Virtual Reality in the Language Classroom: A Look at Students’ Attitudes and Beliefs

ABSTRACT

Virtual reality is an immersive technology that offers contextualized learning through authentic scenarios. Foreign language learners can experience the target language and culture by exploring realistic virtual environments, in place of real ones otherwise inaccessible due to geographical constraints. Researchers have recognized the potential of VR in various fields (e.g., McGrath et al. 189; Zhang et al. 144), nonetheless in the area of foreign language learning and pedagogy only a few studies have explored the use of virtual worlds (Repetto, Colombo, and Riva 8; Lin and Lan 493). Currently, there is a lack of research investigating learners’ attitudes and motivation towards the implementation of virtual reality in the language classroom. The current study addresses this gap by investigating foreign language learners’ perceptions towards the implementation of virtual reality in the educational context to promote cultural awareness. Undergraduate students enrolled in beginner Italian courses viewed 360-degree virtual reality videos of Italian environments (i.e., a piazza, a street corner, and the inside of a restaurant) with the use of the stereoscopic visor, Google Cardboard, a pair of headphones, and their smartphones. Through pre- and post-surveys, written reflections, and interviews participants shared their attitudes and perspectives regarding the implementation of virtual reality in the language classroom. Exploring and analyzing learners’ viewpoints is important to evaluate how emerging technologies can be utilized in pedagogical and learning practices, and to suggest revisions to the language curriculum (Antoniadou 57; Thorne 559-560). Results show that virtual reality is positively perceived by language learners and can be implemented in the language classroom to foster cultural awareness and to create new, immersive, and contextualized learning opportunities.
INTRODUCTION

Culture is an important component of language courses taught and learned through the exploration of various disciplines associated with the target language (Baker 1). Previous research has found positive attitudes, from teachers and learners, towards cultural pedagogy (Yesil and Demiröz 87); nonetheless, frequently language textbooks present the culture in a fixed manner without giving learners the opportunity to explore and engage with the many dimensions of the target culture. The depiction of foreign cultures in pedagogical materials can be considered problematic since students are not able to thoroughly explore the culture in its various facets (McConachy and Hata 294), however the Internet and the rapid advancement of technology have facilitated access to the various aspects of foreign cultures.

Today, educators integrate various technology tools in their own lessons and use resources and materials that traditional language-oriented textbooks do not offer. Teachers and researchers have examined how numerous tools, such as wikis (e.g., Kessler 81-83; Lund 41-44; Zorko 650-654), social networking sites (e.g., Barrot 290-293; Blattner and Fiori 2-8; Mills 2-5), podcasts (e.g., Ducate and Lomicka 70-71; Rosell-Aguilar 474-481; Yaman 63-65), and blogs (e.g., Comas-Quinn, Mardomingo and Valentine 14-23; Pinkman 15-16), can be utilized to support foreign language (FL) learning and teaching. Although virtual reality (VR) is among the latest emerging technologies, it has been recognized in many different fields (e.g., McGrath et al. 189; Zhang et al. 144). In recent years VR has received significant attention, however in the area of FL learning and pedagogy only a few studies have explored its affordances and constraints (Repetto, Colombo, and Riva 8; Lin and Lan 493). Studies investigating learners’ attitudes and motivation towards the implementation of VR in the language classroom for cultural learning are scarce. Thus, the objective of this research is to examine FL learners’ perceptions towards the
implementation of VR in the language classroom to foster cultural awareness. Through the use of selected 360-degree VR videos and Google Cardboard participants were able to immerse themselves in culturally authentic environments and explore the target culture. VR is the ideal technology tool to support the development of cultural awareness since it gives users the illusion of presence, an experience that the traditional language textbook does not offer. Exploring learners’ attitudes towards VR in the educational setting is essential to further understand how new technologies can be successfully utilized in pedagogical practices in the language classroom.

LITERATURE REVIEW

Virtual Reality

Throughout scholarship and consumer markets of recent years, the latest and greatest of technological advancements are frequently used to find new ways in which materials can be presented to the consumer and the learner. This study draws on two theoretical frameworks, immersion and Experiential Learning Theory (ELT), to describe the ways in which VR use can be approached to enhance cultural awareness in early university students, and to address concerns related to using rapidly advancing technologies in place of sound pedagogical practice, as opposed to ensuring proper use of technology together with best practices. Historically, Computer-Assisted Language Learning (CALL) scholarship has focused on the ways in which language learners might benefit from the use of computer technology in and out of the classroom to engage more meaningfully with curriculum to enhance learner outcomes. Indeed, today at people’s disposal are a variety of affordances due to the convenience of the Internet, including texts, film, music, news, and information that is all easily accessible in the modern classroom.
Berti, Maranzana, and Monzingo 4

The internet can bring the Other of foreign language and culture right to the students’ computer screen.

More recently, due to advancements in VR technology, themes of VR have been looked at to answer a variety of world issues, from medical training to spatial reasoning, because VR allows for manipulation of concepts and space in ways that have been heretofore unimagined and are in relatively low risk environments. VR is generally defined from anything as an immersive experience to having particular qualities of hardware or software (Blyth 225; Fabola et al. 1; Lloyd et al. 222). One issue that Kern raises in regards to any new and evolving technology, is a risk associated with the blind use of that technology as a type of panacea, a cure all for ills of educating language learners that cannot fathom a paradigm outside their own. He indicates that while the technology can be useful it needs to be interpreted as a designed environment where what is visualized on screen is another’s creation, and thus their own interpretation filtered through their own perception (341). One response to this understandable concern is an examination of two theoretical frameworks that shed light on how VR can enhance learning and cultural awareness without becoming a placebo in the search for authentic cultural activities.

Cultural Awareness

Before touching on those two theories, however, it must be discussed how cultural awareness is defined in this study so that an accurate reflection of the theoretical validity of the two theoretical frameworks mentioned above can be examined fairly. Awareness alone can be difficult to describe as it changes in the observer and the observed, already implying the subjectivity of what any version of awareness actually means. It is better to think of awareness as a student’s knowledge and process of thinking of and speaking of culture, opposed to some sort of exclusionary ‘observation only’ point of view (Jones 1). It follows that student attitudes and
behaviors should also be influenced through some understanding of a cultural ‘Other.’ Additionally, cultural awareness may be construed as an understanding of the cultural-self and behaviors of oneself, of others, and the ability to identify those similarities and differences (Tomalin and Stempleski 5). More specifically, it is the ability to acknowledge the target culture as a shared and dynamic feature of a country, and the capability to recognize and evaluate specific characteristics, generalizations, and stereotypes of such culture (Lado 40-41; Schulz 16-17).

**Immersion**

To return to the theoretical emphasis at hand, essential points of intersection within cultural awareness for VR are immersion and experience. In regards to reading, the term reading trance refers to the relative extent of ‘other-world citizenship’ induced in a reader thanks to an excellent narrative (Nell 77). Nell also describes an immersive experience where the reader is transported by what they read and their level of emotional investment in what is being described by the author (211). Marie-Laure Ryan applies immersion to literary theory by referring to the vividness and realism found in 3-D displays, speaking specifically of computer gaming, through some kind of hidden depth (110-112). One could posit that the hidden depth Ryan speaks of and the trance Nell discusses are one and the same.

If the above is true, then “Virtual reality (VR) is an immersive, computer-enabled technology that replicates an environment and allows a simulation of the user to be present and interact in that environment” where the virtual world can be interpreted as real through the surroundings found within and the capability to physically interact with it and change it in some way (Lloyd et al. 222; Ryan 111; Sadler 376). For Ryan, this leads to a discussion of telepresence which is “at the conjunction of immersion and interactivity” in a 3-D world of
subjective experience (Ryan 111; Wang et al. 433), again, dealing with an overall sense of ‘being there’. Wang et al. provide a more concrete example of immersion in support of some of Ryan’s more theoretical positioning, furthering its use in a language learning context. In their study 3-D virtual worlds created spaces for realistic scenarios useful for the EFL learner’s immersive practice in real contexts (432). Thus a virtual world is a place where context is available for the practice of vital language skills, and taken together with work in cultural awareness, vital cultural observation can be accomplished at a minimum. More essentially, it becomes an immersive tool for fostering cultural awareness through acts of noticing and reflection through simulated yet still real contexts.

While these contexts have existed in some form of virtual environment or another since the advent of the Internet (Kern 341; Sadler 376), such virtual worlds are in an entirely different league due to the immersive affordances created by advancements in technology that can be found in the augmented reality (AR) and the more mainstream approaches to VR using the new headsets together with software developed for language and cultural learning and software that is not specific to an educational setting (Reinhardt and Sykes 2; Sadler 376). “This new technology provides a more fully immersive experience to learners, potentially allowing a language student to experience being in cities like Paris or Tokyo in a way that has never before been possible without actually being there” (Sadler, 386); in this way, VR videos and simulations create immersive contexts allowing for environmental interaction with a sense of presence in the foreign context or a sense of interaction with the other.

**Experiential Learning Theory**

VR can give students a valuable cultural experience that goes beyond immersion to something more metacognitive. Sadler draws on Kolb’s (qtd. in Sadler) ELT to expound the
virtues of using virtual worlds. The theory states that learning should be thought of as a process (not outcomes), it is based in experience, it is part of holistic world adaptation, a process of knowledge creation, and deals with person-environment transactions, and how the learning process must approach conflict resolution between different cultural world adaptations (Sadler 382) or in Kolb’s own words “...proactive adaptation by the use of auxiliary cultural stimuli, social knowledge, to actively transform personal knowledge” (1). This spiral of learning from experience described in ELT can help learners appreciate their own learning processes on a metacognitive level (Kolb 297). The ELT model portrays two dialectically related modes of grasping experience, Concrete Experience (CE) and Abstract Conceptualization (AC), and two dialectically related modes of transforming experience, Reflective Observation (RO) and Active Experimentation (AE) (Kolb 298). In VR we find a bridge between grasping and transforming experiences, where learners gain concrete knowledge of other cultural experiences that can be abstractly conceptualized through RO after a VR video interaction event and through guiding questions given by the instructors and researchers.

RESEARCH DESIGN

Participants and Research Questions

This research was conducted at a large university in the United States with the aim of understanding FL learners’ attitudes and perspectives towards the implementation of VR in the formal classroom setting. The data collection took place during a grant-funded student-teacher interaction event that was open to undergraduate students enrolled in beginner Italian courses, at the end of the Spring 2018 semester. Of the 24 students who participated in the event, none of whom was a student of the researchers, 19 gave the consent to take part in the study. All data
supplied by the remaining 5 students was discarded and not used for the purposes of this research.

The following research questions guided this study:

(1) What are students’ attitudes and concerns towards the use of VR and Google Cardboard in the language classroom?

(2) Do language learners believe that VR impacts cultural awareness as well as their understanding of the target culture?

Materials

This study included three 360-degree VR videos that were recorded in December 2017 by one of the researchers in Italy using a High Definition Xiaomi Mijia Mi 360-degree field of view (FOV) camera. Cameras featuring a 360-degree FOV are omnidirectional, i.e., they capture the entire environment surrounding it, as opposed to conventional video cameras that restrict recording to a fixed angle. This implies that footage realized with a panoramic 360-degree FOV offers the user the opportunity to choose which part of the environment he or she wants to view interactively. As the digital screens utilized to watch videos are rectangular in shape (TV, tablet, smartphone, etc.), only the corresponding portion of the captured environment in 360-degree can be seen at one time. Nonetheless, by dragging the image with a mouse, swiping on it, or simply moving the portable device in whichever direction, the viewer shifts the gaze to a different area of the environment (Corbillon et al. 4). The 360-degree videos used in this study lasted approximately two minutes each and showed sites in the city of Bergamo, Italy. The chosen locations were the interior of a restaurant, a street corner, and a town square. Although numerous 360-degree videos of renowned Italian cities are available to view on YouTube.com, for this study the researchers chose to present a less touristic town, one that could encapsulate the
average Italian cityscape and everyday Italian environments. Furthermore, feedback from a preceding pilot study carried out the previous semester indicated that prolonged VR viewing sessions, that is more than two minutes, were likely to induce dizziness. All three videos used in this study were uploaded on a public YouTube.com channel and made available for streaming to all participants via web-links sent to their email accounts a few minutes before the beginning of the VR viewing sessions.

This research also involved the use of the Google Cardboard headset, which allowed participants to experience the 360-degree videos in 3-D. Google Cardboard is among the cheapest VR Head Mounted Displays (HMD) currently on the market (Greenwald et al. 19). In this study, the researchers obtained a grant to purchase and lend one such device to each participant. Google Cardboard is a lightweight HMD that allows the user to utilize a smartphone as a display and, in conjunction with specific free applications, it enables the implementation of stereoscopy, that is the presentation of a slightly different image to each eye, to deliver the illusion of depth (Baños et al. 2; Fabola, Miller and Fawcett 5). When a smartphone is inserted in the dedicated slot in the front of the headset, the user can see the 360-degree video in stereoscopy (see fig. 1). In addition, the movement of the user’s head displays a different FOV in the video.

Fig. 1. The Google Cardboard headset and a smartphone display in VR mode.
Procedures

Before the viewing sessions began, participants were invited to sit around a table and form groups of four to five people. All interactions with participants throughout the event were led in English. On the table, participants found copies of the consent form, blank sheets of paper and the Google Cardboard viewers, one for each participant. Once consent forms were collected, the researchers provided a brief introduction to the study and an explanation on how to use the Google Cardboard headsets. All participants were previously notified via email that the event required the use of a fully-charged smartphone as well as headphones, in order to create a more immersive experience, and were advised to bring their own. Extra smartphones and headphones were available to the participants if needed. Participants played each one of the three videos twice on their smartphones, through the YouTube application, and viewed them with Google Cardboard while listening to the audio with their headphones. During the viewings, participants were encouraged to turn their heads in different directions to explore the virtual environment. Between each viewing, participants were asked to write about what they saw on the provided blank sheets of papers. After the second viewing of each video, a short researcher-led group discussion was conducted. The discussion aimed at fostering participants’ reflections on what they just saw and to address any questions. At the end of the last viewing of the third video, participants were invited to take part in the focus group interview.

Data Collection and Analysis

In order to gain a comprehensive understanding of students’ attitudes and motivation, and to answer the research questions outlined above, this study employed a mixed method approach to analyze the acquired data by incorporating both quantitative and qualitative methods (Dörnyei; Riazi and Candlin 138-140). The combination of methods is an important aspect of this type of
research approach, which aspires at inquiring into students’ beliefs and how they interact with the environment (Barcelos 21). However, although quantitative methods are used to enhance the overall understanding of the object of study, learners’ attitudes can be better investigated through a qualitative approach which, unlike quantitative Likert-scale questionnaires, through narration and reflection allows students to become aware of their beliefs, their feelings and their concerns, and have the chance to express their opinions in their own words (Benson 156; Ritzau 98-99). Hence, the materials used in this study include pre- and a post-surveys, participants’ written reflections, and a focus group interview.

**Pre- and Post-Surveys**

A pre-survey, was administered to the participants (N=19) before the beginning of the VR viewing session while a Post-survey was dispensed at the end. Both surveys included 6-point Likert-scale statements, ranging from strongly disagree (1 point) to strongly agree (6 points) as well as open-ended questions. The inquiries were structured around these areas: background information concerning experience with VR and Google Cardboard, perceptions of the usefulness of technology and VR for language learning within the classroom context, interest in learning about the Italian culture and response to the VR experience. The surveys were created with the Qualtrics online platform and made available via web-links that were sent to all participants. Owing to the Qualtrics mobile phone optimization feature, easy access to both surveys via smartphones was ensured.

**Written Reflections and Focus Group Interview**

All participants were provided with three numbered blank letter-sized sheets of paper, one for each video that they were going to watch. Participants were instructed to write their names and record their reflections during the VR viewing sessions. Each sheet of paper was
folded in half to allow participants to note their thoughts in different partitions of the page. For each one of the three videos, participants were to write: 1) prior to the viewing, their expectations about what they were about to watch (e.g., their thoughts on how a town square in Italy would look like); 2) their impressions of the first viewing; 3) their considerations and the differences from their own home environment following the second viewing, after being instructed by the researchers to focus on particular elements in the videos (e.g., how people were interacting in the virtual setting, sounds, the architecture, the means of transportation, etc.). At the end of the viewing event, 8 participants agreed to take part in a ten-minute focus group discussion led by one of the researchers. Participants were asked to reflect on the VR experience that had just concluded and were invited to share additional comments, beliefs, and concerns. The focus group discussion was recorded and subsequently transcribed verbatim for analysis. The researcher’s comments that transcended the focus of this study, such as greetings and clarifications, were not transcribed.

The quantitative data gathered for this study, which consisted of the 6-point Likert-scale pre- and post-survey responses, were analyzed and will be presented in the form of descriptive statistics. The qualitative data, consisting in the open-ended questions in the surveys, the written reflections, and the transcripts from the focus group discussion were sorted, coded and analyzed. Due to the nature of the objectives of this research the data obtained from the written reflections was not included in this study. The following section presents and discusses the analyzed data gathered to answer the research questions outlined above.
RESULTS AND DISCUSSION

The collected data provided insightful information in regard to learners’ attitudes towards the implementation of VR in the language classroom as well as their beliefs about cultural awareness in relation to VR. The focus group interview further explored how the viewings impacted participants’ understanding of authentic everyday Italian environments and the target culture.

Pre-Survey

In the pre-survey, completed before the VR experience, participants answered open-ended questions and rated twelve statements on a 6-point Likert scale. The open-ended questions aimed to investigate whether the participants had been to Italy before, thus if they experienced authentic Italian environments, and if they had used VR prior to the event. Of the 19 participants, 6 (32%) answered that they had been to Italy and reported that the cities they had visited included Rome, Naples, Florence, Venice, Milan, and other popular destinations. None of the participants reported having visited Bergamo, the city where the videos were recorded. About one third of the participants (n=7, 37%) stated that they had used VR prior to the event, mainly for entertainment purposes. Thus, none of the participants had previous experiences in using VR for learning purposes, in the educational setting. As previously explained, the implementation of VR technology in pedagogical practices and language learning is still scarce and as participants’ responses show, in the formal classroom context VR is yet to be utilized and exploited.

In the pre-survey, the objective of the 6-point Likert scale was to explore participants’ attitudes towards the use of technology in the educational setting and their familiarity and interest in the target culture. All the participants stated that using technology in the classroom is useful and it can be enjoyable and fun (see table 1). Most of the participants (n=16, 84%) also
reported that they use technology for their studies and they believe that technology enhances language learning (n=18, 95%). Less than half of the participants (n=7, 36.5%) reported that they find technology a distraction in the classroom. As far as their familiarity with Google Cardboard, the viewer used in this study to experience VR environments, 53% (n=10) stated that they were not acquainted with such a tool. Overall the results show that prior to the VR viewings the majority of the participants, who already uses technology for learning purposes, had positive attitudes towards the use of technology in the educational setting, although some recognize technology as a hindrance in the classroom.

Three statements in the pre-survey concerned participants’ familiarity and desire to learn about the target culture. Almost all of the participants (n=18, 95%) reported that the target culture is important to them, and 78% (n=15) said that they plan to study or travel to Italy in the near future. One of the statements asked if they were very familiar with the Italian culture, and 26% (n=5) of the participants reported that they strongly agreed, while 37% (n=7) slightly disagreed. Altogether, the participants in this study expressed a strong interest in the Italian culture with future plans to travel or study in Italy, although more than half of them felt that they were not very familiar with the target culture. Consequently, a significant motivation to learn more about the Italian culture existed before the VR viewings occurred.

Last, the remaining three statements in the pre-survey inquired about the reasons that prompted students to participate in the VR event. Most of the participants were interested in learning more about the Italian culture (n=16, 84%) as well the opportunity to try VR (n=15, 78%). Since the VR viewing sessions took place outside of the classroom setting and were part of an event that allowed students to make up half an absence, one of the statements in the pre-survey also inquired if a reason for participating in the event was related to the extra-credit
opportunity. Responses to this statement showed that 37% (n=7) either strongly disagreed or slightly disagreed, while 63% (n=12) strongly agreed, agreed and slightly agreed. Participants clearly expressed enthusiasm for the VR technology as well as the opportunity to learn more about the target culture.

Table 1
Pre-Survey Statements on a 6-Point Likert Scale

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Slightly disagree</th>
<th>Slightly agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using technology in the classroom is useful.</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>16%</td>
<td>3%</td>
<td>68%</td>
</tr>
<tr>
<td>Technology in the classroom is enjoyable and fun.</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>11%</td>
<td>2%</td>
<td>68%</td>
</tr>
<tr>
<td>I use technology frequently for my studies.</td>
<td>5%</td>
<td>1%</td>
<td>11%</td>
<td>5%</td>
<td>1%</td>
<td>58%</td>
</tr>
<tr>
<td>I think technology enhances language learning.</td>
<td>0%</td>
<td>0%</td>
<td>5%</td>
<td>16%</td>
<td>3%</td>
<td>58%</td>
</tr>
<tr>
<td>I find technology a distraction in the classroom.</td>
<td>31.5%</td>
<td>16%</td>
<td>16%</td>
<td>0%</td>
<td>5%</td>
<td>31.5%</td>
</tr>
<tr>
<td>I am familiar with Google Cardboard.</td>
<td>26%</td>
<td>11%</td>
<td>16%</td>
<td>20%</td>
<td>11%</td>
<td>16%</td>
</tr>
<tr>
<td>Studying the Italian culture is important to me.</td>
<td>0%</td>
<td>0%</td>
<td>5%</td>
<td>11%</td>
<td>21%</td>
<td>63%</td>
</tr>
</tbody>
</table>
Post-Survey

Following the VR experience, participants completed the post-survey which included four open-ended questions and twelve statements to be rated on a 6-point Likert scale. The data obtained through the post-survey inquired about learners’ attitudes towards the implementation of VR in the language classroom, their beliefs about cultural learning, as well as their motivation to study and learn more about the Italian culture after the viewings. The first open-ended question was for those participants who had travelled to Italy and asked how the VR experience compares to physically being in the target country. Participants’ responses included “I have been to Italy, it seemed nothing like it. Italy was much busier and more exciting”, “I believe it is
similar but nothing compares to being to Italy in person” and “Does not live up to the real thing”.
Participants thus clearly acknowledged that the VR experience did not provide the same experience as real-life interaction in the target country. Although VR provides users with realistic and authentic experiences (Hu-Au and Lee 219), it might not function as a complete substitute of real life experiences, that is physically being in a foreign country. While this is an indisputable limitation of VR, such technology gives language learners in the classroom access to environments that are usually inaccessible.

The second open-ended question asked what aspects of using VR were most memorable. Participants were fascinated by the opportunity to explore the surroundings by moving their head and viewer in different directions as well as seeing and hearing how people interact in different environments. Some students asserted that an important aspect of their VR experience was “Being up close to everything and getting the feeling of actually being there” and “The details and the way we were about to see everything, even people walking”. Therefore, from the analyzed responses it emerged that participants had positive attitudes towards the VR experience; some of them felt as they were present in the virtual environments and were able to notice particular details as a result of being able to move and explore the cultural setting in numerous directions. In this, the use of a VR HMD is very significant, and it demonstrates a clear correlation to VR being utilized as a tool for immersion. Immersion thus becomes a motor for more positive attitudes and motivation to explore target cultural settings. Ideas of presence correspond to the earlier thoughts on interactivity and immersion, leading to increased engagement based on participant attitudes (Lloyd et al. 222; Ryan 111; Sadler 376). This is also observed in the post-survey Likert scale descriptive statistics described later in this discussion.
The third open-ended question aimed to compare the VR experience to previous classroom experiences, for example learning about the target culture from the traditional textbook or from a teacher-led presentation. The majority of the participants explained that they would like to use VR more than the textbook, “You can learn more about the culture and architecture better when you can be that close up rather than just seeing a picture or regular video”, “VR is cool because it gives learning a more hands on experience”, and “The VR gives a visual representation of Italy that can only be seen using technology. A book can't show you Italy like VR can”. Evidently, language learners reported positive attitudes towards the use of VR in the classroom setting and recognized the limitations of the traditional language textbook, which cannot provide immersive and contextualized experiences as VR technologies. Nonetheless, one participant was concerned with the lack of human interaction, while another participant stated that “I just think these are two different ways to teach, I don’t feel like they are actually comparable”. Such responses emphasize the drastic difference between learning from a textbook and a technology tool as VR, which should be used carefully by instructors and language learners. It is important to recognize the differences between the two and it is crucial to understand that some tools might be more appropriate and useful than others in specific learning settings. It is interesting to note that the these differing students’ viewpoints can be summed up as pertaining to the different aspects of Kolb’s ELT (87). ‘Hands-on’ may reference concrete experience in an abstract experience. The participant that notices they are not actually comparable has essentially used Reflective Observation (RO) and Active Experimentation (AE) to determine that the Abstract Conceptualization of VR is really just another tool, which has incidentally illustrated the utility of VR for increasing learner metacognitive awareness.
The last open-ended question specifically asked participants what concerns they might have in regard to the use of VR in the classroom setting. Many responses addressed the issue of feeling nauseated and dizzy when Google Cardboard was used for five minutes without interruption. Other participants were concerned about the technological aspects of using VR, for instance “Getting caught up in the idea of using technology and not really retaining any knowledge” and “Setting up the tech could take too long, though it was pretty easy in this event”. As previously stated, and as noted by the participants, in order to support students’ learning it is important to evaluate how new technologies will impact the learning process and students’ development. In fact, merely implementing the latest technologies in the educational setting is not enough; it is fundamental to consider how the tools that are brought into the classroom, such as VR, will be used to support learning through thoroughly planned activities that encourage reflections and discussions.

The next section of the post-survey included twelve statements on a six-point Likert scale which participants had to rate from strongly disagree to strongly agree. The first statement, also included in the pre-survey discussed above, was purposely chosen to investigate whether students’ attitudes towards the use of technology in the classroom changed after the VR experience. The results show that while the vast majority of participants (n=18, 95%) believe that technology is useful in the classroom (see table 2), after the VR sessions took place one participant slightly disagreed with such statement although in the pre-survey he or she agreed. Thus, it is possible that the participant did not believe in the usefulness of VR for educational purposes and to enhance cultural awareness.

Other statements investigated how the viewings impacted learners’ understanding of the target culture as well as their motivation to travel to Italy. Slightly more than half (n=10, 52%) of
the participants reported that they learned more about the Italian culture by watching the VR videos, and the majority of them (n=17, 89%) also believed that such experience was useful to understand more about Italy. Almost all the participants (95%, n=18) affirmed that virtually experiencing Italian places increased their motivation to travel to Italy. However, surprisingly some of the participants (n=12, 63%) believed that the VR experience was more fun than educational. Consequently, it appears that although participants had positive attitudes towards VR, felt as they learned more about the target culture, and such tool increased their motivation to travel to the target country, some of them perceived such technology as an entreating tool more than an educational one.

More than half (64%, n=12) stated that they felt present in the environments they viewed in 360 degrees and three dimensions with Google Cardboard, and 74% (n=14) of the participants would like to regularly use VR in their own Italian classes. The majority of them (n=16, 84%) also could also see a potential use of VR in other courses they are taking. Last, 68% (n=13) of the participants expressed a preference towards VR compared to the traditional language textbook. Overall, participants’ responses show that VR is a technology tool positively perceived by language learners who desire to use it in the language classroom as well as in other courses.

Although VR cannot entirely substitute the traditional language textbook, some specific topics, such as the target culture, can be further explored through the use of VR and Google Cardboard to support students’ learning especially since learners stated that they prefer VR to the usual textbook.

Table 2
Post-Survey Statements on a 6-Point Likert Scale

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Slightly disagree</th>
<th>Slightly agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Using technology in the classroom is useful.</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>5%</td>
<td>1</td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>By watching the videos I did not learn much about Italian culture.</td>
<td>26%</td>
<td>5</td>
<td>21%</td>
<td>4</td>
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<td>1</td>
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<tr>
<td>I did not feel present in the environments I watched.</td>
<td>32%</td>
<td>6</td>
<td>16%</td>
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<tr>
<td>Seeing videos in 360 degrees and virtually experiencing Italian places increases my motivation to travel to Italy.</td>
<td>0%</td>
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<tr>
<td>I am not interested in learning about Italian culture.</td>
<td>63%</td>
<td>12</td>
<td>0%</td>
<td>0</td>
<td>11%</td>
<td>2</td>
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<tr>
<td>I am interested in learning more about Google Cardboard.</td>
<td>0%</td>
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<td>21%</td>
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<tr>
<td>The VR experience was useful to understand more about Italy.</td>
<td>0%</td>
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<tr>
<td>The VR experience was more fun than</td>
<td>16%</td>
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<td>Question</td>
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<tr>
<td>I would like to regularly use VR in my Italian class to learn about Italy.</td>
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<td>10%</td>
<td>15%</td>
<td>20%</td>
<td>25%</td>
<td>30%</td>
</tr>
<tr>
<td>I prefer learning about the Italian culture through immersive VR videos instead of printed images in the textbook.</td>
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<td>2%</td>
<td>5%</td>
<td>10%</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>I would prefer to learn more about these places from a book or film, not in a 360 immersive way.</td>
<td>32%</td>
<td>6%</td>
<td>5%</td>
<td>10%</td>
<td>15%</td>
<td>20%</td>
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<tr>
<td>I think VR could also be used in other classes that I am taking.</td>
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<td>2%</td>
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<td>5%</td>
<td>10%</td>
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</tbody>
</table>

**Focus group interview**

During the focus group interview participants freely expressed themselves in regard to the VR viewings and shared attitudes, beliefs and concerns in relation to the new technology. One participant expected to see popular Italian cities (e.g., Rome and Florence) and believed that in such cause it would have been a more interesting experience; nonetheless, another participant
who had visited less-known places in Italy explained that it was great to see an ordinary town because, as he argued, “that is how most Italian cities are and the language textbook mainly focuses on touristic places, while leaving out minor cities”. As a matter of fact, the researchers’ decision to use VR videos depicting a less-popular town was driven by the desire to expose language learners to ordinary environments that are relevant to the Italian culture but often excluded from the language textbook.

A participant was impressed by the individuals in the VR videos because “you see strangers walking by in the VR experience and it makes you feel like you are actually in the place because you actually see normal people walking and doing their everyday stuff”. The architecture was also noticed by several participants and it was recognized as unique to the explored sites and different from participants’ own hometowns. One participant was intrigued by how people interacted with the environment, in her own words: “one of the reasons of learning Italian for me is that I don't want to stand like a tourist, but I would like to know kind of roughly how people act in the streets”. Interestingly, as noticed by many, the VR viewings allowed language learners to feel present and immersed in the foreign culture, giving the impression to be observers in a specific setting. Since during the VR experience it was not possible to move forward or backward within the video, one participant suggested to record future videos with a camera placed on a moving vehicle so that the user is not just standing in a place and observing the surroundings, but he or she could actually virtually move along and see various dynamic aspects of the environment. Similarly to the results in the post-survey, in the focus group interview it emerged that students prefer to use VR and Google Cardboard to the traditional textbook in the language classroom because it gives a sense of reality and authenticity. According to one participant, images in the textbook could be “staged” or in another words,
purposely created to be photographed and used in pedagogical materials. Instead, recording VR videos in authentic environments in the target country and using them in the language classroom allows students to be immersed in virtual settings that are real and genuine, and can be explored in various directions and in 3-D.

CONCLUSIONS

The present study aimed to investigate language learners’ attitudes and perceptions towards the implementation of VR in the educational setting. Participants’ beliefs about cultural learning through the use of VR technology were also examined. Exploring motivations and beliefs through lenses of immersion and ELT has shown correlations to learner attitudes and their feelings of presence while also demonstrating an increase in their metacognitive awareness of their own learning. After the viewings occurred, participants’ felt that the experience was useful to them since it supported their understanding of Italy, the target culture, and cultural awareness. Generally, VR was positively perceived and it can have a place in the classroom setting. Although some participants were concerned by the lack of interaction, or the possibility of getting caught up with the technology, it is important to state that new technologies must be carefully considered when utilized for pedagogical purposes. While it is true that the selected VR videos and Google Cardboard do not allow for direct interaction with the environment, such technologies can support students learning by providing authentic and contextualized environments, otherwise inaccessible. Future studies will need to examine more closely the relationship between learner attitudes, immersion, and precise levels of cultural awareness. While awareness has a variety of definitions and interpretations, a commonality has been found that can provide valuable insight into the use of VR HMDs to enhance cultural awareness, and
learner attitudes demonstrate a willingness to use VR in and out of the classroom to facilitate their own learning and development of cultural awareness.
WORKS CITED


