these problems (Berns, González-Pardo & Camacho, 2011).

#### 2.1.1. *VW game design and autonomous online learning*

Taking into consideration the former aspects, the following paper analyses whether VWs combined with specific videogame features, represent interesting tools to be integrated in online learning. The latter is seen here as part of a *blended learning* course, divided into 40% face-to-face-teaching and 60% online learning. In accordance with the Bologna course reform of 1999 and the Common European Framework Reference for foreign language teaching (CEFR), teachers are increasingly expected to provide students with new tools in order to enhance autonomous learning. Some of the commonly used tools are E-Learning platforms such as Moodle, WebCT, Blackboard and VWs (SL, Active World, Open Cobalt or Opensim) which all offer a broad range of possibilities to enhance learning. Nevertheless, drawing on our own teaching experience, we would claim that neither traditional E-Learning platforms such as Moodle, WebCT or Blackboard, nor VWs, completely meet student expectations and needs with regard to autonomous learning. The most frequent demands in online learning are related to those tasks which provide students with opportunities for authentic interaction with others (learner-learner and learner-teacher) as well as real-time feedback on task performance (Sun, Tsai, Finger, Cheng & Dowming, 2008).

While interaction with others and immediate feedback is generally given in face-to-face teaching, the same cannot always be said of online teaching as the teacher is not usually available on a 24 hour basis.

### 2.1.2. Game-design

Taking into consideration students' motivation, when learning contents are contextualized and learning is task-based and coupled with constant individual feedback, we designed a 3-D virtual videogame-like application, called *The supermarket-game*. The game's main goal was to introduce basic vocabulary related to German food and beverages. In part both have been practised previously in face-to-face teaching and were now being fostered and widened through *The supermarket-game*. The following table provides a brief overview of the main game structure and its different levels.

Sessions	Rooms	Skills	Goal	Dynamic	Time
1,2	(Level 0) Meeting room	General communication skills	attend to students' questions	individual tutoring	depends on individual needs
	(Level 1) Training room	Listening comprehension	activate and widen previous knowledge	individual training	15-20 minutes
3,4,5	(Level 2) Quiz-room	Listening comprehension	check the acquired knowledge	team work/ competition	10 minutes
	(Level 3) Amusement arcade	Listening comprehension, reading	consolidate oral comprehension and widen reading skills	individual/ competition	15-25 minutes
	(Level 4) Supermarket	Reading	check and consolidate reading skills	individual/ competition	20-40 minutes

Table 1. Description of the supermarket-game structure and levels

As table 1 shows, the game is based on five rooms which, apart from one room, all aim to train the learners' listening and reading skills whilst writing skills are practised mainly through the use of text chat. During the game students have to move through different rooms (also called levels) with their avatar (students' 3-D virtual representation). In each they face a new language task. The game itself is built on the bottom-up principle, focusing firstly on providing students with the necessary language input (level 1), secondly on the opportunity to train newly introduced vocabulary (level 2 and 3) and thirdly, on the performance of the final task (level 4). This final task requires students to go shopping in order to acquire several items which are on the shopping lists displayed on the students' monitor. With the additional integration of a score-system we aimed not only to give students real-time feedback on their performance while playing, but also to increase their motivation. As highlighted by several game researchers (Garris & Ahlers, 2002), (Lepper & Cordova, 1992) motivation is enhanced through competition as it makes learners challenge themselves in order to outperform other players. Competition is therefore seen as a highly attractive game feature to be explored.

## 3. Discussion

### 3.1. Empirical evaluation

During the current case study one lecturer and one language instructor were on hand to answer queries from the players. Additionally several external observers analysed the data registered by the VirtUAM-platform. The target group consisted of about 85 Spanish university students studying German. Most of them were studying for a degree in modern languages, others in economics or engineering. The students' target language competence corresponded to the A.1.1 level (CEFR). All students were used to being exposed solely to the target language from the very first moment of their language classes. During the different sessions students were connected from home and invited to use the text chat by communicating solely in the target language. Once the students became familiar with the game dynamic and learning tools, they were free to play the game as often as they wanted. The purpose of game repetition was to give

students the opportunity to reinforce their learning as well as to improve their scores. To measure the supermarket-game's impact on student learning and motivation we designed a general questionnaire, to be completed by the student participants at the end of the study (Berns, González-Pardo & Camacho, 2011). The results from the survey can be summarized as follows: 86% of the students state that their motivation towards online-learning increases significantly when learning contents are embedded in a game-based environment. In addition to this, 88% of the students confirm that learning becomes easier, whereas 86% emphasize that it becomes even more entertaining than in other E-Learning environments such as Moodle or WebCT. Moreover 80% of the students stress their remarkable improvement in terms of vocabulary, 74% in terms of pronunciation, 70% with regard to their listening skills and 38% concerning their writing skills. When considering the results it was especially interesting that students became aware of the improvement in their writing skills, as these had not been explicitly practised within the game, only on an individual basis through text chat.

#### 4. Conclusions

It is acknowledged that the proposed study still presents several limitations, such as the omission of the voice chat, the need to increase cooperative activities as well as to provide learners with more opportunities for meaningful interaction with others. Additionally it is necessary to design more game-levels according to the learners' different needs. And last but not least, it is necessary to compare the results of our empiric research with those of a control group. However, some final conclusions can be withdrawn from the previous experiment and the results that were obtained. Looking back on our initial research purpose we can conclude that: Virtual game-like applications make learning easy and fast, as they provide real-time feedback and help players succeed in the different game activities and in turn, the language skills which are targeted. Furthermore virtual game-like applications offer an immersive environment which usually helps learners to acquire new vocabulary easy and fast. In addition to this, virtual game-like applications make learning entertaining and fun. Game features such as competition and collaboration with others motivate students to be more active and encourage them to challenge themselves in order to outperform other players. Moreover virtual game-like applications offer, as does face-to-face teaching, a lot of opportunities for interaction. However, unlike face-to-face teaching, interaction in game-like applications is perceived to be free from the fear of failure, as students don't feel constantly evaluated by the teacher or other learners. Although we consider virtual game-like applications a highly interesting domain, for their motivating and effective learning environment, we believe they cannot totally replace the use of E-Learning platforms such as Moodle, WebCT, etc. Rather than this, both approaches should be used as complementary tools in addition to face-to-face-teaching. This means, both should aim at providing learners with the most effective learning tools in order to enhance students' autonomous learning process. The results presented here are part of a larger project which sets out to explore the positive impact of VW game-like applications on education in general. The study analyses OpenSim as a possible complementary environment for language teaching and learning and establishes a experiment that may shed some light on OpenSim's appropriateness for that purpose.

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