Fostering Cultural Awareness Through Virtual Reality in the Language Classroom

Margherita Berti
University of Arizona, berti@email.arizona.edu
Overview

- Background
  - Virtual reality
  - Theoretical frameworks
    - Experiential learning
    - Cultural awareness
- The study
  - Research questions
  - Data collection
  - Results
- Strategies and pedagogical implications
- Future directions
“A computer-generated display that allows or compels the user (or users) to have a sense of being present in an environment other than the one they are actually in” (Schroeder, 1996, p. 25)

Warburton (2009):
- Visualization and contextualization of inaccessible content
- Exposure to authentic content
- Simulation
## Levels of Immersion

<table>
<thead>
<tr>
<th>Level of Immersion</th>
<th>Device(s)</th>
<th>Surrounding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Numerous signals indicating the presence of device(s) in the physical world (e.g., use of a joystick to control the virtual environment).</td>
<td>Computer monitor presentation with limited field of view.</td>
</tr>
<tr>
<td>Moderate</td>
<td>Some signals indicating the presence of device(s) in the physical world (e.g., noise from a computer fan, weight and movement restrictions from wearing a safety harness).</td>
<td>Large-screen projection with extended field of view.</td>
</tr>
<tr>
<td>High</td>
<td>Limited signals indicating the presence of device(s) in the physical world (e.g., the weight of an head mounted device).</td>
<td>Head-mounted device or surround projection.</td>
</tr>
</tbody>
</table>

Table adapted from Miller and Bugnariu (2016)
The perception of being physically present in a nonphysical world, created by surrounding the user of the VR system with images, sounds or other stimuli that provide a very absorbing environment.

Spatial immersion occurs when a player feels the simulated world is perceptually convincing, it looks “authentic” and “real” and feels that he or she actually is there (Freina & Ott, 2015)
Virtual Reality Today: Widespread and Affordable

- **Oculus Go**: $199
- **VeeR Oasis**: $34
- **Google Cardboard**: $15

**Inclusion**

**Affordability**

**Time**
Current VR Technologies for Language Learning

McGraw-Hill: “Practice Spanish: Study Abroad”
Mondly VR
Gamified experiences
Dynamic Spanish: Learn Spanish in 8K 3D Virtual Reality
Theoretical Framework: Experiential Learning

Experiential learning is the process of “learning by doing”. This type of learning consists of being immersed in an experience and then reflecting on it afterwards.

- ELT (Kolb, 1984)
1. **Meaningful and relevant activities**: the experience must be meaningful and relevant to the learner (why are we doing this?).

2. **Reflection**: learners should reflect on their own learning to gain valuable insights about one's self and others.

3. **Emotional investment**: learners should desire to engage with the experience and not just do it because they feel they have to.

---

**Theoretical Framework: Experiential Learning**

- Experiential learning (Chapmen, McPhee, & Proudman 1992)
The introduction of the Standards Movement in the 1990s influenced the role of culture in language education motivating instructors to include culture in the language curriculum.

In language textbooks the target culture is frequently presented in a static manner without giving opportunities to explore and engage with the many dimensions of that culture (McConachy & Hata, 2013).
Defining Cultural Awareness

• Awareness of the culturally-induced behavior of others (Tomalin & Stempleski, 1993)

• Ability to evaluate critically and on the basis of explicit criteria, perspectives, practices and products in our own and other cultures and countries (Byram, 1997)

“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, 1971; Byram, 2007; Schulz, 2007)
The Gap in the Research

- Lack of studies investigating VR for language education

  - 2004 - 2013
  - 29 articles published in CALL (LLT, CALICO,CALL, ReCALL) journals were related to VR
  - only 3 studies looked at cultural awareness
Research Questions

- What are L2 Italian learners’ attitudes towards the implementation of VR in the educational setting?

- How does VR technology foster L2 Italian learners’ cultural awareness?
Participants and Instruments

- 14 undergraduate students enrolled in beginner and intermediate Italian courses at a large university in the United States
- Out-of-class activity

- Four 360° VR videos recorded in Italy in Florence, Modena, Bergamo and Milan, representing Italian environments
- Google Cardboard
- Smartphones and the YouTube app
- Headphones
VR Videos

- A street in Florence [http://goo.gl/1njU8c](http://goo.gl/1njU8c)
- A bakery in Bergamo [http://goo.gl/DxYwRg](http://goo.gl/DxYwRg)
- A plaza in Milan [http://goo.gl/yagYNb](http://goo.gl/yagYNb)
1. Pre-survey → attitudes and experience with technology for cultural learning in the classroom, previous experience of VR

2. Written task 1 → What do you expect to see? Describe colors, sounds, materials, people, the environment in general.

   Viewing

   Written task 2 → Did you experience what you expected to see? How is it similar and/or different from your own hometown?

   Teacher-guided discussion

3. Post-survey → advantages and concerns of VR, comparisons with current pedagogical materials used in the classroom

4. Focus group interview***
Technology tools used in past and current language courses:

- Google images
- YouTube videos
- Slideshows
- Projector
- RadioItalia
- McGrawHill and Pearson online platforms

Results: Pre-survey

<table>
<thead>
<tr>
<th>Have you used VR before?</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

n=5, gaming
n=2, out-of-class activity
n=1, education*
How have you explored the Italian culture inside the classroom? For example, from readings in the textbook, through YouTube videos, images, etc.

- Readings
- Teacher’s explanations
- Videos
- Images
- By being in Italy

→ No previous experience with VR for cultural awareness
<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Slightly agree</th>
<th>Slightly disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I find technology a distraction in the classroom.</td>
<td>16%</td>
<td>42%</td>
<td>42%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I use technology frequently for my studies.</td>
<td>42%</td>
<td>34%</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>I think technology enhances language learning.</td>
<td></td>
<td></td>
<td>70%</td>
<td>22%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Technology in the classroom is enjoyable and fun.</td>
<td></td>
<td></td>
<td>77%</td>
<td>15%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Using technology in the classroom is useful.</td>
<td></td>
<td></td>
<td>50%</td>
<td>42%</td>
<td>8%</td>
<td></td>
</tr>
</tbody>
</table>
Results: Pre-survey

- I plan to study or travel to Italy next year.
  - Strongly agree: 50%
  - Agree: 14%
  - Slightly agree: 20%
  - Slightly disagree: 8%
  - Disagree: 8%

- I am familiar with the Italian culture.
  - Strongly agree: 16%
  - Agree: 16%
  - Slightly agree: 36%
  - Slightly disagree: 24%
  - Disagree: 8%

- Studying Italian culture is important to me.
  - Strongly agree: 63%
  - Agree: 14%
  - Slightly agree: 23%

- I am familiar with Google Cardboard.
  - Strongly agree: 21%
  - Agree: 8%
  - Slightly agree: 8%
  - Slightly disagree: 21%
  - Disagree: 42%
What aspects of the virtual reality experience were most memorable to you?

• The 360 degree viewpoint and having the freedom to look around!
• The fact that you can almost feel like you are in the place presented.
• Getting to see all the scenery and people of Italy

How does the virtual reality experiences compare with classroom experiences you have had, for example learning with a textbook or from a teacher-led presentation?

• This really brought to life what my professor has been exposing to me. It’s one thing to hear about it and see a couple pictures but to be immersed is an entirely different thing.
• I like that you get to focus on whichever details catch your attention, unlike a regular presentation where everything is filtered through your teacher’s point of view.
• I thought it was really cool. But it made me a little motion sick so I’m ok with just looking at the pictures.
Results: Post-survey

What are your concerns, if any, about using virtual reality in the classroom?

- People falling over in chairs because they aren’t paying attention to their surroundings.
- My concern is that it might become too distracting at times. If used properly though, it would be a powerful learning tool.
- Headaches.

Do you see any benefits and/or advantages about using virtual reality and Google Cardboard inside your language classroom? Please explain, why you see or not see such benefits and/or advantages.

- Yes, it gives a more accurate depiction of Italy then textbooks.
- It would be a great idea. With the students getting closer to the culture it will make them more excited about learning the language and the culture.
- I see major benefits for learners like myself. I am a combo of a visual learner and a ‘do-er’. I have to do something to understand it which is why sports and hands on learning comes so easily to me. Being able to “go” to Italy in the classroom and experience what I am leaning would have major benefits on myself as I imagine many others.
Results: Post-survey

- By watching the videos I did not learn much about Italian culture.
  - Strongly agree: 7%
  - Agree: 14%
  - Slightly agree: 22%
  - Slightly disagree: 57%

- I am interested in learning more about Google Cardboard.
  - Strongly agree: 35%
  - Agree: 14%
  - Slightly agree: 30%
  - Slightly disagree: 7%
  - Disagree: 14%

- I would like to regularly use virtual reality in my Italian class to learn about Italy.
  - Strongly agree: 44%
  - Agree: 21%
  - Slightly agree: 28%
  - Slightly disagree: 7%

- I would prefer to learn more about these places from a book or film, not in a 360 immersive way.
  - Strongly agree: 8%
  - Agree: 21%
  - Slightly agree: 21%
  - Slightly disagree: 50%

- I am not interested in learning about Italian culture.
  - Strongly agree: 7%
  - Agree: 93%

- Using technology in the classroom is useful.
  - Strongly agree: 79%
  - Agree: 7%
  - Slightly agree: 7%
  - Slightly disagree: 7%
  - Disagree: 7%
The virtual reality experience was educational for me.  

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Slightly agree</th>
<th>Slightly disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>35%</td>
<td>35%</td>
<td>23%</td>
<td>7%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I prefer learning about the Italian culture through immersive virtual reality videos instead of printed images in the textbook.  

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Slightly agree</th>
<th>Slightly disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>65%</td>
<td>7%</td>
<td>7%</td>
<td>14%</td>
<td>7%</td>
<td></td>
</tr>
</tbody>
</table>

I felt immersed in the experience.  

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Slightly agree</th>
<th>Slightly disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>28%</td>
<td>14%</td>
<td>8%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The virtual reality experience was fun.  

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Slightly agree</th>
<th>Slightly disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>78%</td>
<td>15%</td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Seeing videos in 360 degrees and virtually experiencing Italian places increases my motivation to travel to Italy.  

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Slightly agree</th>
<th>Slightly disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>68%</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
<td></td>
</tr>
</tbody>
</table>

The virtual reality experience was useful to understanding more about Italy.  

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Slightly agree</th>
<th>Slightly disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>57%</td>
<td>14%</td>
<td>29%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. What do you expect to see? Using your previous background knowledge, describe colors, materials, sounds, people, the environment in general, etc. that you expect to see.

Buildings around the town. Art around the city. The way people interact with each other, different music throughout the town. Shops/restaurants around the town. The culture of the city.

2. Is what you have experienced in virtual reality exactly what you expected? How so? How is the environment different or similar to your own hometown/United States? Provide concrete examples.

Not exactly. I was expecting to walk through a larger city. But all of the shops/restaurants were what I had imagined. I didn’t see as much art as I thought but all of the old historic buildings were cool.
1. What do you expect to see? Using your previous background knowledge, describe colors, materials, sounds, people, the environment in general, etc. that you expect to see.

- A lot of the color “Red”
- Some high pitched beautiful singing
- A raised stage

2. Is what you have experienced in virtual reality exactly what you expected? How so? How is the environment different or similar to your own hometown/United States? Provide concrete examples.

The ceilings were a lot higher than I expected. The colors were much more calm and mellow. This room was able to seat a lot more people than I was expecting. The audience was raised and the stage was lowered.
Results: Written Tasks – *Bakery in Bergamo*

1. What do you expect to see? Using your previous background knowledge, describe colors, materials, sounds, people, the environment in general, etc. that you expect to see.

- Cookies
- Cakes
- Bread
- Small building
- Old style
- Pizza

2. Is what you have experienced in virtual reality exactly what you expected? How so? How is the environment different or similar to your own hometown/United States? Provide concrete examples.

*I didn’t see pastries, but there was a lot of pizza. The building was larger than I imagined too. It was updated/modern display, but the architecture is still very historical.*
1. What do you expect to see? Using your previous background knowledge, describe colors, materials, sounds, people, the environment in general, etc. that you expect to see.

lots of shops with presents, lots of people shopping. Cold & decorated with Christmas decorations.

2. Is what you have experienced in virtual reality exactly what you expected? How so? How is the environment different or similar to your own hometown/United States? Provide concrete examples.

I expected more decorations on the buildings around the plaza. There were A LOT of birds. It seemed cold cause everyone was wearing winter coats. There weren't a lot of shops.
Key Findings: Surveys

- Participants had not had previous experiences with VR to foster cultural awareness in the educational context.
- Most of the participants find technology useful and use it frequently in their studies.
- Most of the participants also stated that studying the culture is important, and only 32% felt familiar with the Italian culture.  
  → General positive attitudes towards technology for educational purposes

- Through the use of VR students felt motivated and “closer” to the target culture.
- 92% would like to learn more about Italy in 360-degree immersive way and the experience itself was useful to learn more about the target country.
- Participants were concerned about feeling dizzy or getting distracted by the technology, with the risk of not gaining knowledge.

  → Students had positive attitudes towards VR; however the teacher must plan for activities that are meaningful and support learning
Key Findings: Cultural Awareness

The written tasks revealed that with VR students noticed cultural facets that they might not notice in the traditional textbook or through other resources.

- how narrow a street might be
- how people interact in a given environment
- the size of a building
- the fact that a bakery in Italy usually does not sell pastries

Using VR *just to use the latest technology* is not enough! Teachers need to facilitate learning through open discussions and by explaining cultural facets that might not be understood (e.g., *why does the bakery not sell pastries?*)
Strategies and pedagogical implications

• VR can be used in the educational setting to increase students’ motivation and engagement (*ELT: emotional investment*)

• VR offers students additional cultural layers that are not found or seen in the traditional textbooks, videos, or images

• VR allows users to immerse themselves in the culture through a technology they enjoy (*ELT, Kolb, 1984*)

• VR might make people feel nauseated → training/evolving technology

• Be intentional on how VR is being used → emphasize content rather than technology
VR vs Textbook: Galleria Vittorio Emanuele, Milan

http://goo.gl/MYXkkj
• Implementation of VR within the language classroom to supplement cultural sections in the textbook over a longer period of time
• Larger number of participants
• Use VR videos to show cultural differences within the same country (e.g., espresso in the northern and southern part of Italy)
• Improved VR hardware
Thank you!

Margherita Berti  @maggieberti  
University of Arizona, berti@email.arizona.edu

Thanks to my colleagues Stefano Maranzana and Jacob Monzingo for contributing to the construction of the data collection materials. 
Thanks to Dr. Warner for her support and feedback.


