INTERDISCIPLINARITY IN VIRTUAL WORLDS: TEACHING APPROACHES FOR ACQUIRING A LANGUAGE-CULTURE

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Abstract

Virtual Worlds are among the fastest growing areas of web 2.0, as they dispose characteristics that promote the development of all kinds of applications not only for communication and entertainment, but for education, as well. This work highlights the importance of Virtual Worlds, their potential and their contribution to foreign language education and explores the perspectives for further exploitation. Virtual Worlds can be an important tool for the cooperative learning of a foreign language and culture, and can facilitate the acquisition of the target language, while also promoting interdisciplinarity through their multi-potential dimension. The present paper presents implementations of the use of Virtual Worlds for foreign language education through interdisciplinary approaches with particular emphasis on foreign language learning and culture.

Keywords: Interdisciplinarity; virtual worlds; foreign language learning; learning environments.

1 INTRODUCTION

In the last four years, the appearance of a new generation of services on the World Wide Web has created a new reality in which the Internet and its services have become an indispensable part of users’ daily lives. In this new web generation (2.0) users are no longer simple consumers of the information provided by the website administrators, but are now in a position to participate, communicate and cooperate with other users, as well as to create and publish any type of multimedia information and create new content, or even their own personal websites. These possibilities are available thanks to a new generation of services which permit not only the creation of online communities (Social Networking Services), search, publication and sharing of any type of multimedia files (Data Sharing Mechanisms), data tagging, Social bookmarking, automatic user notification (Syndication and Notification Technologies – RSS), but also the collaborative and simultaneous work and file sharing (Collaborative Editing Tools). These services can be classified into the following categories:

- Social networking services: Online services or websites that focus on facilitating the building of “personal” networks of “friends” among people who share the same interests, backgrounds, or professional activities
- Data sharing services: Services that facilitate the search, publication, storage, sharing and distribution of content (text, images, video, music, presentations, web/podcasts etc) among users
- Social bookmarking and tagging: Services that provide users a mechanism and a place to mark, store, categorize, annotate and share favourite Web pages and create user-defined taxonomies of bookmarks.
- Syndication and notification technologies: Mechanisms that permit the automatic notification and feed of users with content selected by themselves.
- Collaborative editing tools: Services that provide the tools and space for communication and collaborative work among distant users on the same file in real time.
- Virtual Worlds: Computer-based online community 3-Dimensional environments, usually simulated worlds in which users can move and interact with each other.

All of these services, described by the umbrella term ‘Social Software’, mark the modern form of the web [1], and are used on a daily basis by millions of internet users of all ages, but especially by the generation of ‘digital natives,’ that is, by young people of between 13 and 17 years of age, who consider internet as their natural environment for entertainment, communication and education [2].

As expected, this new philosophy of the web, has caused significant changes in the field of eLearning applications, which are trying to adopt a new perspective on things, escaping from the traditional strict
and teacher-managed approach and becoming more open, interesting, creative and, consequently, more effective maybe and useful to the end user. In this framework there has also been an attempt to create a new generation of language learning applications, exploiting the 'social' tools of web 2.0, in order to give the end user a real experience of contact with the target language which, until now, was only partially feasible.

In the case of foreign language learning, the design of a learning environment that brings learners close to the natural environment and the native speakers of the target language has always been a key challenge for the foreign language teacher.

As already mentioned, a key characteristic of the web 2.0 is the possibility of creation and participation in online communities. Participating in such a community favors the unplanned – as well as the teacher-scheduled– personal virtual contact with a native speaker, as it could happen if the student was in the country in which the target language is spoken. To this direction, the use of Virtual Worlds seems to be a very promising perspective, as it promotes the creation of virtual environments in which users can freely communicate with native speakers of a foreign language, while acting operating perhaps in a friendly and playful environment.

2 THEORETICAL BACKGROUND

In the following sections there is a short presentation of the two basic concepts that this paper is based on: virtual worlds, and interdisciplinarity.

2.1 Virtual Worlds

Virtual Worlds are 3-Dimensional MUVEs (Multi-User Virtual Environments) in which users can move and interact with each other. Virtual Worlds can be simple or very complex environments that simulate specific sites and locations, from rooms or buildings to entire cities or islands.

The origins of these modern, complex virtual or imaginary worlds and their technologies can be found in the early tabletop role-playing multiplayer games which still continue to have thousands of fans worldwide. In these games, users are represented by a digital character – usually a character with heroic characteristics –, and try to explore a Virtual World, solving complex puzzles, collecting useful and valuable items and destroying dangerous opponents. The rapid growth of the Web, along with the technological evolution of PCs, gave birth to a new generation of games characterized as Massive Multiplayer Online Games (MMOGs) or as Massive Multiplayer Online Role Playing Games (MMORPGs). Since 2003, the strictly structured 3D worlds of MMORPG's gave their place to new unstructured and limitless worlds. An important characteristic of these environments, which are now known as Multi-User Virtual Environments (MUVEs) is the sense of freedom and creativity that derives from the absence of a single plot [3].

It must be noticed that a number of very popular new social networking platforms, such as Facebook, Hi5 or Twitter, have been developed during the same time. Through the use of these platforms, users are already familiar with the ideas of interaction, interconnection, communication and collaboration with other users, and can carry this spirit in Virtual Worlds.

From a technological point of view, Virtual Worlds are completely customizable 3-dimensional spaces in which users can create the appropriate scenery and load it with the necessary for the specific purpose content, in order to develop an environment suitable for the acquisition of the language-culture or any other subject.

Today's concept of "Virtual World" refers to a type of online community that is implemented using a computer simulated 3D environment in which users can interact with each other with audio and text and use or create objects in it [4]. Having already escaped from the simple stage of a playground, Virtual Worlds are evolving into complex integrated network communities [5] incorporating powerful tools for written and oral communication [6; 7]. Several research projects such as Niflar, Avalon or Virtlantis, have been developed to this direction [8]. The virtual environments introduced in these projects can support a variety of modern learning theories, especially those which emphasize the social role of both teacher and learner and the concept of cooperation among students.

Especially in the case of synchronous collaborative learning, the use of virtual environments with the new wireless technology may hold an important role [9]. In such multiuser environments, educational activities can be enhanced and encouraged [10], communities of practice or communities for learning can be formed and social interaction [11] as well as live communication and collaboration [12] can
increase. The user’s interaction with these virtual environments consistently promotes experiential learning and enhances his experience with new data [13]. Nowadays, a growing number of virtual environments and worlds are available to users [14]. These worlds are created, maintained and managed by large commercial companies, either as commercial or free / open software. Several of these Virtual Worlds require user registration while others permit free entry for all users. The majority of these worlds are based on one of the two major development platforms –Second Life and OpenSim–, while a small percentage is based on Java programming language. Here is a brief description of the most well-known Virtual Worlds:

- Second life: This is the most famous development platform that supports a fully functional Virtual World developed by the LindenLab company. The platform offers users the ability to browse through a multitude of regions/worlds and in addition, enables the creation of a Virtual World for personal, commercial or educational use with an annual subscription fee. Used by independent users, companies, public and private organizations, educational institutions, museums, etc., LindenLab raised the annual subscriptions fees in 2008-2009 and, as a result, a large number of the international educational community turned to the open source development platform of OpenSimulator, the OSgrid [15].

- OSgrid: It is actively supported by the development platform OpenSim and is considered the second largest provider of Virtual Worlds –after Second Life– as it provides free and open access to all users. The OSGrid platform is used by several large educational institutions around the world after the reduction of educational support by Second Life. It must be noticed that a large number of independent Virtual Worlds, such as 3rd Rock Grid Avination, InWorldz, Kitely, The New World Grid, Nexxtlife, FrancoGrid, Your Alternative Life, SpotOn 3D, is based on OSGrids' OpenSimulator server.

- Habbo Hotel: It is a Virtual World developed by the Finnish company Sulake Corporations and aimed mainly at young people. The platform does not follow the usual concept of a Virtual World but the concept of a huge virtual hotel where users gather in public places for communication and entertainment and maintain their personal rooms which they decorate and upgrade according to their wishes and interests.

- Active Worlds: This is an old and famous provider of Virtual Worlds which has been running since 1994-1995. It offers users the ability to browse through a multitude of areas and, additionally, enables the creation of a Virtual World for personal use, with a limited number of visitors/users, with an annual subscription. The company has also created a whole universe especially for educational use (Active Worlds Educational Universe).

- IMVU: This Virtual World started its operation in 2004 as a three-dimensional environment of social networking and entertainment. Today IMVU maintains a large repository of web objects, where millions of users sell or buy these objects online (e.g. houses, trees, clothing, etc.) [16].

- ReactionGrid: It is a Virtual World which is quite different from the rest. Based on Jibe and a single web browser, RG is an integrated design and construction platform for Virtual Worlds entirely implemented in Java language. This method of development and implementation allows the use of this Virtual World in a variety of devices such as tablets and smartphones as well as in a variety of operating systems, such as Microsoft Windows, Android and Apple iOS.

In all those Virtual Worlds, users participate through an ‘Avatar’, i.e. through a digital representative, which they can choose and customize according to their personal preferences (race, sex, figure, hair color, shape, age, clothes or even style, are among the available choices).

In this environment users are able to enter (or be “teleported” from another virtual space), move, hang around, interact with the environment, meet other users (avatars) that happen to be at that time in the same part of this VW (and who may be from any country of the real world), and communicate with them.

During such a meeting, the communication can be oral or written, as users can act, listen and write in real time. Users' meetings with other users, native (or non-native) speakers of a foreign language, can be either random and unplanned or carefully prepared and scheduled by the teacher, and take place at a specific time and place (any point inside the VW). These new features, which are for the first time available in language teaching, have led a large number of educational institutions to the development of a new generation of language learning applications, offering registered users language training in a virtual environment.

The obvious advantage of these applications is that users operate and communicate in a –by default–
multicultural environment, that engages and motivates them to learn. In this context, interdisciplinarity [17; 18] seems to be an interesting option, as it is a modern teaching approach that promotes the transmission of knowledge and allows the development of key / transversal skills of the user / learner, contributing this way to the acquisition of foreign-language and culture through the exploitation and the exploration of the virtual environment.

2.2 Interdisciplinarity in foreign language education.

2.2.1 Definition of the “Interdisciplinarity” concept

Interdisciplinarity, as a methodological approach within education, can be found in many publications since the ‘70s and continues to concern writers, researchers and teachers nowadays [19; 20; 21; 22; 23; 24; 17; 25; 26]. The main concerns of these researchers seem to be the clarification of the term, in order to define a common field of reference and application of interdisciplinary approaches, as well as the promotion of interdisciplinarity in the educational process. The most basic concern is the promotion of interdisciplinarity in the educational process with multiple goals: knowledge provision, skills development, learner’s autonomy, creativity encouragement, critical thinking development, withdrawal and transfer of learning strategies and problem solving.

The Lisbon strategy and all subsequent acts of the European Union [27] regarding education belong to this framework, as they all foster a holistic, systemic and interdisciplinary approach of educational systems. This approach requires the renewal, the reconstruction, or even the replacement of existing curricula and the development of new ones.

In order to conform to the actions of the EU, Greece established the “Interdisciplinary Unified Framework of Studies Programs” for compulsory education in 2003, thus promoting the interconnection and expansion of disciplines through projects. During the academic year 2011-12, a pilot implementation of the “Unified Study Program - Foreign Language” took place in a significant number of public schools in primary and secondary education. The experiment, carried out under the project ‘New School’, was intended to implement and exploit the interdisciplinary approach to knowledge and skills development.

In this paper, we adopt the definition of interdisciplinary as a sum of three components: Mutual feed-in of knowledge, development of competences, cultivation of attitudes and values.

These three components are perfectly implemented in Virtual Worlds, giving a new dimension to the interdisciplinary approach: That of direct and authentic communication.

2.2.2 Foreign Language and Interdisciplinarity

It is commonly believed that multilingualism and multiculturalism are essential skills for students / future citizens. This places the foreign language/culture at the core of interdisciplinarity, and recognizes it as a discipline that is useful and appropriate for interdisciplinary approaches (although the Greek educational system does not reserve the appropriate position for foreign languages in public education timetables).

Since the interdisciplinary approach relies on the aforementioned triptych of components, the role of the foreign language / culture becomes important, as it:

- improves language and communication competences of the student in the target language,
- facilitates the development and transfer transversal competences,
- broadens the student’s cultural awareness,
- fosters his cultural consciousness
- strengthens the collaborative spirit through interculturalism,
- assigns the student the role of mediator.

Applied in Virtual Worlds, as a technological method in the framework of an asynchronous or synchronous interdisciplinary approach, these positive parameters allow - if not require – the addition of the word “virtual” in the definition of interdisciplinarity in order to describe the concept in a virtual digital environment.
2.2.3 Virtual Interdisciplinary approach with emphasis in foreign language teaching / culture

In this paper, we attempt to exploit virtual interdisciplinarity, based in the teaching of language/culture, as one of the curriculum subjects suitable for the implementation of a virtual interdisciplinary approach. In this process, speech acts serve as 'connecting links' with the other taught subjects.

The choice of the speech act as the core of the virtual interdisciplinary approach was made after serious consideration. Speech acts provide the dynamics that allows the student to develop a set of competences and use them in the most appropriate manner for specific communicative situation/s. It is commonly accepted that a foreign language is not acquired simply through its content, i.e. only through internal data concerning the linguistic elements of speech. It is also carried out through external factors, which are related to the purpose the speech is produced for. In the context of communication, the intention of the writer and/or the speaker remains an integral part of the access to the various meanings [28; 29].

This communicative intention, which is defined by the speech act, is the key factor in the comprehension and production of speech. Moreover, the approach, production and dissemination of information and knowledge are constantly being reformed, especially with the introduction of technologies in the educational process and the widespread use of the Internet. Students/users now interact in various semiotic ways—through linguistic and/or paralinguistic communication, through video and/or audio—, operating in a complex communicative universe. Conventional and new forms of written and oral texts, which perform a social act and are characterized by linguistic and textual diversity, coexist in this universe.

Initially, speech acts are detected in the ‘Communicative Approach’ in the late ‘70s, an approach which has brought radical changes in the methodology of foreign language teaching. The abandonment of programmed progression of the syllabus, overthrew the “teaching progress”, which was based on linear continuity, a transition from simple to complex, with vocabulary and grammar as its axes. Since the publication of the “The Threshold Level” framework for Modern Language Learning in Schools in 1975, speech acts have been considered the basis of the curriculum and, consequently, of the textbooks for foreign language education. In the Common European framework of reference for languages: learning, teaching, assessment (CEFRL) are defined as speech acts the «macrofunctions are categories for the functional use of spoken discourse or written text consisting of a (sometimes extended) sequence of sentences» [30]. The micro-functions themselves refer to speech acts. Speech acts, i.e. what a student can do with the foreign language in a particular communicative situation, are at the center of teaching and form the core of the development of communicative language competences. Broadening the communicative situation and integrating it into a virtual interdisciplinary approach, the speech act becomes the channel that facilitates the development of all competences dictated by the triptych of components of interdisciplinarity mentioned earlier in this paper.

3 THE STUDY

For the development of this Virtual World we have chosen the OpenSim platform, as it is freely available, open source and in a continuous process of development with the contribution of thousands of users worldwide. This explains why it is widely used, especially for the implementation of Virtual Worlds with an educational character. The platform is supported by the OpenSimulator server, a software which is also free for users. In addition, a variety of items stored in large object repositories, such as 3D models, prefabricated microcosms and collections of objects are also freely available to users/developers.

A Virtual World is usually implemented in a basic grid, with blocks of various dimensions. Several blocks together form a single ‘building’ space, i.e. a region that can be ‘built’ by the user/administrator. Users can have access to a two-dimensional visualization of the Virtual World (top view), called world map or grid map. This form of representation helps users understand the shape and the boundaries of the Virtual World and locate their position in it. In this case the grid comprises 16 regions (a 4x4 square), two of which contain buildings or bigger structures. One of the regions hosts a commercial center (with stores, coffee shop, etc.) while another hosts a small part of a city with buildings, offices, houses, etc.
All buildings are preconstructed and can be downloaded, configured and adjusted –to some extent--, in order to fit into the available region. Resident users (not guests) can create or import ready-made simple or complex objects (such as buildings, streets, trees, etc.) or even bigger structures (such as renowned historical buildings). In this way they can form the space and create their own microcosm according to their preferences. The use of interactive objects is also possible: Users can assign objects specific properties/functions, such as playing a sound or a movie, or perform an action when activated. For example, a CD player can play a sound file or, a monitor can automatically display a PowerPoint presentation when the user touches it. The number of possible interactions that can be designed is almost inexhaustible.

Users can have access to a Virtual World using a special browser called ‘viewer’. This software also permits users to move and circulate, as well as to communicate and interact with the microcosm and the other users. There are four popular software viewers: Second Life, Hippo, Singularity and Imprudence. Users can choose the viewer that is most suitable for them and use it to control the “avatar” by which they are represented in the Virtual World. Through the avatar, they can explore the world, move from one region to another (or even from this world to another), interact, speak or chat with other avatars/users.

4 DISCUSSION

In a Virtual World the initial target is the familiarization of users with the viewer and its functions, as well as the training on the basic functions of the environment (i.e., the way one can move, respond, communicate etc). After this stage, the users are ready to freely explore the environment or, to take part in an educational scenario, prepared by the teacher.

In order to design, develop and schedule training scenarios for communicative language education / training of learners in Virtual Worlds, we have to take into account:

- the kind of experiences that users / learners are expected to encounter, such as partial immersion in a social interaction, participation in the creation of an object or collaboration with someone for a purpose,
- the age of learners / users,
- their language proficiency level,
- the spatial and temporal distribution of learners / users,
- the openness/privacy of the session and the safety and security of learners / users from malicious web interventions.

In the context of virtual interdisciplinary approach, two scenarios are suggested based on the parameters discussed earlier and the acquired experience from – successful - implementations in the Department of French Language and Literature of Aristotle’s University of Thessaloniki (AUTH). Each course sets its own individual goals. In this paper, we will discuss the conditions that favor and allows the participants students to develop language communicative skills, according to their level of language proficiency, using French language in a natural way.

4.1 First scenario: visit to a museum

In the first scenario a virtual tour in a museum is suggested (Fig. 1). Two student groups of age 14-15 years participated: the first group consisted of 10 Greek students and the second group of ten students from abroad. French language is defined as the communication language, however, none of the students is French native speaker. The level of language proficiency is B2 according to CEFRL. Implementation of virtual interdisciplinary approach concerns the courses / subjects of History, Art and French as a Foreign Language. The goals of French language course concerns the development of communicative skills through specific speech acts.
**Figure 1: The museum area.**

<table>
<thead>
<tr>
<th>1st Scenario</th>
<th>Visit to a museum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>30’</td>
</tr>
<tr>
<td>Virtual World</td>
<td>OpenSim</td>
</tr>
<tr>
<td>Level</td>
<td>B2</td>
</tr>
<tr>
<td>Skills</td>
<td>Oral and Writing</td>
</tr>
<tr>
<td>Target of the activity</td>
<td>To acquaint both groups with the museum and its activities and to exchange impressions, opinions and views.</td>
</tr>
<tr>
<td>Description</td>
<td>The participants / learners visit a museum in the Virtual World. Initially, each individual can explore the various available objects (statues, paintings or sculptures), ask for information, express feelings (joy, curiosity, etc). In the second phase, the students, are divided in groups and use the available written communication tools in order to describe the most stimulating exhibits and justify their selection, etc.</td>
</tr>
<tr>
<td>Speech Acts</td>
<td>Get in touch (Entrer en contact)</td>
</tr>
<tr>
<td></td>
<td>Describe an object (Décrire un objet)</td>
</tr>
<tr>
<td></td>
<td>Asking / giving information (Demander/donner des informations)</td>
</tr>
<tr>
<td></td>
<td>Express a positive or negative feeling, an opinion (Exprimer un sentiment positif ou négatif, une opinion)</td>
</tr>
<tr>
<td></td>
<td>Exchange of views, (échange de vues)</td>
</tr>
<tr>
<td></td>
<td>Argue: Justify one's point of view (Argumenter : justifier son point de vue)</td>
</tr>
<tr>
<td>Interdisciplinary approach</td>
<td>The virtual interdisciplinary approach in this scenario refers to the development of language for general purposes, communication and mediation competences, and knowledge transfer. In addition, it aims at the cultivation of attitudes and values, the development of critical thinking and the creation of authentic communicative speech.</td>
</tr>
</tbody>
</table>
4.2 Second scenario: visit to a shopping center

In the second scenario a visit to a shopping center is suggested (Fig. 2). This scenario is addressed to students of age 13-14 years, with B1 language proficiency level according to CEFRL. The courses / subjects involved in the virtual interdisciplinary approach are French as foreign language, Modern Greek as foreign language, Chemistry, and Music. The goals of French language course concerns the development of communicative skills through specific speech acts. Students, divided in groups, search for information in order to: buy specific books suggested by the philologist, learn more about new music releases and audio cds, and, discover some new organic products discussed in the course of Chemistry. Students can also find the products in the appropriate stores, discuss specific items/places and try to formulate their opinions and transfer their impressions to the others.

<table>
<thead>
<tr>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Scenario</th>
<th>Visit to a virtual Shopping Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>30’</td>
</tr>
<tr>
<td>Virtual World</td>
<td>OpenSim</td>
</tr>
<tr>
<td>Level</td>
<td>B1</td>
</tr>
<tr>
<td>Skills</td>
<td>Oral and Writing</td>
</tr>
<tr>
<td>Target of the activity</td>
<td>The familiarization of users with the environment of a virtual shopping center and the exchange of impressions, opinions and views.</td>
</tr>
<tr>
<td>Description</td>
<td>The students visit a virtual shopping center. They are divided into groups with a different task each: To locate a bookstore, a music store and a shop with organic products.</td>
</tr>
</tbody>
</table>
| Speech Acts             | - Get in touch (Entrer en contact)  
- Be in space (Situer dans l’espace):  
- Asking and giving information (Demander et donner des informations),  
- Express feelings (Exprimer des sentiments) |
| Interdisciplinary approach | The virtual interdisciplinary approach in this scenario aims at the development of general language, communication and mediation competences, and the transfer of knowledge. In addition, it aims at the cultivation of attitudes and values, at the development of critical thinking and the use of authentic communicative speech. |
5 CONCLUSIONS

As stated earlier in the presentation of the theoretical principles, the multipotency of the interdisciplinary approach in a virtual environment is undeniable, as it ensures the simultaneous coexistence of several disciplines over a small period of time.

The implementation of interdisciplinary educational scenarios, as presented in this paper, is expected to have positive results, as in the case of the Department of French Language and Literature of AUTH. In such approach each source / subject has its own individual goals when at the same time facilitates and promotes foreign language learning.

Benefits of inter-disciplinary approach, should also include the improvement of students' ability to recall and transfer skills [31] that have been developed in other courses, in order to successfully accomplish assigned tasks. These competences (transversal competences), characterized by affective, social, cognitive and meta-cognitive competences, aim at the development and consolidation of knowledge, know-how, knowledge learning and the recall of strategies strengthening [15]. Development, utilization and integration of these competences in the educational process will facilitate Content and Language Integrated Learning (CLIL) [32; 33] applications. In addition, experiential learning, connecting the aforementioned competences, focuses on the dynamics of teamwork teaching, encouraging emotional expression and epistemological and learning development of the students. Therefore virtual interdisciplinary approach needs further research and implementation practices.

REFERENCES


