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VIRTUAL WORLDS AND SECOND LANGUAGE ACQUISITION

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Introduction

Virtual Worlds have been designed specially to create a collaborative and social experience for the user. A virtual world (VW) is an Internet-based $2D_1$ environment where individuals, who adopt the appearance of avatars, can interact with artifacts and with each other. These multimodal immersive web environments offer their users a simulation of a real or a fantasy world, where a large number of avatars can participate and undertake action. They often contain a variety of features to enhance users' engagement and learning. In recent years, an increasing number of immersive virtual environments have become available for educational purposes. The most widely used VWs are Active Worlds, Second Life (SL) or Open Simulator (open source). Due to their multimodal, immersive and social nature, these VWs have been embraced by many educators for language teaching purposes.

The following sections will present the affordances of VWs for language learning while discussing the most relevant theories underpinning pedagogical practices in these environments.

Historical Perspectives

Virtual Worlds and Learning Theories

The origin of VWs can be traced back to the 1980s in the so-called Multi-User Dungeon games (MUDs). These were text-based role-playing games inspired by the *Dungeons and Dragons* multi-user genre (Ondrejka, 2008). Their key feature was the users' ability to compete among each other remotely, regardless of their geographical location (De Freitas, 2008). These environments evolved technically into MOOs (Object-Oriented MUDs), where users could create in-game objects, and subsequently into today's online MUVEs (Multi-User Virtual Environments). *Habitat* was the first graphic VW ever created and it was launched in 1985 (De Freitas, 2008).

VWs allow for multimodal communication that takes place through different media. Users may communicate through their avatars orally, in writing via instant messaging or even simultaneously via both. In addition, real-life body language may be replicated to a greater or lesser extent depending on the technical capabilities offered by each environment. The communication that takes place in VWs thus presents a number of specificities that make it all the more complex and that may influence FL interaction in unexpected ways.

The main affordances that VWs offer to language learners are particularly related to their social, immersive, and multimodal dimensions. Learning emerges as a result of learners being

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immersed and situated in simulated scenarios (see Fig. 23.1) and engaging in purposeful interaction and scaffolding sequences in task-based situated contexts (Canto et al., 2014; Canto & Jauregi, 2017; Jauregi et al., 2011). VWs offer a real space for communication (Kruk, 2019; Liou, 2012) and their pedagogical use is theoretically grounded in sociocultural theory, situated learning, and immersion (Wang et al., 2019), which emphasizes the value of interaction and collaboration as integral to learning. These key concepts will be described in detail in the sections included below.

Figure 23.1 Students as Avatars Carrying Out Virtual Exchange Tasks in OpenSim

Sociocultural Theory

The social turn in second language acquisition (SLA) places the language learner in the role of a participating social agent in the language acquisition process (Thorne & Payne, 2005). Sociocultural theory has taken centre stage in the implementation of technologies, and hence, VWs, for meaningful language education purposes (Lantolf & Thorne, 2006). Sociocultural theory (Vygotsky, 1986) places social interaction at the centre of all learning processes and suggests that interaction with the people and cultural artifacts within one's environment plays a fundamental role in the process of L2 cognitive development. In this sense, computer-mediated communication (CMC) tools have been used since the nineties to create collaborative learning spaces, to foster self-expression and authentic communication, and to facilitate intercultural exchanges across national borders (Thorne et al., 2009; Ziegler, 2016). Thorne (2003) described CMC technologies as cultural artifacts that mediate human behaviour. The concept of mediation states that learners develop higher cognitive levels through cultural activities and symbolic artifacts (Lantolf, 2006). VWs have been found to mediate language learning processes because of the opportunities for learners to explore, collaborate, communicate, and to socially co-construct knowledge while being situated and immersed in a simulated (real or fantasy) VW. The unique features of these environments, namely affordance of interactivity and the capability to foster presence, support social interaction and experiential learning (Wang & Burton, 2013, p. 365).

Situated Learning

The use of VWs in a pedagogical context is largely based on the theory of situated learning, which states that learning is socially constructed and naturally embedded in the culture, activity, and context in which it takes place (Dawley & Dede, 2014). According to situated learning theories, knowledge is a product of the interaction between the learner and the context. For learners to acquire knowledge, they must become a part of the context by means of learning to observe, experiment, demonstrate, and explain in context while fully participating in the learning process (Brown et al., 1989). For SLA scholars, language learning is a complex social activity, highly contextualised, thoroughly embodied, and largely experiential (Blyth, 2018). Situated learning recognises that language learning is situated in specific contexts that comprise particular social and physical environments (Lave & Wenger, 1991). Scholars argue that contextual learning of a language can effectively help learners construct knowledge and achieve learning goals. In this vein, VWs offer teachers the possibility of enriching the cultural context in which language learning emerges naturally. Indeed, one of the limitations of language teaching in a classroom setting is the potentially poor authentic linguistic and cultural context in which teaching takes place. Immersive technologies such as VWs provide alternative environments for situated learning, by providing a great variety of virtual contexts or scenarios giving users a sense of being there (Slater, 2009).

Immersion

Rich linguistic and cultural immersion is crucial for effective language and cultural teaching. With the advent of social networking environments on the Internet, the term 'virtual immersion' has emerged to refer to "the perception of being physically present in a nonphysical yet culturally authentic environment" (Blyth, 2018, p. 226). The potential of VWs in education is due to their capacity to support immersion by providing a variety of scenarios (a sense of space), situations and role plays and their capacity to foster presence, the feeling of being there, and co-presence, being there immersed together within that space. The feeling of immersion in a VW is achieved through the use of sensory inputs (graphics, sounds, visuals, possibility to move and interact with objects,

maps providing geo-location clues, etc.), a variety of multimodal social communication layers, avatar customisation and the ability to design and build aspects of the environment itself (Dawley & Dede, 2014). This sense of immersive co-presence not only results in richer online identity construction and thus more effective collaborative learning, but also can result in more effective transfer of knowledge from the virtual environment to the real world (Dalgarno & Lee, 2010).

VWs integrate multiple modes of communication conducive to relevant meaning-making processes in language learning. Synchronous and asynchronous written and oral communication layers can be complemented with non-verbal elements and bodily movements (kinetic and proxemic acts) that customisable avatars can reproduce in multiple scenarios while engaging in action (Calvo et al., 2016; Wigham & Chanier, 2013). All these different layers of meaning-making sources interact in complex ways in VWs enriching communication and learning processes. However, the technological limitations posed by the VW on the expression of kinesics and proxemics of avatars when compared to their dynamic character in face-to-face settings, migt hinder communication in general and language learning in particular (Tan et al., 2016).

Critical Issues and Current Research

In the following sections we will primarily highlight the findings from research carried out after 2010. For earlier research see also Sadler (2017) and Peterson et al., (2019).

Technological Affordances for Language Education

VWs have been used to support learning processes due to their specific affordances to simulate real-life scenarios and to participate in social interaction, thereby facilitating negotiation of meaning and individualised learning through tasks that would otherwise be difficult or impossible to accomplish in a standard classroom (Peterson, 2011; Swier & Peterson, 2018), the exposure they provide to the target language in a context conducive to learning (Zhao & Lai, 2009), and the pedagogical possibilities they offer to engage in gamified activities through collaboration and exploration. VWs also facilitate membership in online communities supporting collaboration, teamwork, and language socialisation and at the same time they represent low-risk (or fail-safe) environments that offer to engage in peer-based dialogue. The feeling of immersion, the degree to which a person feels a part of the environment, adds to the learning, as it promotes a strong sense of community between those present. The avatar is an important element, because it enhances the sensory feeling of presence arising from participating in the virtual environment. The anonymity afforded by avatars fosters participation, motivation, and risk-taking (Swier & Peterson, 2018).

VWs can serve as an inspiring educational learning space for creating not only formal but also informal learning (Panichi & Deutschmann, 2012). They are particularly suited to informal ways of language learning and skills development through social interaction. Evidence suggests that incidental foreign language contact in unstructured, virtual environments such as VWs (the 'virtual wild') can enhance second language learning (Lech & Harris, 2019). VWs, viewed as resources not specifically tailored for educational purposes, allow exposure to situated instances of the language user understanding or producing language to convey particular meaning in a specific communicative situation, where the actual delivery of a message is the only purpose of the language use (Tyler et al., 2018).

Promoting Language Acquisition through Interaction in Virtual Worlds

The research carried out in the field of language acquisition through interaction in VWs is characterized mainly by small-scale studies conducted often in higher education settings and focusing on target language production. Although studies in a variety of languages can be found, the target languages most frequently investigated are English, Spanish, Chinese, and Japanese.

The findings from many of these studies have suggested that social interactions in VWs have a significant impact on language learners' linguistic and communicative outcomes. Examples of these findings are, for instance, those provided by Lan (2014), who set out to confirm the potential of Second Life (SL) to promote in-class oral output and its effects on the performance in Mandarin of 44 overseas Chinese university students. Interaction analysis, together with oral performance tests, revealed that students learning in the VW had increased in-class oral output and showed improvements in oral performance as compared to a control group in traditional Chinese classes. Lan (2015) also looked into whether these VWs might improve elementary school students' EFL performance, with results demonstrating that the use of the virtual environment had enhanced learners' EFL performance, providing students with learning opportunities without time or space limits.

Research conducted by Canto et al., (2013) provided evidence that showed communicative growth for a group of university students studying Spanish who had performed tasks in the VW SL. The results of this study, measured by comparing oral pre- and post-tests, revealed that the experimental group outperformed the control group, who had carried out similar tasks in the classroom. Later research by Canto and Jauregi (2017) emphasized that participation in VWs elicited target language production and meaning-focused interaction. The construction of a target language via negotiation of meaning in VWs has also been explored with positive results in the context of Japanese as a foreign language at the university level (Yamazaki, 2019).

In addition to enhancing oral communication skills, numerous studies have produced encouraging findings showing that communication in VWs can also facilitate learner-centred interaction (Chen, 2016; Lan, 2015; Peterson, 2012), help improve writing skills (Lan et al., 2019; Peterson, 2012) and grammatical correctness (Kruk, 2013, 2015), as well as encourage high degrees of participation (Peterson, 2012; Wang, 2015) and effective integration in the language classroom (Canto & Jauregi, 2017; Chen, 2016; Liou, 2012).

Developing Intercultural Competences & Skills

Although the potential of VWs to enhance intercultural awareness has been recognized, the lack of empirical evidence to demonstrate it has been noted as an important issue. A number of studies, not specifically in the field of SLA, have explored the perceived usefulness of VWs for intercultural awareness and collaboration in intercultural competence (IC) modules at the university level. Hasler (2012) conducted a study with 86 non-native English speakers registered in a first-year IC module offered at a university in New Zealand. These students were assigned to international virtual teams in which they collaborated on group assignments over the course of a semester. The evaluation results, which were based on students' subjective reports, indicated that VWs have the potential to effectively support intercultural collaborative learning, and to foster the development of intercultural literacy. The students reported various learning effects in terms of increased intercultural awareness, indicating that the VW provided the necessary experiences to challenge values and beliefs and develop strategies to manage emotions when faced with difference. These findings are in line with Corder and U-Mackey (2015). These authors conducted a case study on seven university students enrolled in an IC course for one semester in New Zealand and concluded that students who used SL demonstrated IC development and evidence of deep learning gained from increased critical awareness. There was evidence that this IC development was transferred between SL and real-life and was observed in both SL and real-life interactions. Similar results were obtained by Machado et al., (2016) with a group of 82 Brazilian and Portuguese Master students who performed four tasks in SL. After administering qualitative and quantitative instruments for self-assessment of students' IC levels it was revealed that the activities performed in the VW showed attitudes and skills, such as understanding others' worldviews, skills to analyse, evaluate, and relate, skills to listen, observe and interpret, as well as demonstrations of respect, openness, and tolerance for ambiguity among other skills.

A very limited number of studies in the field of SLA have analysed the development of IC using VWs. Canto et al., (2014) investigated how negotiation of intercultural meaning took place in SL in a study with 27 students of Spanish and 14 native speakers enrolled in a teacher education program. Participants undertook five language tasks designed to facilitate the development of IC. The qualitative and quantitative data gathered provided clear and frequent evidence of negotiation of intercultural meaning. Participation in these task-based VW interactions made participants more aware of intercultural issues, since tasks prompted them to reflect on their own culture and their interlocutors' by discussing, explaining and understanding contrasts, similarities and misunderstandings. This evidence builds on the findings from Jauregi et al. (2011), who reported that task design in the VW SL facilitates learner-centred discussion of cultural issues. This interaction with native speakers had a positive impact in the development of language learners' IC. It offered them opportunities for rich linguistic exposure and communicative practice close to real-life experiences. Survey results also showed that the participants' target culture knowledge was enhanced (Canto & Jauregi, 2017). This research is significant as it represents an attempt to explore the added value of VWs to empower intercultural learning experiences.

While the obvious differences cannot be ignored, virtual cultural experiences can approximate real-world ones in that both allow for experiential cultural learning and allow learners to access culturally authentic materials and use them in context. Thus, VWs are places where learners can achieve culturally authentic immersion experiences (Shih, 2015). However, task design seems to be the key for effective interaction and should match the communicative affordances of the environment in order to facilitate intercultural communicative competence (Hampel, 2014).

Anxiety, Motivation and Self-Efficacy Beliefs in Virtual Worlds

VW users take on the appearance of avatars when interacting in these environments, which means that their real-life faces cannot be seen by their interlocutors. This 'visual anonymity' (Keipi et al., 2015) has been researched in the fields of psychology, sociology, and communication. Scholars have found it to vest users with a sense of invisibility, which in turn may lead to increased disinhibition (Lapidot-Lefler & Barak, 2012). Similarly, Stritzke et al., (2004) concluded in one of their studies that the lack of visual cues available in certain CMC environments prevents users from identifying negative judgement from their interlocutors. There is also evidence indicating that the anonymity afforded by certain CMC environments may lead participants to believe that they perform better than in face-to-face situations (Tanis & Postmes, 2007). All of these findings open up interesting avenues of research in foreign language interaction, specifically when it comes to the role played by affective variables in VWs. The following sections will address the importance of foreign language anxiety, motivation, or self-efficacy beliefs in CMC while reporting on the most relevant findings regarding the behaviour of these variables in these environments.

Decades worth of research attest to the crucial nature of affective variables in the language learning process, and more specifically when developing students' oral production. Factors such as Foreign Language Anxiety (FLA) (Horwitz et al., 1986), which may exert a negative impact on the students' ability to use the FL; motivation (Dörnyei & Ushioda, 2011), which fuels the learning process; or self-efficacy beliefs, defined as 'people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives' (Bandura, 1994, p. 71), are integral variables in the foreign language learning process. The interaction between these variables and CMC media poses intricate questions that have been addressed by research in recent years. A number of studies have found a positive affective impact on language learners both in oral interaction through audio and videoconference platforms (Jauregi et al., 2012; Wu & Marek, 2009) and written interaction through instant messaging platforms (Arnold, 2007; Satar & Özdener, 2008). However, scholars have also pointed out that the lack of non-verbal cues experienced in certain CMC environments may have a negative effect. Not being able to access body language and facial speech

cues, such as lip reading, may affect comprehension negatively and even cause an increase in foreign language anxiety levels (De los Arcos et al., 2009). This would cancel out the alleged positive effect of anonymity described above. The sections below analyse in more detail how foreign language anxiety, motivation, and self-efficacy beliefs interact with VWs.

Foreign Language Anxiety

A limited number of studies have analysed foreign language anxiety in VWs, concluding in all cases that the FLA levels experienced by language learners were lower than in other learning contexts. Arnold (2007) and Satar and Özdener (2008) focused on VW chat communication whereas Wehner et al. (2011), Melchor-Couto (2017, 2018), and Reinders and Wattana (2015) have addressed VW oral interaction.

Arnold (2007) compared anxiety levels in a group of 57 learners of German who interacted for a term in three different contexts, namely face-to-face, chat, and in an asynchronous forum. The group that interacted via written chat experienced a sustained decrease in FLA. Satar and Özdener (2008) reached similar conclusions in their study, which involved 90 learners of English who interacted via chat in a VW for four weeks. FLA levels were reported to decrease over that period. In addition, as mentioned above, Wehner et al. (2011) and Melchor-Couto (2017, 2018) focused on anxiety levels in oral interaction. In their study, Wehner et al. (2011) concluded that the 21 Spanish learners who interacted orally via a VW during the course of 10 sessions experienced lower anxiety levels than the group of students who completed similar oral interaction tasks face-to-face in the traditional classroom. Melchor-Couto (2017, 2018) found in her research study conducted in the VW SL over four weeks that the anxiety levels experienced by a group of 14 Spanish learners was lower than those of a group who interacted face-to-face in a classroom context. Similarly, the language learners interacting orally in Jauregi et al. (2011) reported lower anxiety levels than those interacting via a videoconference platform and face-to-face in the traditional classroom. Finally, Reinders and Wattana (2015) found lower anxiety levels in their study participants, although it must be noted that in this case the environment used for interaction was a videogame and not a VW as such.

In addition to the studies mentioned above, Kruk (2019) analysed how several affective values interacted, namely language anxiety, willingness to communicate, and motivation, as well as the notion of boredom. Two Polish learners of English communicated orally with other users in the VW SL. Decreasing trends of anxiety and boredom levels were recorded from the start until the end of the sessions, suggesting positive effects for the use of VWs in mitigating negative affective factors.

Motivation

It has been reported that learning a foreign language in VWs is engaging, which, in turn, motivates student participation (Peterson, 2012; Wehner et al., 2011). If one of the most influential forces on a person's ability to learn a language is motivation, providing students with engaging and interesting experiences can lead to a more complete acquisition of their target language.

A number of studies have analysed motivation in VW interaction, reporting generally positive effects (Jauregi et al., 2011, 2012). Wehner and colleagues (2011) conducted a study involving 21 learners who interacted in the FL via the VW SL and reported higher levels of motivation than the peers who did not use this platform. Canto and Jauregi (2017) analysed the motivation levels experienced by a group of 56 students who were assigned to either a VW, video-communication (VC), or face-to-face groups. The VW and VC groups reported higher motivation and engagement levels as compared to those interacting face-to-face in the traditional classroom. Kruk (2015) compared the motivation levels in two groups of students, interacting via the VW Active Worlds

and face-to-face in the traditional classroom. The motivation levels in the VW world proved to be more stable and showed an increasing trend over time as compared to that of the face-to-face group.

Berns et al. (2011) conducted a study with 85 learners of German who completed five tasks in the VW OpenSim. Most students reported an increase in their motivation levels on completion of the proposed tasks, which required learners to communicate with each other via written chat. It must be noted that the environment presented game-like features, as students were asked to complete games in which they competed with one another.

Taken together, this body of work provides encouraging evidence for VWs as a context supportive for initiating and sustaining learners' motivation.

Self-Efficacy Beliefs

The study of self-efficacy beliefs in VWs points towards a positive impact on learners, although it is perhaps a slightly under-researched area. Henderson et al. (2009) analysed self-efficacy beliefs in a group of 100 learners of Chinese who interacted via a VW and found that self-efficacy belief levels increased on completion of the task proposed, which involved going to a virtual Chinese restaurant. Similarly, Zheng et al. (2010) found that the self-efficacy belief levels in 31 English learners who interacted in the FL via the VW Quest Atlantis for 25 weeks were higher than that experienced by a parallel group of students who interacted face-to-face in the traditional classroom.

As described in this section, VWs seem to be appropriate environments for language learning also from an affective perspective.

Pedagogical Approaches and Recommendations for Practice

The open access nature of VWs facilitates the implementation of task-based learning. Task design can be crucial to promote interaction in VWs and, in the case of language learning, this means careful conceptualisation and setting up of activities (Hampel, 2006). The concepts of real-world authenticity and meaning and goal orientation are seen as the main characteristics of tasks within Task-Based Language Teaching (TBLT) (Ellis, 2003, 2012; Long, 2015). TBLT also emphasises learner-centeredness, suggesting that task design should start by analysing learners' language learning needs (González-Lloret, 2014; Long, 2015), and in so doing contribute to personalising learning processes. An interesting concept in this line of thought is 'task appropriation' (Gijsen, 2021), which refers to the cognitive process by which learners make a task their own.

According to the 'intercultural turn' in L2 pedagogy (Thorne, 2010), raising language learners' intercultural awareness should also constitute a major learning goal when designing tasks (Byram, 1997, 2012; Canto et al., 2014, 2017; Hampel, 2014; Möllering & Levy, 2012). These tasks should stimulate learners' curiosity, empathy and openness towards the *Other,* while increasing awareness and knowledge of one's own and the *other's* culture and social practices.

In addition, tasks should exploit the technological affordances of the environment to enrich the students' pedagogical learning experience (Jauregi et al., 2011). Three specific affordances will be highlighted here as crucial to VW educational experience: the power of the scenarios, opportunities to embed rich comprehensible content and co-create meaning collaboratively and engaging in gamified activities.

Jauregi and colleagues (Jauregi et al., 2011; Canto et al., 2014, 2017) found that the scenarios in the VW shaped to a greater or lesser extent the task-based interactions that learners engaged in, making them more authentic and realistic. Learners in the VWs referred frequently to the attributes of the scenarios that their avatars were immersed in, such as the sunset, the coast, the game possibilities in a parcourse, or the posters of films hanging on the wall of a pizzeria, the actions that they undertook in the world ('you are dancing', 'you are driving too fast', 'we are skiing') and the appearance of their avatars ('you´ve changed your outfit, I like it').

The second important affordance of VWs is the possibility to enrich content and support peer collaboration. Different types of documents (video and audio files, PowerPoint and text-based documents) can be uploaded into the world as part of a task sequence, and in so doing provide meaningful opportunities for learners to access rich comprehensible input in the target language. In addition, the multimodal affordances of VWs offer learners the possibility to collaborate and co-create meaning.

Although VWs are not game environments, they are particularly suitable for gamified activities. An example of this are the in-world quizzes, games such as Snakes & Ladders or Treasure Hunt activity undertaken as part of the TeCoLa project, mentioned below. Effective team collaboration and meaningful interaction in the target language was key to achieve game success.

Finally, this section includes a summary of successful examples that may be taken as the basis for future practice in this domain. These projects have been funded by the European Commission in an attempt to gain further insights into how these environments can be exploited for language teaching purposes and have provided a useful framework of work and 'route map' for practitioners who wish to explore VWs as environments for their teaching. Most of them tackle two key dimensions, namely addressing teacher training needs and establishing practice networks. Rich pedagogical resources comprising training materials, teacher guides, tasks in different target languages, interactions with experts, best practices or case studies are freely available in their websites to all language practitioners (Table 23.1).

Future Directions of Research

The potential of VWs for language learning and teaching has been acknowledged by both practitioners and researchers. The research and pedagogical focus have been placed on oral interaction, language achievement and, to a lesser extent, on the role played by the affective dimension in this specific type of teaching and learning environment. Few studies and pedagogical experiences have addressed their relevance as tools to promote intercultural communicative competence. The research studies described above found promising results in this regard, although further research would be required in order to have a complete picture of the benefits that VWs have for language teaching.

In VWs, it is not the user, but their avatar, who is immersed in the environment. Nowadays, due to recent technological advances, the user can be highly immersed in a virtual reality (VR) environment through the use of specific head mounted VR headsets. The use of this type of technology has increased exponentially in recent years both for entertainment and, on a much smaller scale, educational purposes. Highly immersive VR tools may offer unique and engaging environments to motivate students and provide more authentic learning and assessment opportunities. However, research into the use of VR for language teaching is still in its infancy (Blyth, 2018). Yet, a growing educational and research interest on the pedagogical use of VR for language learning has been experienced in the last few years. So far, most studies have been exploratory (Herrera, 2020; Lee, 2019; Scrivner et al., 2018) and designed to analyse the educational possibilities of VR (Bonner & Reinders, 2018; Holden & Sykes, 2011). Few studies have measured learning outcomes in this specific learning context. Xie et al. (2019) found that the content and vocabulary of the oral presentations of the participants using VR tools scored significantly higher than when not using VR tools. Jauregi and colleagues (Jauregi-Ondarra et al., 2020) carried out a pilot study on virtual exchange making use of high immersion VR. A preliminary analysis of the data shows that the students enjoyed communicating with peers in the VR environment, although the degree of enjoyment varied. Most of the students were positive about feeling immersed and co-present in the same room as their peers. They valued the pedagogical affordances of the VR technology for realistic linguaculture learning (Risager, 2013). However, some students experienced dizziness after a while or discomfort due to the weight of the headsets.

Table 23.1 Main Projects Including VWs for Foreign Language Learning

Project name	*Resources*
TeCoLa	Focus on (gamified) virtual exchanges for the development of students' intercultural communicative competence in primary and secondary foreign language education. OER resources. ➔ More than 100 telecollaborative tasks for English, French, German and Spanish including gamified activities for VWs ➔ Best practices ➔ Pedagogical guides ➔ Learner experiences ➔ The VW authoring tool TeCoLa Gamify to enable teachers to design and implement their own in-world gamified activities ➔ Case studies to document successful learning experiences developed (Colpaert et al., 2019). (Jauregi & Melchor-Couto, 2017)
TILA	Focus on telecollaborative practices for the development of students' intercultural communicative competence in primary and secondary foreign language education. ➔ Teacher guides ➔ Best practices ➔ Interaction tasks (Jauregi et al., 2013)
Euroversity	"The Euroversity Good Practice Framework" (Motteram et al., 2014) to guide practitioners in their first steps in VW teaching.
NIFLAR	➔ Best Practices in virtual exchange ➔ Teacher guides ➔ Research results ➔ Interaction tasks for virtual exchange ➔ Student experiences (Jauregi et al., 2011)

High immersion VR opens new venues for task-based interactions and might radically impact language education processes in the near future. Further research is required on the educational affordances and pedagogical gains that could be facilitated through the use of VR for linguaculture learning purposes.

Note

1 With the irruption of high immersion VR, these virtual worlds are no longer considered 3D but 2D environments.

Further Reading

Canto, S., & Jauregi Ondarra, K. (2017). Language learning effects through the integration of synchronous socializing network opportunities in language curricula: The case of video communication and Second Life. *Language Learning in Higher Education Journal, 7*(1), 21–53. https://doi.org/10.1515/cercles-2017-0004
The article provides evidence of the impact that integration of CMC has on the development of the intercultural and communicative competence of L2 learners. Interactions from three groups of learners (two experimental

settings, VWs and video communication, and a control group in a traditional classroom setting) together with other data sources are analysed and compared. The findings reveal significant differences with experimental groups (VWs and video communication) scoring higher than the face-to-face control group.

Peterson, M., Wang, Q., & Mirzaei, M. S. (2019). The use of network-based virtual worlds in second language education: a research review. In M. Kruk (Ed.), *Assessing the effectiveness of virtual technologies in foreign and second language instruction* (pp. 1–25). IGI Global. https://doi.org/10.4018/978-1-5225-7286-2.ch001
This chapter presents a comprehensive review of 28 studies on the use of VWs for second language learning published between 2007–17, providing a snapshot of the latest developments in this regard.

Wigham, C., Panichi, L., Nocchi, S., & Sadler, R. (2018). Interactions for language learning in and around virtual worlds, *ReCALL*, *80*(2), 153–160. https://doi.org/10.1017/S0958344018000022
The special issue focuses on the social affordances of VWs. It documents how the mediation offered by social VWs provides a landscape that supports different types of interaction and showcases different approaches and methodologies to study these, providing a timely state-of-the-art discussion of how interaction can be studied.

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