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Virtual Reality as a Learning Environment in Iranian EFL Context: Personal, Technical, and Pedagogical

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Abstract

The purpose of this study was to introduce issues and limitations regarding VE implementation in real Iranian classroom context. VE surveyed in three levels of personal, technological and pedagogical issues. A five-point Likert scale questionnaire was used to collect data from 36 male and female EFL teachers at different universities and language institutes in Iran. In the qualitative phase, a semi-structured interview was carried out to explore the EFL teachers' perceptions toward using VE tools in their classes. The analysis of the data highlighted that Iranian teachers were enthusiastic about VE as an instruction tool in their classrooms and also had a positive attitude toward it, they also felt an obvious fear in dealing with the new technologies, especially VE tools.

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1. Introduction

As the time is traveling far into the twenty first century, computer-based training is gaining higher rates of popularity in the community of educators (Guinn & Montoya, 1998). Meanwhile, the realm of language learning has

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been no an exception. In fact, with the emergence of diverse fields such Computer-Assisted Language Learning (CALL), Mobile-Assisted Language Learning (MALL), Technology-Enhanced Language Learning (TELL), and Computer Mediated Communication (CMC), it goes without saying that applied linguistics and foreign/second language teaching were the areas that warmly welcomed the application of technology.

Hislope (2008) proposed that these days, language learners are tightly attached to technology, and in classroom settings, lecturers and teachers have the potential to facilitate learning with many resources that technology puts at their disposal. He counts videos and audio materials such as podcasts, digital recording of learners' voice, video taping, and clips on YouTube as instances of technology application in learning settings. Knutzen and Kennedy (2012) exemplified some media-savvy methods such as typed instant message (IM) chats and Skype web cam interaction to reflect the use of CALL. Nevertheless, there are numerous other technological opportunities out there to be employed to engineer a more successful and resourceful FLA/SLA setting. Weblogs, forums, webinars, social networks such as Facebook and Twitter, different types of software, smart boards, and digital journals are other examples of TELL tools. Of all the tools listed here, one of the most complicated, yet practical, ones which has recently come to the spotlight of attention in TELF circles is virtual reality (VR) (Kastoudi 2012).

2. Theoretical Framework

According to Burdia and Coiffet (2003), the term virtual reality was first coin in 1988 by a computer programmer called Jarod Lanier. In his perspective, the concept of virtual reality referred to “a combination of high-speed computers, advanced programming techniques, and interactive devices designed to make computer users feel they have stepped into another world, a world constructed of computer data” (Grady, 2003, p. xi).

Singhal and Zyda (1999) define VR as a software paradigm that provides the user/users with a chance to explore and interact with a computer generated environment. This environment contains either static or dynamic objects or both, and might be integrated with sound and movie textures. To build up on this, Hur (2001) adds that this environment comes in a three-dimensional setting which is far less confusing than the two-dimensional world of paper. Besides, Weiss & Kessel (1998) mentioned that this virtual world is comparable to that of the real one. In their view, VR is a simulated version of the real world.

Similarly, Guinn & Montoya (1998) propose that virtual reality represents a culmination of technological advances in real-time graphics hardware and software that is capable of the generating high-quality, picture-realistic images in real time. They, also, mention that these computer advances could go as far as performing recognize voice, face, and even movements. Just as Singhal and Zyda (1999), Guinn & Montoya (1998) emphasize the element of interaction –visual, haptic, sound, speech, and olfactory – in VR between humans and computers, or two or more humans in the multi-sensorial world, resembling how humans interact with real environments.

Zhang, Yu, and Smith (2006) count several key features for virtual reality:

1. It contains furniture and virtual objects that real people can manipulate and interact with
2. The virtual characters are able to perform different types of social skills and actions
3. Multimodal interaction between virtual and real people takes place in diverse forms such as speaking, eye contact, pointing at, gazing, and moving virtual objects.
4. Data recording facilities in virtual reality monitors and records participants' actions and movements

Depending on the design and the function of the environment, virtual reality could be classified into three categories. First, VR could either be static or dynamic. The former comprises fixed objects that do not have the element of movement (e.g. buildings), whereas in the latter, the objects have the capability shifting positions as the time goes by (e.g. a pigeon that is flying). Second, the dynamic virtual worlds could either be interactive or non-interactive. In interactive form, the user has the luxury of interacting with objects and changing their states. Sometimes, the user is even allowed to modify the virtual scene by creating or destroying objects. But in the non-interactive mode, the user is just the observer and follower. Third, interactive virtual environments might be single user or multi user. In the former case, each user can merely explore the environment on his/her own; yet in the latter, the user could establish interactions with other users, as well. (Buraga, Tanasa, & Brut, 2002)

A well-designed virtual reality environment has three important capabilities: navigation, realistic manipulation, and immersion (Bell, 2008; Calongne, 2008; Dalgarno & Lee, 2010; Dickey, 2005; Dillenbourg et al., 2002; Eschenbrenner et al., 2008; Girvan & Savage, 2010; Kallonis & Sampson, 2010). Navigation is simply the capability of movement in the virtual environment, and manipulation, as Yahya (2007) puts it, is the capability of

interaction and making mutual communication. The last category, however, is more profound than the other two.

Immersion is a feeling inspired in participants in the VR environment, via which they feel as though they are in the real world, and they are actually doing what they are doing in the virtual world (Burdea and Coiffet, 2003; Sherman and Craig, 2003). The feeling of immersion provides the main stimuli that trigger novel modes of learning which are absent in traditional classroom settings. This helps learners obtain a deeper version of real-life simulation (Garcia-Ruiz, Edwards, El-Seoud, & Aquino-Santos, 2008).

Virtual reality has a large number of pedagogical and didactic merits (Kastoudi, 2012). The main upside of virtual reality, as discussed above, is that its immersion and modality provide stimuli that leads to more profound learning according to stimuli and constructionist theories (Dede, Salzman, Loftin, & Ash, 2000). Moreover, virtual reality solves the input provision problems that Watson and Oliviera (1998) consider traditional classroom settings to have. Learners get to experience any situation in which they intend to do language practice in the VR, with no restrictions, and they could be exposed to authentic language in the authentic context. In addition, Yahya (2007) proved that VR enhances learning by putting the learners in crises and imposing the stress that real critical situation of L2 use imposes on them.

VR has turned into a popular research topic with the researchers. Kastoudi (2012) investigated L2 vocabulary acquisition through interaction, negotiation of meaning and noticing in three-dimensional environment. He discovered that there was a great amount of output and meaningful interaction, as well as negotiation of meaning and negative feedback in the VR. Also, small but substantial quantities of incidental learning of vocabulary occurred in his study. Adding to this, he highlighted that owing to the integration the written chat and the virtual environment, noticing took place at a remarkable ratio.

Garcia-Ruiz, Edwards, El-Seoud, & Aquino-Santos (2008) investigated the use of collaborative (or multi-user) virtual reality environment (CVRE) on mobile phones. Multi-User Virtual World (MUVW) was delved into by Ibanez, Garcia, Galan, Maroto, Morillo and Kloos (2011). Hundsberger (2009), and Hislope (2008) looked into a VR software called Second Life and its impact on language learning. Peterson (2008) worked on another VR software called Active Worlds. Zhang, Yu, and Smith (2006) set up an Interactive Virtual Reality Platform to study social interactions in VR. Noh, Lee, Lee, and Lee (2011) worked on POstech iMmersive English studY (POMY), which is a conversational virtual environment for language learning designed to improve English in Korean speakers. Other platforms have been designed in EU consortium such as the NIFLAR (Networked Interaction in Foreign Language Acquisition and Research), the AVALON (Access to Virtual and Access Learning live ONline), and the "Talk with Me" project. Overall, a comparison of learning that takes place in traditional classroom settings and that of virtual reality environment in all these studies depicts that VR settings

- ascend retention
- diminish the duration of acquisition
- elevate access to training
- boost conceptual and procedural learning
- decrease errors in performing skills, specifically in complex tasks (Guinn & Montoya, 1998).

3. Methodology

Despite the outstanding popularity of VR as a research topic in all the corners of the globe, and thousands of hour of man power and intellectual labor put into it in various research centers, virtual reality is a fairly novel concept to the Iranian community of TEFL and applied linguistics, and little effort has been put into shedding lights on the darks aspects of this learning area in the Iranian context. That is why this study focuses mainly on VR in Iranian EFL context.

3.1. Research Questions

The main objective of this study was to find out the attitude and the feeling of Iranian EFL teachers – school, university and private English institute teachers – regarding virtual reality, and its impacts on Iranian language learning community in three levels of personal attitudes, technical issues, and pedagogical aspects. Thus, to investigate these matters empirically, the following research questions were formulated.

- To what extent do Iranian EFL teacher, personally, tend to apply VR and integrate their English teaching with VR?
- In Iranian EFL teachers' perspectives, what technical issues are plausible to happen when implementing VR in Iranian EFL settings?
- In Iranian EFL teachers' view, in what aspects can Iranian EFL learners gain benefit from the integration of VR with their learning?

3.2. Participants

To discover Iranian EFL teachers' thoughts on the above-mentioned matters, 36 teachers (22 male, and 14 female) were chosen from among school, university and private English institute teachers on a random basis.

3.3. Instruments

Two different instruments were utilized to collect data in this qualitative research. The first one was a 15-item questionnaire, designed by the researchers. The validity of the questionnaire was sought by asking for the opinion of two experienced researchers in the field of VR and their comments were applied. The reliability of the questionnaire was, also, measured by Chronbach Alph to be 0.81, which means was bigger than 0.7, and meant it was reliable. The participants were supposed to answer the questions based on a five-point Likert scale: 1= Strongly Disagree, 2= Partially Disagree, 3= No Idea, 4= Partially Agree, and 5= Strongly Agree.

After doing the questionnaire, each participant sat in an interview for half an hour, and shared their opinions regarding diverse facets of VR in Iranian context. They were asked open-ended questions, whose validity were sought by asking for the opinion of two experienced researchers in the field of VR. Nevertheless, the researchers avoided asking too many questions and tried to listen to teachers who were freely expressing their thoughts.

Of course, it should not be left unmentioned that both the questionnaire and the interviews were held in Persian to remove the language barrier and put the ideas in the spotlight.

4. Results

The raw data collected from participants underwent Skewness and Kurtosis analysis to investigate the normality of distribution. As depicted in table 1, the Skewness and kurtosis for all three sections of the questionnaire fall well within -1.95 and $+1.95$, which means the data is normally distributed.

The first five questions of the questionnaire investigated teachers' personal attitude toward using VR in their classes. It asked them whether they believe in VR, enjoy using it, and the like. As shown in table 1, the average mean of the teachers' responses was 19.78 out of 25, which very well means that Iranian teachers have positive attitudes regarding the use of VR.

The second five questions attempted to find out whether teachers thought Iranian EFL community were technically ready for VR implementation. Internet, hardware, and future equipment's were the items incorporated in this section. As it is signified in table 1, the average mean of teachers' responses was merely 7.89 out of 25, which indicates teachers are not technically satisfied with the equipment's available on the path to implement VR, and they have not got their hopes up about future technical facilitation of EFL classes either.

Finally, the last five questions of the questionnaire focused on the pedagogical aspects of VR. Teachers were asked to what extent they found VR useful in term of education and practicality. Table 1 demonstrates the average mean of 20.06 out of 25, which conveys Iranian EFL teachers look up to VR pedagogically. They believe Iranian learners could educationally gain benefit from VR.

Table 1. Descriptive Statistics of the Questionnaire's Data Analysis

| | N | Range | Min | Max | Mean | Std. Deviation | Variance | Skewness Statistic | Std. Error | Kurtosis Statistic | Std. Error |
|--------------------|----|-------|-----|-----|-------|----------------|----------|--------------------|------------|--------------------|------------|
| Personal Attitude | 36 | 15 | 10 | 25 | 19.78 | 3.921 | 15.378 | -.582 | .393 | -.302 | .768 |
| Technical Attitude | 36 | 7 | 5 | 12 | 7.89 | 1.968 | 3.873 | .259 | .393 | -.591 | .768 |

| | | | | | | | | | | | |
|----------------------|----|----|----|----|-----------|-------|--------|-------|------|-------|------|
| Pedagogical Attitude | 36 | 11 | 14 | 25 | 20.0 6 | 3.198 | 10.225 | -.114 | .393 | -.813 | .768 |
|----------------------|----|----|----|----|-----------|-------|--------|-------|------|-------|------|

In the interview that followed the questionnaire, as mentioned above, teachers were given the time and the chance to express their views about different aspects of VR, and integrating it with their classroom teaching strategies. Regarding their individual take of VR, and how they viewed this technology-based system of language learning, almost all the teachers, 33 out of 36, mentioned that the application of VR would add fun and spice to the language learning process. Some other points the teachers mentioned as to their personal attitude toward VR are summarized in table 2.

Table 2. Teachers' Personal Attitudes on VR in Iranian EFL Context

| Points of View | No. of Teachers |
|---|-----------------|
| VR would add fun and spice to the learning process. | 36 out of 36 |
| VR is attractive and would motivate the learners. | 30 out of 36 |
| If we have access to VR, we do not have to put a lot of effort to teach some areas of the language. VR would make our job much easier. | 26 out of 36 |
| VR could be an ideal tool for assigning homework. VR would be the homework which is not demanding and not boring; hence the learners would do it. | 24 out of 36 |
| VR application would increase the exposure hours of the learners to the language. | 23 out of 36 |
| VR is a realistic approach to learning. | 19 out of 36 |

In one word, Iranian EFL teachers staged very positive personal attitudes concerning VR. As far as the technical matters and equipment were concerned, teachers expressed their dissatisfaction with the current technological status of schools, universities and institutes. Lack of hard ware, and low speed of the Internet were their main concerns, as illustrated in table 3.

Table 3. Teachers' Technical Perspectives on VR in Iranian EFL Context

| Points of View | No. of Teachers |
|---|-----------------|
| EFL classes in Iran do not have enough equipment for the implementation of VR. | 36 out of 36 |
| Internet quality is not good enough for implementing multi-user VR settings. | 31 out of 36 |
| School/university/institute authorities are not willing to devote budget to provide VR infrastructures. | 28 out of 36 |
| Iranian learners are not willing to pay for VR as part of their language learning. | 26 out of 36 |
| Iranian learners do not have ample computer literacy to utilize VR. | 5 out of 36 |

Approximately all the teachers, 31 out of 32, held that VR provides the learners with authentic, and real-like situations to practice English. The rest of the educational views of the teachers on VR are summarized in table 4.

Table 4. Teachers' pedagogical Perspectives on VR in Iranian EFL Context

| Points of View | No. of Teachers |
|--|-----------------|
| VR puts learners in real-life situations where they can do real tasks. | 31 out of 36 |
| VR exposes learners to natural language. | 26 out of 36 |
| VR is the best source of function practice. | 25 out of 36 |
| VR can reduce learners' anxiety. | 21 out of 36 |
| VR would lead to deeper learning. | 18 out of 36 |

5. Conclusions and Discussion

The results of the data collected via the questionnaire and the interviews of this study indicate the existence of a huge gap between the mentality and actuality of Iranian EFL community regarding VR. On the one hand, the teachers possess very positive and promising attitudes toward VR, and they are willing to incorporate it into their classroom practices or even homework assignment; yet on the other hand, the hardware and other basic

infrastructures in Iranian EFL settings – schools, universities and institutes – are not anywhere near even the minimum that is required to implement VR. What makes this gap even worse is that teachers did not just like VR because it is something fancy and luxurious, but they liked it because they believed it was practical and learn some. As depicted in table 4, the majority of the teachers were aware of the VR advantages in learning, but complained that lack of equipment barred them from integrating VR with their instruction. This is really upsetting for Iranian teachers to know VR is a great tool, which is out there, feel good about it, be sure it would be a great asset, but not be able to use it due to technological backwardness.

This research, more than anything, outlines that mentally and scientifically, Iranian EFL community is quite ready to embrace VR as a magnificent tool of learning; nonetheless, technically, there is still a long way to go to prepare the infrastructures of VR implementation. The researchers suggest the following guidelines to pave and shorten the path of technological preparations for VR.

- The department of education as well as the department of higher education should allocate a portion of their annual fund to the equip schools and universities with the audio/visual/kinetic equipment that are necessary for the implementation of VR. Although it would take a fairly long time equip all schools and universities with VR equipment, we have to begin from somewhere after all.
- Authorities should require private English institutes to provide some VR equipment, even at the minimum level, so that all the learners have a chance to use them at some time.
- It would be a good idea to license language schools that focus mainly on the field of VR. They could even be allowed to demand higher tuitions due to the special VR facilities that they provide.
- National standard for building schools and universities should be tuned up, setting VR facilities as minimum requirements of language education equipment.

Overall, this study highlighted that Iranian teachers – at school, university and private institutes – were aware of the benefits of VR in language learning, and held a positive view toward it. But sadly, they are not the decision makers. The budget to provide basic equipment for VR application has to be allocated by managers and authorities, and they are the ones who are in the dark about VR. What could really help is holding panels and workshops to increase their awareness about the efficiency and adequacy of VR in language education.

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