Exploration through virtual reality: Encounters with the target culture

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ABSTRACT
This paper presents the results of a study on the use of a virtual reality (VR) world in a German language classroom. When utilized in the language classroom, virtual worlds support students’ language skills and linguistic awareness “through interaction, collaboration, and critical reflection” (Schweinhorst 2002). It is argued that this new medium allows for students to both be immersed in the target culture and experience the language in ways that are not possible through the use of other media. Previous research (e.g., Purushotma 2005) into the use of virtual worlds in the language classroom has not investigated the non-linguistic benefits of the experience. The results of the study indicate that the virtual world experience enhances students’ awareness of the target culture.

INTRODUCTION
Although the teaching of culture in the language classroom has historically been relegated to a peripheral status, as can be seen in the terminology applied to it such as the “fifth dimension” (Damen 1987) of language learning, there have recently been a calls to incorporate cultural instruction more fully into the curriculum (e.g., Chavez 2005; Ware & Kramsch 2005). Policy documents such as the ACTFL Standards for Foreign Language Learning in the 21st Century (2006) point to the integral role that culture should play in the teaching of foreign languages. Standards 2.1 (“Students demonstrate an understanding of the relationship between the practices and perspectives of the culture studied”) and 2.2 (“Students demonstrate an understanding of the relationship between the products and perspectives of the culture studied”) speak to three important aspects of the target culture: the behavioral practices (i.e., “patterns of social interactions” (ACTFL 2006, p. 47)) such as forms of discourse and the use of space), philosophical perspectives (i.e., “meanings, attitudes, values, ideas” (ACTFL 2006, p. 47)) and both tangible and intangible products (i.e., “books, tools, foods, laws, music, games” (ACTFL 2006 p. 47)). Knowing a language today, therefore, means having an understanding and
appreciation for the culture(s) in which it is spoken.

It has been argued that cultural understanding is especially important for students who never travel to the target culture (e.g., Dubreil 2006). The difficulty lies, however, in presenting a representative picture of the target culture to students (e.g., Kramsch et al. 1996; Tseng 2002). Robinson-Stuart & Nocon (1996) and Tseng (2002) and call for new interpretation of culture as a process of learning “rather than an external knowledge to acquired incidental to the ‘facts’ of language” (Tseng 2002, p. 13). Coming to know a culture—its products, practices and perspectives—is now meant to be a central focus of foreign language teaching.

The introduction of virtual reality (VR) to foreign language instruction allows for students to truly experience the culture—both its practices (e.g., virtual family routines as described in Purushotma 2005) and its products (e.g., through virtual museum tours as described in LeLoup & Ponterio 2004)—while at the same time exposing them to a range of linguistic data. Authors (e.g., Goodwin-Jones 2004; Johnson et al. 2004; LeLoup & Ponterio 2004; Purushotma 2005) have described the possibilities for utilizing VR in the language classroom, but they have not systematically investigated the use thereof. This study reports on students’ interaction with the target culture present in a virtual world that is based loosely on Salzburg, Austria. Given that there is an actual cityscape where they can walk and explore, students are exposed to a German-speaking environment, and this can reinforce the connection between language and culture.
LEARNER AUTONOMY AND CULTURAL AWARENESS THROUGH VIRTUAL REALITY

What is virtual reality?

Simulations can be quite valuable in the language classroom (e.g., Cerratto 2002; Davis 1995; García-Carbonell et al. 2001; Hulstijn 2000; Jung 2002; Kovalik & Kovalik 2000; Magnin 2002). Benefits of simulations\(^1\) include a sense of realism, increased motivation, the student-centered nature of interactions, identification with target culture and reduction in anxiety levels. Virtual reality (i.e., “an immersive, interactive medium that relies on computer-mediated manipulations of the visual, aural and tactile senses to provide learners with the simulated experiences in computer generated worlds” (Dennen & Branch 1995)\(^2\) takes the concept of simulations to a new level in that students inhabit, experience and have the ability to interact with the target language environment (Bricken 1990, cited in Schweinhorst 2002).

Three defining characteristics of VR include its interactivity, three-dimensionality and its real-time feedback (Settekorn 2001; Stone 2002; Whyte 2002). Another important aspect of VR is the notion of ‘presence’. That is, users “feel they are inside the computer simulated environment, rather than just looking at a video display” (Winn et al. 1995, p. 11). As such, Stevens (1995) notes that VR “is being touted as a revolutionary and easy way to stroll through

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\(^1\) García-Carbonell et al. (2001) refer to Jones’s (1995) definition of simulation as “an event in which the participants have (functional) roles, duties and key information about the problem to carry out these duties without play acting or inventing key facts” (p. 482). Therefore, the reality of the situation is greater than it is in role plays, for example.

\(^2\) It is important to note that a number of researchers (e.g., Davis 1996; Richards 2000; Jain, Holett, Ichalkaranje & Tonfoni 2002) use the term ‘virtual reality’ as an all-encompassing term synonymous with ‘computer-mediated.’ Schweinhorst (2002) cautions against such misuse of the term. This is only one aspect of the working definition of virtual reality in this paper.
worlds too far away, too small, too experimental, or too dangerous for ordinary access” (p. 435). Virtual reality affords the opportunity to participate in new and distant experiences (Stone 2002).

Virtual reality in the language classroom

In the classroom, the advantages of VR are abundant. Brett (2001) argues that people remember what they experience to a much greater extent than which they read (cited in Dubreil 2006). Virtual reality has been successful in helping students to understand difficult concepts (Winn 1995; Winn, Hoffman & Osberg 1995). Among these are biomedical techniques (Stevens 1995), water phases and phase transitions (Trindale & Fiulhais 2000), and planetary phenomena (Bakas & Mikropoulos 2003). It is not without its cynics, however. Goodwin-Jones (2005) states that “[p]arents of teenagers who spend inordinate amounts of time finding treasure, zapping evildoers, and exploring imaginary worlds may take a dim view of electronic games and be skeptical about any potential benefits to their children” (p. 19). We argue, however, that a video game—a medium with which students are familiar and which therefore may have a motivating effect on learning—that is both culturally appropriate and contains a wealth of linguistic data can encourage language students’ cultural learning.

Games, when designed with a particular pedagogical goal, may be classified as tasks. While definitions of task-based instruction abound, Lee (2000) maintains that the central aspect of a task, as opposed to a mere activity, is the notion of purpose. That is, language manipulation is not the central focus; instead, “learners use language as a means to an end” (Lee 2000, p. 31). Littlewood (2004) argues that the best tasks call for a high level of task involvement and learner

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3 Such games are often referred to as ‘serious games.’
engagement. As such, games are only tasks when learners work toward a goal external to the language itself in the second language (L2).

In spite of its promise, VR has been underutilized in foreign language teaching. Major benefits of VR include its ability to motivate students and build confidence (Johnson et al. 2004). Purushotma (2005) cites the possibility of using “The Sims” computer game in language classes simply by switching the language setting. As such, students are able to gain contextualized practice with everyday vocabulary items. The game “Sim Copter” has been used in ESL classrooms for the giving of directions and for peer review of writing (Goodwin-Jones 2005, p. 20). While such uses of games may be helpful for vocabulary learning or for improving writing in the L2, we argue that they do little for the cultural aspect of language learning since students are not interacting with a culturally appropriate version of the game.

Goodwin-Jones (2004) presents a number of VR language learning environments, some of which introduce aspects of the target culture. One virtual environment, the “Tactical Language Training System”, introduces students to both the Arabic language and culture through a virtual world (Johnson et al. 2004). To date, however, there has not been a systematic study into the usefulness of such games, especially into their effectiveness in cultural mediation, in the university language classroom.

Virtual reality and cultural awareness

Dubreil (2006) discusses the benefits of multimedia including video, the Internet, and electronic learning communities for gaining perspective on the culture of the L2. He cites Cameron (1998), who states that “it is virtually impossible to devise a CALL program which does not have some connections with cultural issues. CALL is about language and language is a
cultural issue par excellence”” (p. 238). One successful example of the use of CALL to develop students’ understanding of foreign cultures is the Cultura project as described by Furstenberg et al. (2001). This project provides students with the opportunity to explore culture through an online forum “where they exchange their respective viewpoints and perspectives and try to understand each other’s culture through the eyes of the other” (Furstenberg et al. 2001, p. 59). Webquests as described by Skehan (2003) and Goodwin-Jones (2004) are computer-mediated tasks that allow students to interact with target language Internet material intended for native speakers. Virtual field trips (e.g., Goodwin-Jones 2004; Johnson 2004; LeLoup & Ponterio 2004; Settekorn 2001) give students the chance to view some of the material available in museums that would otherwise be too distant to explore.

Unlike other forms of multimedia that can be utilized in the language classroom, VR allows students to physically experience the culture. They are able to hear the sounds, come into contact with the language in use, explore the environment, and interact with the culture in ways that are not possible through other media. Dubreil (2006) foresees the role that VR could play in the future: “[o]ne could envision, in the future, the development of … more advanced applications involving virtual reality… that could help teachers and learners become better culture learners” (p. 258). This study tests the effectiveness of Dubreil’s vision.

Given the lack of studies into the use of VR in the language classroom, we sought to investigate students’ reactions to a VR experience in a German language classroom and their interaction with the target culture as a means to set the groundwork for future research into the use of VR in the language classroom. Two main research questions guide this study:

4 Note that the “virtual field trips” described in Goodwin-Jones (2004) are only ‘virtual’ in that they are computer-mediated. Students are not in a three-dimensional setting when they view the museums. The museum described in LeLoup & Ponterio (2004), however, is a virtual reality experience.
1. What do students feel is the primary focus of the VR environment?

Given that this study was performed in German language classes in which the central focus of study was the language, it was expected that students would focus on the linguistic aspects of the game. On the other hand, if students did not focus on the language and instead on some other aspect of the game, then it can be argued that this virtual world experience truly is a task.

2. Do students focus more on the cultural practices or products in the VR environment?

Given the interactivity of the virtual world experience, it was expected that on a free-recall task students would remember more cultural practices than cultural products as was the case for both beginning-level (Herron, Corrie, Cole & Dubreil, 1999) and intermediate-level (Herron, Dubreil, Corrie & Cole 2002) learners who watched videos in the L2.

METHODOLOGY

Subjects

Subjects in the study were forty-two students from three sections of first-semester German at the University of Calgary. There were nineteen males and twenty-three females, and their average age was 20.5 years. Most indicated that they were motivated to learn German, and the mean motivation rating given by students was 5.5 on a 7-point scale. Students who took part in the study were performing well in their German classes. There was a high class average of 89% (range: 75–95%). When asked to choose which aspects of learning German were important to them, they indicated that the most important aspects were general fluency, grammar and vocabulary. Some indicated that they were interested in learning about German culture and
pronunciation, although these aspects were given lower ratings of importance when compared to
the more traditional and quantifiable foci of fluency, grammar and vocabulary.

Only 25% of the subjects in this study claim to be regular game players. Of this group, the
average number of hours of game play is 7.5 hours/week. At the other extreme, 25% of the
group has played only once in the last year while an additional 13.7% stated they have never
played a computer game. Students indicated that they play these games for the following
reasons: “they are fast and fun and you get to have a goal”, “they are fun to play with challenging
puzzles to solve”, they are good to play “for relaxing and unwinding.” Three indicated that they
play games to pass time, two indicated a social aspect of multi-player games, and two others
noted that they play video games because they are lifelike. When students were asked which
games they play, the most frequently mentioned commercial games included “World of
Warcraft,” “The Sims” and “Final Fantasy”, while “Oregon Trail,” “SIM City” and “The Sims”
were the titles of educational game played by these students. When students were asked to name
educational games that they enjoy playing, only 11 of the 42 students were able to name one.

On the pre-task questionnaire, students indicated that they believe that video games can be
utilized in the classroom (mean = 5.16 on a 7-point scale). The most common responses included
that the games are interactive (N = 10), that they are interesting (N = 6), that they are different
from traditional classroom lessons (N = 4), that they are a familiar media (N = 4), and that they
are entertaining (N = 2) or motivating (N = 2). The questionnaire responses provide an indication
that the students in this study were interested in seeing how a video game could be used in a
German language classroom, but they had low expectations for the game.
Tasks

On the first day of the study, all students were introduced to the linguistic aspect of the game: German commands. Commands were taught in the following way: 1) students were given simple classroom commands and were asked to follow them; 2) the grammatical fundamentals of commands were presented to students; 3) they performed a listening activity with commands in German; 4) students created commands with partners; 5) relevant new vocabulary specific to the virtual world was presented to students through PowerPoint and an accompanying partner activity; and 6) students were given a map and were asked to follow directions given orally.

Students completed a pre-study questionnaire on the night before they experienced the virtual world environment. This questionnaire probed into students’ motivation for learning German and asked students to discuss their computer usage generally.

The game played by students in this study is a computerized task situated within a proficiency-oriented communicative classroom. Two important aspects of task-based instruction (Swan 2005) that are central to this game are natural language use and learner-centeredness (e.g., Willis 1996; Skehan 1998; Willis 2003). From the pedagogical design standpoint, we had two pedagogical goals for the task:

1. to enable students to interact in a real-life L2 setting; and
2. to provide students with exposure to and experience with carrying out commands in the L2.

The virtual world created for this game was created in a 3D modeling environment (StudioMAX) and imported into Virtools, an interactive gaming application. The architectural backdrop for the game is based on photos, drawings and maps of Salzburg. Many of the public squares and spaces would be recognizable to a tourist today, including the Domplatz, Salzburg
Cathedral, Residence Square and Old Market. The game itself is a mystery in which the students are expected to follow commands and collect clues to find the mayor’s missing daughter. Students are exposed to a variety of clues including spoken commands, written commands, conversations between characters, radio and TV broadcasts, cell phone messages, and signs (figures 1–6).

Figure 1. Salzburg Cathedral, starting point for the game.
Figure 2. Maximilian dancing in the Residence Square. Students learn about the possible kidnapping from a public radio announcement and Maximilian’s remarks.

Figure 3. Market near the Residence Square. Here students learn a little about the market culture before getting their next clue.
Figure 4. Flower stand.

Figure 5. At the café a note and cell phone message give the next clue.
On a post-treatment questionnaire, students were asked, among other things, to speculate as to the goal of the task. They also were to discuss in a free-recall task the aspects of the culture they retained from the virtual world, and they were to compare and contrast the culture presented in the virtual world with Canadian culture. Finally, students completed a post-test in which they were asked to follow directions through a city in German. This probed whether students could follow and create commands after they made use of the VR technology. The results of this task go beyond the scope of the present paper.

RESULTS

Student perceptions of the VR environment

Upon completion of the virtual world task, students rated the usefulness of the VR software. Twenty-six of the 42 students indicated that the virtual reality task improved their knowledge of German. Students were asked to rate on a 7-point scale, with 7 indicating most helpful, which
aspects of their German were most bolstered by the virtual world experience. They felt that the virtual world was most helpful (mean rating = 6) for developing their listening skills. Students indicated that the virtual world was less helpful for developing the following skills: learning vocabulary (mean rating = 4.65), learning about culture (mean rating = 4.45), gaining speaking fluency (mean rating = 4.44), and improving pronunciation (mean rating = 4.60) and reading skills (mean rating = 4.18). They indicated that the software was least helpful for learning grammar (mean rating = 3.32) and improving their ability to write in German (mean rating = 2.67).

After the experience, students indicated that virtual worlds should be utilized in the German classroom (mean = 4.91 on 7-point scale). Students, although enthusiastic about the experience, spoke with caution when they explained when and why virtual reality should be used in their own German classrooms. The most common responses included that the VR experience was fun (N = 4) and different (N = 4), that it was a good review (N = 3) that allowed students to apply what they had learned in class (N = 4). Others, however, said that it should only be used occasionally as a supplement (N = 2) to more communicative classroom activities. The four most critical students said that this technology reduced their level of participation and that they would therefore be hesitant to suggest regularly making use of VR in their German classrooms.

As noted above, it was important for us to determine what students believed to be the goal of the task in order to determine where they focused their attention while completing it. When students were asked, they gave the following responses: to practice listening skills (N = 5), to test the effectiveness of VR technology (N = 8), to follow commands (N = 13), and to find the mayor’s daughter (N = 15). While each of these was a goal for us as creators of the experience, it

5 This is not surprising, given that the game is not text focused.
is important to note that a game-related response (i.e., finding the mayor’s daughter) was cited most often as the goal of the activity.

When students were asked which aspect of the experience they enjoyed most, the greatest number (N = 13) mentioned the explorational aspect (i.e., seeing / exploring / navigating through the city). None of the students in the study had been to a German-speaking country in the past, but the virtual world enabled them to experience a German-speaking city.

**Cultural products and practices**

After students participated in the VR experience, they were asked a number of free-response questions. These included questions about what they remembered most from the experience as well as the similarities to and differences from Canada. When students were asked to indicate which aspects of the virtual world they remembered, they mentioned the following: buildings and other structures (e.g., cafés, flower shops, bookstore, pretzel stand, McDonald’s) (N = 21), marketplace (N = 16), and cobblestone (N = 7). Note that all of these aspects are cultural products.

In response to the question “How is the world similar to an experience you might have in a Canadian city?”, students’ responses can be classified into the following categories: modes of transportation (N = 14), types of shops (N = 12), giving and receiving directions (N = 4), and that the two situations are not similar (N = 3). Once again, most students tended to focus on cultural products in their responses. They noted that there were trucks, buses and bicycles, and some students also said that people walked around the city as is the case in a city in Canada. The types of shops that they mentioned included restaurants, flower shops, cafés, and McDonald’s. Four of the subjects, however, did focus on a cultural practice—that of giving directions. These students
noted that in this German-speaking city, as in a Canadian city, one asks for and receives directions when he or she is unsure of where to go.

Finally, when students were asked how the city portrayed in the game differs from a Canadian city, they gave the following responses: it has a European look (N = 2), the language differs (i.e., the people in the world speak German) (N = 7), there are cobblestone streets (N = 8), the city is much older than a Canadian city (N = 12), and there is a marketplace, which one does not often find in Canada (N = 22). As was the case with the other questions, students again focused on cultural products.

DISCUSSION

The results of this small-scale study into the use of a virtual reality world indicate that this is a successful use of technology. We would like to remind the reader that the greatest number of students focused neither on a linguistic nor on a cultural aspect when they were asked to guess the goal of the virtual reality experience. Instead, a number of students focused on the game itself. The question that then arises is: Is this a negative outcome? Similarly, should games in the language classroom be created such that students are most focused on the linguistic aspects? We would argue that this is most certainly not a negative aspect of the experience. This result may mean that students were engaged enough in the game itself to forget that they were performing an educational task in German. They were working toward a goal that was external to the language while at the same time developing their linguistic skills, especially listening.

An essential aspect of teaching about culture is focusing both on the similarities and differences between the native culture and the target culture. The Standards document (ACTFL 2006) points out that students need to be made aware of both similarities and differences as a
means of enabling them to “develop cross-cultural understanding and respect” (p. 49). Students were able to remember both similarities and differences after they experienced the virtual world. It is interesting to note, however, that a number of students were unable to identify areas of cultural similarity. This points to the need for follow-up tasks that allow students to discuss and analyze the experience, thereby encouraging students to “become skilled observers and analysts of other cultures” (Standards, p. 48). Researchers such as Ware and Kramsch (2005) and Bass (2000) note that the onus is on the teacher to make the target culture accessible and meaningful to students by ensuring that the objectives are being met. Similarly, Dubriel (2006) states that “more than ever before, FL teachers have to play a crucial role inside and outside the classroom and […] learner-centered pedagogy is more intensive for the FL teacher than teacher-fronted instruction” (p. 250).

The reader is again reminded that students in this study tended to focus on cultural products more than cultural practices after they participated in the experience. This stands counter to the results Herron et al. (1999) and Herron et al. (2002), who found that students tended to focus on cultural practices after having watched videos in the L2. One might argue that the reason why students in the present study were likely to mention cultural products has to do with the fact the game’s primary focus is cultural products\(^6\). While we do not argue that students were exposed to a wide variety of cultural products while they experienced the virtual world, they did also come into contact with some cultural practices. For example, since the various characters in the game know neither one another nor the student playing the game, the formal address is used

\(^6\) Dubriel (2006) posits that the reason why the subjects in the video studies tended to focus on cultural practices for two reasons: the culture presented in the episodic narrative used in Herron et al. 1999) was more “‘high-brow’” and thus “removed form their daily activities” (p. 244), and students in the Herron et al. (2002) study who watched the journalistic videos have a “fundamental interest in the patterns of daily living” (p. 245).
throughout. In addition, the marketplace culture is such that vendors sell products in the open, people spend time sitting outside in cafés, and the marketplace is not open to traffic. Nonetheless, students failed to mention any of these aspects and instead focused on the tangible aspects including the *modes* of transportation, *types* of shops, and building *materials*.

This brings us back to the notion of ‘presence’ that is at the heart of virtual reality. Were students in this study actually present in the virtual world that we created? A look at some of the answers provided by the students lets us know that students clearly experienced the world and did not merely feel that they were outside observers. Some students mentioned interactions between characters: it “seemed like a normal day”, there were “townspeople milling around”, I “overheard interactions between people.” Others mentioned the sounds: I enjoyed the “music and background noise”, and I noted “the cell phone ring.” Still others mentioned aspects of the city: I was “surrounded by many tall buildings”, in the marketplace there were “lorries driving through courtyards, but no other vehicle traffic”, the city was “very spread out”, there is a “big open square with many open shops”, there was “more cobblestone and less concrete … than in Canada”, and there is a “‘different city layout.’” Perhaps the best indication of a virtual ‘presence’ comes in the form of the following responses: the city “feels a lot older”, the city “seemed to have a much different *ambiance* to it.” The students who participated in the experience became immersed in the virtual world and felt they were *inside* the environment.

While it is important to be cautious of “edutainment” products, many of which were designed for profit over learning (Papert 1996, cited in Wood 2001), we argue that there is a place for VR in the language classroom. In the context of this game, students reported an improvement in their listening skills, and they also noted that the experience was beneficial for their vocabulary.

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7 Italics our own.
learning, general fluency, and improving pronunciation and reading skills. Moreover, students clearly showed that they experienced the target culture in new and meaningful ways. Barr and Gillespie (2003) propose that “technology is used to enhance already effective teaching methods for the benefit of learners and teachers” (p. 69). The responses of students in this study supported this finding. They indicated that the experience was fun and different as well as a good review that should be used as a supplement to communicative classroom tasks. We do not believe that this software could or should replace classroom communication; however, we have found that it is an effective tool for enhancing both linguistic and cultural learning.

None of the students in this study had experienced a German-speaking city before they took part in this experience, and only eight of them mentioned that they plan to visit a German-speaking country in the future; however, approximately one-third of the students mentioned that their favorite aspect of the experience was exploring the world. We are reminded of the importance of the process of learning: “culture is not just a body of facts to be acquired by learners, but something actively created by learners through interactions” (Tseng 2002, p. 20). It is through the participation in the virtual world task that students in this study have come to truly experience the target culture for the first time in their lives.

AREAS FOR FUTURE RESEARCH

After the first round of testing with university students, we made a number of changes to the software including, but not limited to, the following:

1. the addition of a stable set of characters throughout the world acting as “helpers and friends.” These members of the police force were added throughout the world as a constant source of information for students. Thus, students who were unsure of the last
set of directions they heard were able to walk up to a policeman to hear the directions in a
different way.

2. a large TV screen with local news was added to increase both the types of clues students
received as well as to provide another type of cultural realia.

We are currently testing the revised world in high school classes. For these students, a
linguistic pre- and post-test have been given so that we are better able to analyze the linguistic
gains made by students. Moreover, students’ movements were tracked, which allows us to
analyze how students explored the virtual world.

In future studies with the software, we hope to add speech recognition technology as a means
of making the experience more interactive. This added feature may provide additional feedback
for introductory levels of language instruction. By being able to respond to a game characters
questions with a simple ‘yes’ or ‘no’, students would be provided additional clues and
information at critical points in the game. By incorporating speech recognition, students failing
to understand a single clue would avoid getting lost by receiving additional information.

Additionally, we hope to expand the world to focus on other linguistic goals aspects of daily life
(e.g., visiting the doctor, taking public transportation). Finally, we plan to create and test virtual
worlds for ESL students.

Readers who would like to try the virtual world for themselves may download it at
player may also be downloaded at http://player.virtools.com/downloads/playerie3.5.asp.
References


