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Evaluating Virtual Reality as Environment for Adults'Second Language Learning: A Literature Review

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Abstract: Linguistic environments have always been considered as an important factor in second language acquisition. According to Ortega (2009), "the five environmental ingredients that together contribute to (but do not guarantee) optimal L2 learning are: acculturated attitudes, comprehensible input, negotiated interaction, pushed output, and a capacity, natural or cultivated, to attend to the language code, not just the message".(p. 79)[1] Unfortunately, these ideal language learning conditions are not always readily available to SLLs. On the other hand, the rapid development and popularization of computer-assessed language teaching (CALL) and multimedia language environments have led to great attention in language learning in Virtual reality environments (VRE) in the past few years. Virtual reality (VR) is defined as a system designed to bring a simulated real-life experience, providing terrain and physical effects to give users an immersive feel. Because of its function, VR is being rapidly introduced by researchers and educational practitioners to promote a real, immersive learning environment that allows them to continually explore the possibilities and effects of its application in second language learning.

Keywords:Language Learning;Virtual Reality;Linguistic environments

In recent years, researchers have become increasingly interested in integrating language leaning in VRE. The purpose of this literature review is to better understand the role and effect of VRE on second language learning; it is also considered worthy to inquire the language learning tasks or courses implemented in the VRE, the particular effectiveness of VRE in second language area and the synthesized reasons behind the promising environment.

To clarify, the research questions of this study are:

(a) From the current research, what kinds of teaching and learning design were used and practiced in the instruction of the VRE?

(b) Aiming to the instructional designs mentioned in the recent researches, how effective are they according to improving the Second language learners (SLLs)' language learnings? Specifically, which areas or aspects?

(c) For the current courses or tasks designed based on VRE, what are the advantages and disadvantages?

This literature review provides an overview of findings from recent research on the second language learning and teaching in the VRE. The paper in organized into three sections to resonate the three research questions proposed above. First, section one provides a comprehensive overview of the instruction used in learning and teaching in VRE. Section two addresses the issue of the effectiveness of the second language learning under the condition of VR. Finally, the third section offers a concise analysis of the merits and demerits of VR as second language environment from the learners and teachers' perceptions, in order to integrate the factors of the effects of the VR as language learning platforms and the instruction designed for it.

1. Teaching Using Task-based Language Instruction in VR

In this section, I will introduce the instructional uses of VR as language teaching application in current studies, so as to give readers a general understanding of the characteristics and laws of its course design. According to the research, task-based activities as a main design of instructing the learning in VRE were widely used in the research .

As explained in the introduction, this review of research focuses on the virtual world as the kind of OSV, among which SL is the most frequently investigated platform for related research (Canto & Van Den Bergh, 2013; Chen, 2016; Deutschmann et al., 2009; Jee, 2014; Paterson, 2010; Paterson, 2012; Wang, Calandra, Hibbard & Mcdowell Lefaiver, 2012). As the most popular 3D virtual world on the market, SL provides an immersive and interactive environment. In SL, users can create and customize personal avatars. At the same time, a variety of virtual environments reflecting different functional themes, regions and national cultures can be created. In those different environments, users as avatars could walk or fly through the spaces or move between different virtual environments. In addition, multimodal communication functions are embedded in the virtual world. Users have the access to real-time text chat and

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audio communication through text and dialogue box.

The virtual world is hypothesized by researchers to have the potential to overcome the limitations of other locales (for example, real world, language classroom, video-communication) to provide a more convenient and immersive teaching environment. Based on such an immersive learning environment, the researchers were attracted to the feasibility of task-based language teaching (TBLT) to conduct the teaching procedures in their research. (Canto & Van Den Bergh, 2013; Deutschmann et al., 2009; Jee, 2014; Paterson, 2010; Paterson, 2012;). According to some researchers' views (Ellis, 2000; Skehan, 2003), in keeping with the theoretical foundation and the teaching-driven task design, the TBLT should be: meaning-focused, goal-oriented, outcome-evaluated, real-world-related, and problem-solving based.

The following three parts in this section address the issue of task-based instruction: the choice of the task-based instruction, comparison of other learning environments, and participant as SLLs alone or group with native language speakers.

1.1 The Choice of the Task-based Instruction

Based on the characteristics and requirements of the TBLT, a study examined and emphasized the impact of task-based instruction design on students' engagement. Deutschmann at al. (2009)'s discussion of task-based learning in SL openly acknowledges the validity of task-based instruction in SL.[2] Compared with the role-play activity, the meaning-oriented task design involves authentic and collaborative elements, which have a direct impact on learner participation and input. In Deutschmann at al.'s empirical study, Course One and Course Two are 2 groups of experimental comparisons. Both of the course goals are improving oral proficiency to communicate with professionals. For the task design, students in Course one incorporated "role-play scenarios," for example, introducing themselves to some influential academics. Students in Group two worked on authentic communication. The results show that the participation of the Course two is higher, because there was more authentic and cooperative communication in the second set of task design, while role-playing lacked engagement.

In order to facilitate readers and researchers to have a clearer understanding of the tasks used in previous research, the following parts will be classified and interpreted in terms of the tasks' topics and types of the learning tasks arranged in the research design.

1.1.1 The choice of tasks' topics.

The choice of the content or theme of the task is roughly divided into 3 aspects: daily life related (Canto and Van Den Bergh, 2013; Chen, 2016), culture related (Canto and Van Den Bergh, 2013; Chen, 2016), and academic related (Deutschmann et al., 2009; Paterson, 2010; Wang et al., 2012).

First, I will introduce the research using **the daily life and cultural related tasks**. Chen (2016)'s research design is based on a task-based syllabus that takes advantage of meaningful real-life tasks.[3] His research shows that using the SL function, adapting to the learner's culture/world knowledge and simulating real-life tasks can optimize the learner's virtual learning experience. In the VISLLANTIS (a virtual island in SL), there were 9 EFL adult learner as participants who performed various tasks in the SL to simulate the reality. There are tasks topics that were relevant to everyday life and cultural exchanges, such as ordering food,visiting a museum such as taking tour guide to a virtual place like their motherland in SL, The research conducted by Canto and Van Den Bergh (2013) measures the growth of verbal communication among language students.[4] They carried out the 5 tasks with the students participating in the virtual world, which included content related to daily life and cultural elements. For example, planning a holiday and reflecting on previous holiday experience.

Second, some of the research utilized **the academic related tasks**. Wang et al.' s study reports on the effects an experimental English as a Foreign Language (EFL) program in Second Life (SL) had on Chinese student EFL learning.[5] Participants were selected to join in the SL experimental group, while the others are in the control groups. The control group did not participate in complementary activities designed specifically for the SL group. And the activities in SL are based on the academic theme, including individual presentation, interview and group discussion. Paterson' s studies (2010) conducted a mixed method research study (case study) to evaluate the learners' participation pattern under the task-based course in SL.[6] Tasks were implemented for improving participation and communication in virtual world, including having acedemic conversation reading and demonstrating presentations. Learner-centered and task-related interactions occurred in the practice, which greatly stimulated the students' motivation for learning.

In the Deutschmann (2009) research project, students were assigned to SL-based courses with task-based guidance. To make the meeting more realistic, the study used a virtual lecture theatre in the SL. The content includes students performing presentations of their real-world research areas, and other participants and teachers ask questions, which are highly related to the academic theme in an authentic way.

1.1.2 The choice of tasks' types.

For the choice of task type, there are some categories mentioned explicitly: Jigsaw, decision-making, discussion tasks, presentation and opinion-exchange (as in the Table 1).

Table 1 *Classification of task types and corresponding literature*

Types of tasks	Articles includes the types of the tasks
Decision-making	Paterson (2012) Jee, (2014)

Discussion tasks	Jee, (2014)
Presentation	Deutschmann (2009): academic related; Paterson (2010) platform related; Paterson (2012)
Jigsaw	Jee (2014)
Opinion exchange	Paterson, 2012

As stated before, three types of tasks: jigsaw, decision-making, discussion tasks were used in Jee' s research (2014).[7] The study investigated the impact of different types of tasks on ESL students' negotiation of meaning in SL and how students used the affordance of SL. The results indicated that the decision tasks tended to lead to more negotiation of meaningful routines compared to the Jigsaw task. In addition, discussion tasks were less restrictive than jigsaw tasks and decision-making tasks, thereby enhancing the learners' use of avatars and freer language interaction.

In Peterson (2012)'s research, learner-centered tasks were designed to encourage learners' exploration of the SL environment and interaction with their peers in the virtual world.[8] In the study, there were three types of the tasks --- decision-making, opinion-exchange and presentation. Peterson (2012) argued that under the condition of VRE, participants collaborate and share information to achieve inter-subjectivity in order to complete the tasks effectively.

1.2 Comparison of Other Learning Environment

In addition to emphasizing its effectiveness through comparative studies of tasks and other curriculum design methods (Deutschmann et al. 2009), the researchers also focused on the comparison of communication environment under task guidance. Among them, face-to-face traditional classrooms (Canto & Van Den Bergh, 2013; Lan, 2014), video-communication (Canto & Van Den Bergh, 2013; Levak & Son, 2017) as contrastive environment of task-based design with virtual world as a platform were compared.

In Canto and Van Den Berg' s empirical study (2013), video-communication, face-to-face classroom and VR world as three different learning condition were examined. The researchers argued that learners' oral communicative competence increased more effectively in video-communication and VR group. For the details of the study, 36 participants were randomly assigned to three groups, which includes video-communication experimental group (VC), SL experimental group (SL) and classroom control group (C). For the VC and SL experimental group, language learners took part in hybrid tasks interacting with the native speakers. In terms of control group, all the students had no interaction with native speakers. After analyzing the quantitative data, the study drew the results that the oral communication competence of experimental group improved more obviously than the control group.

Lan (2014) further investigate the effect of SL on Chinese language learners' oral output in contrast with language learning in classroom.[9] Lan (2014) argue that learners' oral output, oral language performance and attitude towards Mandarin was helped under the condition of virtual world to achieve significant improvements. The researcher pointed out that the use of diverse teaching techniques (such as text chat) in the SL teaching environment guaranteed more language input than traditional classroom using of PowerPoint presentations. With regard to the linguistic output, communication in the realistic environment of SL was more effective and engaging than talking in regular classrooms.

Similarly, Levak and Son's mixed method research (2017) also looks at the effectiveness of SL as VRE.[10] In the study, Skype was studied as a computer-mediated communication (CMC) as a control group while the SL was the experimental group. In SL, learners performed language tasks in real and cultural virtual scenes. For example, students practiced "at the cafe" as a language topic in a virtual cafe. Beyond that, a virtual Zagreb that is very similar to the real Zagreb was created, in order to establish culturally connection with participants. For the Skype group, similar tasks activity were contained for participants. Statistically, participants' listening comprehension improved significantly in both the Skype and SL learning environments.

1.3 Participant as SLLs Alone or Group with Native Language Speakers

In addition to the SLLs involved in the virtual world, the other research focused on enabling SLLs to communicate with native peers (Canto & Van Den Bergh, 2013; Wang et al., 2012) for oral communication.

Canto and Van Den Berg's study (2013) examined the SLL'degree of oral level improvement in two experimental groups (video-communication/VC group and SL group) and one control group (traditional classroom). In the VC and SL groups, learners had the opportunity to interact with without native speakers, and their verbal communication skills improved more effectively. Wang et al. (2012)'s research also demonstrated the opportunity to create exchanges for language learners and native speakers in a VR platform in order to improve the level of spoken English of language learners. In the EFL learning program of the research (Wang at al., 2012), both the experimental SL group and the control group were assigned the same course with the required learning tasks and materials. However, the control group did not participate in complementary activities designed specifically for the SL experimental group.

2. The Effectiveness of Virtual Reality Environment for Language Learning

In this section, I will explore a set of research texts by a number of scholars who have examined or identified the effectiveness of the VRE. Much previous work on the effectiveness of the VRE for language improvement focused on the oral output, oral proficiency and interaction engagement. (Canto & Van Den Bergh, 2013; Lan, 2014; Peterson, 2012; Wang at al.2012). Then, a recent line of research work in the area of language performance focused on listening comprehension (Lan, Fang, Hsiao & Chen, 2018; Levak &

Son, 2017).

2.1 Oral Output and Performance

The study carried out by Peterson (2012) revealed the computer-based nature of interaction in SL promoted the production of oral output for SLLs. The analysis of the researchers pointed out that the collaborative communication, peer scaffolding, and feedback helped improve learners' communication skills. In addition, politeness and information exchange promoted interpersonal relationships and social cohesion, which in turn created mutually supportive relationships and expression environments. The study also confirmed that participants used their avatars in the interaction process, which enhanced the participation and entertainment of language learning.

Canto at al.'s study (2013) also acknowledged the oral communicative growth of the SLLs. Drawing on the Peterson (2012)'s study examining the interaction between SLLs, Canto at al. (2013) highlighted the interactivity involving native speakers and language learners. The results of the study noted that oral competence of participants in VR group achieved more effective improvement than the control classroom group's students without interaction with native peers.

Similarly, Lan (2014) claimed from the research that learning Mandarin in SL environment significantly improved the oral output of these students. In addition, the learners' oral performance and learning attitude towards Mandarin also improved significantly. In contrast to the traditional face-to-face teaching model, I found that both Canto at al. (2013) and Lan (2014) tested the superiority of VRE in stimulating spoken language output of language learners. However, in the former study, language learners had the opportunity to interact with native speakers, while the latter still mainly examined the SL communication environment in which only SLLs interacted with each other.

Furthermore, the SL English as Foreign language (EFL) program conducted in the Wang at al. (2012)'s research also showed promising effects on the ELLs' language abilities improvements, especially the oral communication abilities. According to the researchers, "the tests assess a student's ability to understand an English descriptive oral passage and retell it, as well as answer questions and provide explanations. The tests also assess a student's pronunciation" (p.950).[5] The results showed that the SL study group's total score from the pre-study test to the post-study test and the scores of several sub-components increased the most.

2.2 Listening Comprehension

Levak and Son (2017) believes that the applying task-based language activities in SL has a significant improvement in the listening level of language learning of the participants. Particularly, the quantitative data of the study provided information about the effectiveness and affordance of the techniques. Researchers discovered that participants in the lower language ability level group showed a greater degree of improvement in listening comprehension by participants of higher-level language ability.

Moreover, Lan at al. (2018) investigated the effectiveness of manipulating 3D avatars in the virtual world contributing to listening comprehension.[11] For the learning and listening comprehension of the motion language pattern, learning in the virtual world showed more obvious results than real-life Kinect training and paper-based learning. Besides, students with high or low scores in the SL group contributed significantly to the results, although the rate of progress was not significant from both levels.

3. Learner and Teacher's Perspectives

This section will extend how the researchers investigated the participants (including learners and teachers) in the VRE to better understand the reason or factors behind the effectiveness (Canto & Van Den Bergh, 2013; Lan, 2014; Levak, & Son, 2017; Melchor-Couto, 2017; Melchor-Couto, 2018; Peterson, 2012; Wang et al., 2012). By examining the participants' perceptions and attitudes toward the virtual learning environment, quantitative and qualitative research methods were used to gain a detailed understanding of the features and deficiencies of the virtual world from the perspective of the subjects (Wang et al., 2012; Peterson, 2012; Canto & Van Den Bergh, 2013; Lan, 2014; Levak, & Son, 2017). On the other hand, some empirical studies also objectively studied the influence of anxiety levels, autonomy, and self-efficacy of language learners in the virtual world on their language learning and communication (Melchor-Couto, 2017; Melchor-Couto, 2018). Thus, the results further verified the underlying reasons for the validity of the virtual world' s effectiveness in language teaching and learning.

3.1 Students Feel Immersive in the Virtual Reality

The immersive characteristics of VRE were mentioned in the literature. The affordance or function such as navigating the avatars or using the chat box in the virtual world provided the users a sense of realism and context, thus helped them to be better immersed and present in the virtual environment. Witmer and Singer (1998) define immersion as "a psychological state characterized by perceiving oneself to be enveloped by, included in, and interacting with an environment that provides a continuous stream of stimuli and experiences" (p. 227).[12] In the study by Wang, Petrina and Feng (2017), "presence" was considered to be a personal feeling of being transported into a synthetic environment.[13] And they considered presence is a critical part of constructing the virtual environment.

In order to dig more deeply in the factors affecting the immersion offered by the virtual language environment, Wang, Petrina and Feng (2017) conducted their research examining the influence from different learning artifacts such as chatbot and time machine. Their experimental results proved that chatbot and time machines in the virtual world OpenSimulator improved the immersion and presence of learners.

In addition to the study by Wang, Petrina and Feng (2017), some other studies mentioned the positive effects of maneuvering and navigating the avatars in virtual language environment from the perspectives of participants. (Pasfield-Neofitou, Huang, & Grant, 2015; Wang et al., 2012; Paterson, 2012).

To start with, Pasfield-Neofitou, Huang, & Grant (2015) argued in their study that the embedded and extended cognition of

students in the virtual world allowed the boundaries between real and virtual environments to be highly (cognitive) permeable.[14] After the researchers analyzing the data information, they highlighted that the students usually did not distinguish themselves from avatars.In Wang et al. (2012)'s study, the data resources collected from questionnaire, interview and the weekly Blog postings were looking at the participants' perceptions on SL as language learning platform and the EFL program in the SL itself. It was founded by the researcher that the participants "[They] thought it was easy to control their avatars and navigate around the SL environment. All of the participants liked the interface and virtual environments of SL and were interested in communicating with others in SL"(p. 952).[5]In a similar vein, the answers from the participants in Paterson's research (2012) confirmed the merit of using avatars. Evidence was identified in the post-study survey that participants highly supported the statement of "having an avatar helped me to communicate and feel more engaged"(p. 35).[8] It is also mentioned in the data of the post-interview that the presence of the avatar promoted communication and enhanced the sense of participation.

3.2 Students Regard VR as Interactive and Engaging

According to the related literature, VRE is also considered as engaging and motivating for facilitating effective interaction between the students. Many studies found that participants positively evaluated the stimulating nature of interactions, claiming that they found the use environment enjoyable (Canto, & Van Den Bergh, 2013; Chen, 2016; Lan, 2014; Levak, & Son, 2017; Peterson, 2012; Wang et al., 2012). Researchers found results to promote, realize, and ensure the ability of engaging happened.

First, some studies emphasized that virtual world such as SL provided contexts for communication. In the combination with the task-based activities, the language learning environment thus simulated the authentic and contextual interaction (Levak & Son, 2017; Chen, 2016; Lan, 2014). Levak and Son (2017) offered evidence for this argument. Comparing to Skype, SL as virtual language environment was perceived as being entertaining due to providing suitable context for participants' communication and activities. Additionally, Lan (2014)'s research found that the scores of the students' dimensions related to the educational context significantly improved, indicating that the students highly valued the learning environment and activities of SL.[9] Besides, Chen (2016) mentioned that the student's 3D building experience in the virtual world also provided a driving force for communication.[3] These challenging activities (such as creating 3D characters and objects, creating posters for presentations, etc.) allowed students to read and follow instructions, or interact with others. By seeking help and providing guidance or mentoring, students collaborated with each other to create a harmonious and positive atmosphere.

Secondly, some researchers pointed out that, comparing to the traditional classroom, learners pointed out that virtual world possess the qualification which provided them opportunities to communicate with native speakers of their target second language. Such superiority adding merits to the VRE that students could have the opportunity of cultural exchanging and cultural awareness promotion (Canto et al.,2013; Chen, 2016; Levak & Son, 2017). Canto et al. (2013)'s research support this claims from the analysis of the questionnaire data. Results reflected that not only the non-native SLL students as participants regarded having interaction with native speakers as unique and positive condition of VRE, but also the pre-service teachers were aware of the situation.[4] Also, both of the students and teachers observed cultural awareness of contrasts and similarities were increased through the cross-cultural or multicultural interaction. This consequently added initiative and confidence for learners second language expressing. These results were similar to those reported by Levak & Son (2017), who also pointed out the cultural exchange and exposure gained from talking with native peers. Additionally, participants reflected in the interview that interacting with native speakers in VRE helped them learn to handle accents, new sentence structures and new information.[10] Similar evidence could also be found in Chen (2016)'s study with multiple ways of qualitative data support. Chen believed that the advantage of virtual courses in SL was that students had the opportunity to interact and collaborate with other students across cultures, nationalities, genders, and languages.[3] The results of the data show that this multicultural/multilingual dynamic also enhanced students' understanding of the rich cultural capital and the bonds of cooperation and learning that build and strengthen each other.

Finally, research noted the consequences of the characteristics and their positive influences. The situation mentioned above creates a virtuous circle: because the language activities in the VRE engage students' interest in learning while improving their language level, which in turn becomes the driving motivation for further learning. No matter if it was possible to communicate with native speakers, many studies found that the learner's language ability advanced from the perspective of students and teachers. Through the communication process such as inquire, negotiation and correction, the student's pronunciation, vocabulary and grammar were likely be corrected somehow and become more enriched. Also, the practice in the language environment could help the learners being exposed to content that was not available in textbooks or traditional classroom.

3.3 Students Have Less Anxiety

There seems to be some agreement that the anonymity provided by VRE was crucial because it affected how students communicated. When communicating anonymously, users did not care too much about other people's opinions, thus reducing their anxiety and restraint in communication and expression (Peterson, 2012; Wang et al., 2012).

In Wang et al.'s research (2012), learners expressed their recognition of the "SL environment is relaxed" (p. 953).[5] Using their avatars without showing their face helped reduce their embarrassment and anxiety. In addition, Peterson's (2012) survey and interview results suggested that using SL was more conducive to frank self-expression than traditional language classes.[8]

Melchor-Couto (2017) investigated the change of students' anxiety level in a VRE as well as the degree of their anxiety compared to face-to-face class situations.[15] The research reported that the anonymity provided by VRE had a positive impact on some students,

whose self-confidence was increased and neuroticism alleviated. In the study, 2 groups were formed from the participants, which were virtual world group (VW group) and classroom group (CR group). Both groups carried out similar communication activities in different learning condition. VW group' s members interacted with native Spanish speakers in pair; however, the students in CR could only work with their non-native peers. The study's instrument included demographic questionnaire, reduced Foreign Language Classroom Anxiety Scale (FLCAS) and open-ended questions. The data from the analysis showed that over time, VW group anxiety decreased and was lower than CR group.

However, there were some different voices in the survey results. Some participants thought the fact that the lack of physical presence or being anonymity does not really affect their confidence in communication with others. Another participant thought that they were more willing to communicate with people in the real world and negate the effect of the virtual world on their language expression abilities.

Then in 2018, Melchor-Couto conducted another research to explore the solution of the conjecture he posted in his previous research, that anonymity may not be the only reason to explain the decrease in foreign language anxiety.[16] He discovered a significant correlation between students' self-efficacy beliefs and the anonymity effect experienced in the SL as VRE. In this research, all the participants worked with native speakers on activities similar to the ones used in Melchor-Couto's previous study (2017). In order to inquire the correlation between the VRE anonymity and foreign language anxiety or self-efficacy or personality, multiple methods and instruments were applied. The study's quantitative and qualitative data were collected from demographics questionnaire, FLCAS, reduced FLCAS, Eysenck's Personality Questionnaire (EPQ-RS), Self-efficacy beliefs test and open-ended questions. Results showed that factors such as invisibility caused by the VRE led to a more positive effect in the anonymous experience of high-anxiety participants. This put them under less communication pressure, and they were more confident and improved in Spanish. For people with high self-efficacy, interacting in VRE was more inclined to be seen as a negative experience. The reasons cited by them are the lack of body language in VR and the perception that VR was an unfamiliar environment or tends to face-to-face interaction.

3.4 Perceived Problems

As mentioned above, the characteristics of VR lead to the learning of second language in VRE is not suitable for everyone. In addition, in this section we will also explore the downsides of VRE in second language learning.

Many researchers pointed out the technology problems perceived by the SLLs as communicating participants in their studies (Chen, 2016; Lan, 2014; Levak & Son, 2017; Wang, 2012). Wang (2012) found that technical problems are reported including Poor audio quality during chat (e.g., echo and audio stream interruption) and screen freezes prevent smooth communication and task completion in SL as VRE. In addition, research participants mentioned that distracting objects and uninvited guests suddenly landed in front of SL's discussion group are some issues that need to be resolved. Similarly, the survey of Lan (2014) and the interview of Levak and Son (2017) as well as Chen (2016) also exposed the technical issue of the VRE like internet speed lags behind and login fails. Also, Chen also mentioned some other technical problems, like poor quality of the devices, platform instability.

Moreover, Chen's study (2016) highlights another problem from the participants reflections of their communication experience in the VRE, which is that its lack of paralinguistic features hindering the active interaction between users.[3] Users must manually activate non-verbal prompts (such as laughs, screams), so these secondary language features are not automatically displayed at the appropriate moment. This lack of facial expression or eye contact makes the participants feel stressed, puzzled, or shy. But of course, there are also people who look at this problem from the positive side, thinking that it reduces the tension of social and conversation.

4. Conclusion

This paper set out to report on some of the latest research status of applying VRE in second language learning and teaching. In the research design, many researchers implement task-based instruction for language learning activities in VRE, and their specific activities are categorized into type of tasks and the topic or theme of the tasks. In addition, the arrangement of the task-based activities was also classified as follows: first, the material environment was used as a variable, where VRE contrasted with other computer-assisted communication environments or face-to-face traditional classrooms. The second is whether participants communicated with native language speakers in the target language . After voicing the teaching design in the study, it was found that previous research reached a consensus that second language learning under the environment of VR achieved significant effectiveness. Two of the main focuses emerged under the discussing of VR language environment' s effectiveness, which were oral performance and listening comprehension. Then, some of the factors of the effectiveness were revealed from investigating the learners' and teachers' perspectives toward the VRE. The positive characteristics of VRE were pointed out such as immersive, interactive, engaging, relaxing and less anxious. However, some downsides of VRE are also pointed out. Firstly, technical problems perceived by SLLs as participants are reported by many researchers . Secondly, lack or shorten of paralinguistic communication are considered as negative features of VRE by some of the users .

For the research gaps, research on language learning in VRE relied primarily on the effectiveness and learners' perspectives rather than the impact of course instructors and designers. For example, this literature review only recognizes one empirical study discussing the effects of different task on SLLs' extent of participation under the condition of VRE. According to Peterson (2011), "a most effective role of the teacher in VLE has yet to be clarified". In order to better understand the role and effect of language teaching and guidance in VRE on second language learning, it is important to inquire the effectiveness of the teachers' decision-making in the VR language learning tasks or courses for future research direction.

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