

A Model for Collaboration in Virtual Worlds Bringing Together Cultures in Conflict

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Abstract. This paper puts forward a pedagogical model and design for using virtual worlds to not just connect people from different cultures, but to be a center for collaboration. It demonstrates how virtual worlds have been incorporated in a nationwide project to connect between Moslem, Druze, Christian and Jewish children in Israel and follows the development of the pedagogical model through the stages of collaborative learning. The stages move from learning about one another and carrying out joint assignments through a social network to meeting in virtual worlds and designing the interior of a joint home and “living” there throughout the year.

Keywords: Virtual worlds · Collaboration · TEC Model · Opensim

1 Introduction

Collaboration is a basic skill in our society but the concept is easier said than done. Collaborative learning has been around for the last 60 years and since the 1990s collaborative online learning has been used to bring together people from different parts of the globe. Virtual online worlds are not a new phenomenon, Second Life, the most popular 3D virtual world, started in 2003. This world is open to and free for adults and has been used successfully for various online learning and collaborative ventures. However, by 2007 the idea of an open simulator began and in the last few years numerous private worlds have been made using the Opensim for educational purposes. These environments can be protected for the learners and allow the young learner to participate as well as forming a closed and safe environment for students.

These worlds allow participants from different locations to meet through their avatars and interact through voice, gestures and text. Can this environment be used not just to bring together students from diverse cultural background and even cultures in conflict but to be a place where the participants learn to collaborate, respect and understand one another?

2 Related Work

2.1 Types of Virtual Worlds

Virtual worlds come under the area of virtual reality. They are 3 dimensional worlds where the participant as an avatar feels they are part of the world. The participants can interact via voice and text as well as being able to add specific gestures. These worlds are realized in various forms or combinations. We need to distinguish between Gaming Virtual Worlds (GVWs) which are 3D environments which normally involve clearly defined quests, for example Minecraft, and Social Virtual worlds (SVWs) where the stress is on engaging in social interaction (Vrellis et al. 2016). A recent example of a very accessible SVW Virtual world is Edorable. Here there are premade college campuses where Avatars can meet socially and also watch live presentations together. Each teacher receives their own campus which allows for blended and online learning between the students.

Open source virtual worlds (OSVWs) have an open-ended technological infrastructure and can be in different server modes (networked or standalone). In these worlds users interact and can, if permitted by the owner, create their own virtual environment (grids). In this case users can be involved alone or with others in co-creating or coordinating their activities, using programming scripting languages “open” to all users without financial cost for constructing a virtual environment. Two of the most well-known open source virtual worlds are Open Simulator (or Open Sim) and Open Wonderland.

Another category of virtual worlds are Collaborative virtual learning worlds (CVLWs): CVLWs are used in the educational world for blended (mixed online and face to face courses) or online instructional formats. Students, who are separated spatially or temporally, can work as teams and this can be done through co-existing in a common virtual environment and by interacting through synchronous communication tools. Examples of CVLWs are Active Worlds, Quest Atlantis, Multiverse and Aeroquest (Pellas et al. 2016).

Pellas et al. (2016) in their extensive review and assessment of the use of virtual worlds in the teaching of STEM present the results of various studies that show the positive impact of working in Virtual Worlds on students’ learning outcomes including knowledge transfer, higher-order thinking, problem solving and social skills. They also show a large improvement in student engagement referred to as the affective learning experience.

Liou (2012) explored EFL college students’ attitudes toward a computer-assisted language learning course conducted in SL. (Second Life), the research pointed to advantages of Virtual Worlds for language competence and collaboration. Overall, the students perceived SL as an optimal virtual environment for language learning due to its features, such as immersive collaboration and real-world task simulations in 3D mode. The 3D environment also facilitated real-world task delivery, which is difficult to manage in a conventional class and promoted authentic interaction. Liou also argued

that an ecological language learning system should be implemented by using pedagogically sound, sense-making tasks instead of relying on the novelty value of technology alone.

Peterson in his numerous studies on using text chats for interactive sessions (Peterson 2006, 2012) using Active Worlds and SL shows that the EFL students saw their SL learning experience as beneficial, more enjoyable, and less stressful than a traditional class. Peterson's findings show that the EFL students were engaged in collaborative interaction and also used different social management strategies to their interactions. He also showed that the avatar presence improved student engagement and sense of autonomy.

The reticence to use virtual worlds to improve language skills and collaboration in the classroom is not just because of issues of technophobia for some of the teachers, but based on real technical issues. These include technical requirements to use virtual worlds which do not exist in many schools (bandwidth, compatible graphic cards etc.) The system often crashes and there is still an issue of platform stability. Users also need to invest time to master the skills required to work in a virtual world (Dawley and Dede 2014; Liou 2012). Taking into account these drawbacks, Cooke-Plagwitz (2008) argue that there is great potential for integrating SL to promote authentic target language learning simulating real-world language immersion when the use of SL is planned and constructed within the language curricula (Chen 2016).

3 Intercultural Literacy

When students from different cultures meet, the issue of intercultural literacy needs to be addressed. Hasler (2011) uses Heyward's Model of Intercultural Literacy (2002) together with the Cultural Historical Activity Theory and claims that Intercultural learning environments need to be designed so that students from different cultures will be able to participate equally. The students need to be aware of their own culture and of other foreign cultures so as to increase their understanding, develop their competencies, to increase their language proficiencies, and ultimately to form transcultural or global identities. Hasler's research using SL shows that although the cross-cultural exchanges in SL do not guarantee intercultural literacy, they provide participants with opportunities to move in that direction.

4 Collaboration in Virtual Worlds

Firstly it should be noticed that there is a great difference between presence and collaboration in a virtual world. Working together is not necessarily collaboration. Many practitioners and researchers have concluded that totally free, unguided or unstructured collaboration does not necessarily result in productive activity or learning (Kreijns et al. 2003). Some see the establishment of rules to be an important feature to support cooperation (Owens et al. 2009). Slavin took the skills for collaboration

together with Allport's contact theory to show how cooperation can be used to bring diverse cultural groups together in a face to face situation. (Slavin 1985; Allport 1954)

According to the contact hypothesis, competition is destructive in trying to reduce bias between groups in conflict (Allport 1954), but most of the existing virtual worlds tend to be individualistic or competitive in nature.

The wealth of research and practice in Collaborative Learning (CL) over the past 60 years allows us to confidently claim that all students benefit from learning this way. Yet the effect of CL is not automatic. As we all know, in any context just placing students in groups does not guarantee that they will work smoothly together; all the more so when there is a potential gap between teachers; and students' expectations and behaviors in the classroom (Sharan 2010).

According to Boris and Tsiatsos (2006) a collaborative learning environment is an environment in which:

- The users participating have different roles and privileges.
- The educational interactions in the environment transform the simple virtual space into a communication space.
- The information in the environment is represented in multiple ways that can vary from simple text to three dimensional (3D) graphics.
- Students are not passive users but can interact with each other and with the virtual environment.
- The system that supports the environment integrates multiple technologies.
- The possibility of implementing multiple learning scenarios is supported.
- Recognizable elements from the real world are visualized.

Sociable computer-supported collaborative learning (CSCL) environments emphasize the social (emotional) aspects of group learning. Kreijns et al. (2007) define sociability as the extent to which a CSCL environment is seen to facilitate a social space with attributes as trust and belonging, and where there is a strong sense of community, and good working relationships.

If we combine this with the "Big Five" components for teamwork (Salas et al. 2005) which are:

1. Team Leadership: Ability to direct and coordinate the activities of other team members, assess team performance, assign tasks, develop team knowledge, skills, and abilities, motivate team members, plan and organize, and establish a positive atmosphere.
2. Mutual performance monitoring: The ability to develop common understandings of the team environment and apply appropriate task strategies to accurately monitor teammate performance.
3. Backup behavior: Ability to anticipate other team members' needs through acc-rate knowledge about their responsibilities. This includes the ability to shift workload among members to achieve balance during high periods of workload or pressure.

4. Adaptability: Ability to adjust strategies based on information gathered from the environment through the use of backup behavior and reallocation of intra-team resources. Altering a course of action or team repertoire in response to changing conditions (internal or external).
5. Team orientation: Propensity to take other's behavior into account during group interaction and the belief in the importance of team goals over individual members' goals.

Together we have the requirements to be able to build collaborative activities in a virtual world and the criteria for making this effective.

4.1 The “Six Learnings” Framework

Lim (2009) suggested a six stage model for working in virtual worlds with children. He termed it six learnings where the stages are not necessarily hierarchical or mutually exclusive, but presents the range of pedagogies that can be used while using the island as a learning experience. He recommends that interventions should target one or two of these “learnings”.

- Learning by exploring within the virtual island
- Learning by collaborating with others on different tasks;
- Learning by being through understanding self and role-playing
- Learning by building through designing and building on the island
- Learning by championing; By this Lim means to “adopt, champion, and evangelize causes from Real Life” (p. 8)
- Learning by expressing this would include explaining to the “outside world” what is going on in the world using different forms of media and genres.

5 The TEC Model

The TEC (Technology, Education and cultural Diversity) model was created to form a framework for small group collaborative online learning between students from different cultures (Hoter et al. 2009, 2012). The model suggests a way for students from different cultures and religions, often in conflict, to work together online. The model has been explained in depth elsewhere, suffice it to say here that the model moves from a low level of collaboration to higher levels, from low technology use, to high technology use and from written text to hearing to verbally communicating online to real face to face meetings. The idea is to first get to know the person before meeting face to face to lessen bias and prejudice.

5.1 Project Design

One of the programs designed and implemented by the TEC Center is TEC4Schools. The pupils, grades five to nine, taking part in the TEC4schools program, study with students from 2 other schools where the pupils come from different cultures. They study in small groups of six, two from each class and culture. They have a weekly hour throughout the year in their school timetable to work together on collaborative tasks moving gradually from peer work, to eventually synergetic collaboration.

About 3000 children from 100 schools take part each year in the program. Results and feedback from this year of collaboration show the students improve their intercultural competencies. However, the most prevalent complaint about the year is that it finishes and the pupils want to continue studying together.

This year we opened a pilot program for 12 schools where students could continue collaborating together for an additional year. These students are technically competent after a year of online collaborative learning which integrated many new technologies. At this stage our aim is to move the students to a higher level of collaboration and intercultural understanding. How can we get the pupils to really collaborate together in this second year?

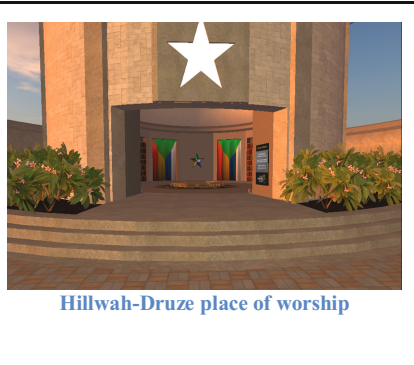
5.2 The Process

According to the TEC Model students gradually get to know one another through tasks demanding more collaboration. The environment chosen for this is a social network developed specifically for the population in three languages. This allows the pupils to work in small groups. Initial communication is intentionally text based so the students do not know how the others look (just seeing clothes, hijab, skull caps etc. cause bias before they have even met). The problems we have previously faced using the social network was the difficulty to create a sense of belonging to the small group and develop inter dependence within the small group. We also had difficulties planning meetings between the groups.

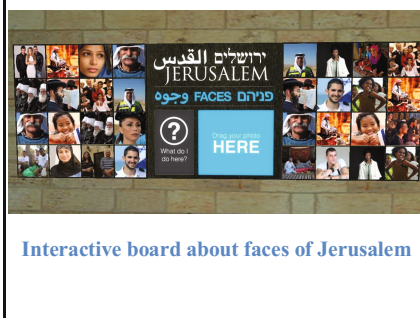
With all the advantages for using virtual worlds to enhance collaboration and intercultural competence we built a social virtual world (SVW) called TEC Island as a meeting place to understand other cultures.

The TEC island includes 4 places of worship, a Mosque, a Synagogue, a Church and a Hilwah (place of worship for the Druze religion). The Island is a place for the children and students to meet virtually and carry out joint assignments. The Island has a storytelling corner, a “dabuka” drum circle, a place to learn languages, Hebrew, Arabic and English as well as games about festivals connected to the other religions.

As creative and fun this world might be, there were a number of drawbacks. Not enough teachers used the world and aside from technical considerations we realized that many of the teachers, despite in-service training, were not confident themselves in using the island. To overcome these issues we made a training Island for everyone as a precondition to being on the TEC Island where the participants need to go through 14 stations and then they earn their wings and can proceed to the TEC Island.



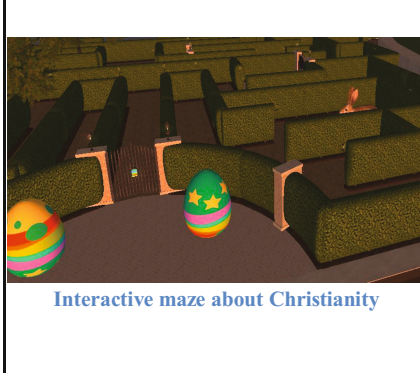
Hillwah-Druze place of worship



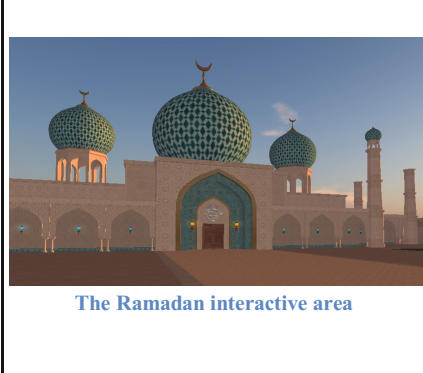
Interactive board about faces of Jerusalem



Inside of the synagogue



Interactive maze about Christianity



The Ramadan interactive area



A drum circle



Role playing in the market

We tried to make collaborative activities in the Island for example in the virtual Jerusalem area you can add a prayer for Jerusalem onto a balloon and only when three different people write a prayer do the balloons lift off. We also have role playing activities for buying fruit. However, it was almost impossible for the children from the three classes to have their class at the same time and be able to meet online together. Last year they only managed to have one class together. Most of the activities, unless set specifically by the teachers, are individualized experience and children don't want to keep going there unless there they have new activities. As Kreijns et al. (2007) said, we needed a social space where there is feeling of trust and belonging, and where there is a strong sense of community, and good working relationships. This takes time to build and can't be done through a one hour session. We need to build a place where the pupils feel they really belong and where they will want to continually return.

Principals, teachers and students wanted to continue in the TEC project for an additional year. In this year we hoped to reach synergetic group collaboration. In order to do this we realized that we needed to build an Island that would belong to the children. As explained above there are islands where the participants can jointly build the Island, but this is specialized work belonging to a different course on building virtual worlds with different pedagogical aims. Not everyone likes to build and we can't make an Island just for the techno-minded students. As in life, some people like to buy things, they prefer ready-made items and not DIY! We wanted the students to work truly collaboratively and learn from one another.

The solution we can up with was to combine building and shopping. We built a new virtual world for the continuing pupils. The world is divided into areas, each area for a different cluster of schools (three classes work together). Each area consists of residential areas with beautiful modern houses. The small group of six pupils (two from each class) get an empty house with the number of their small group on the door. They get to live in their house throughout the year and design the interior of their home. Many items they can get from the various shops on the Island and some they can learn to build. The world is designed so that each student can only build within their own house and garden.



The project has only just begun and by the time of the conference we will be able to report back how the students managed to collaborate living together in a virtual home. We hope that the world and activities will encourage the students to join from home and feel this is a home away from home. This is surely the highest level of collaboration which comes the closest to actually living together.

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