

Technology-mediated Task-Based Language Teaching in a Virtual Reality learning environment

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Abstract

Task-based language teaching (TBLT) emphasizes interaction in the target language, bridging classroom learning with real-world language use (Nunan, 2004). TBLT focuses on meaningful, purposeful tasks that reflect authentic language use outside the classroom. With the integration of Web 2.0 technologies, the TBLT framework evolved into Technology-mediated task-based language teaching (TMTBLT) to better incorporate technological advancements (González-Lloret & Ortega, 2014). Recently, emergent technologies like Virtual Reality (VR) have influenced TMTBLT by enhancing the authenticity of language use in realistic, immersive contexts (Smith & McCurrach, 2021). This paper applies the TMTBLT framework to analyze a series of language tasks carried out in VR, focusing on how certain affordances of VR can enhance TMTBLT. The tasks come from an 8-week case study involving six Japanese adult learners. Each week, participants engaged in 30-minute English lessons on the VR language learning platform, Immerse. These lessons were designed according to TBLT principles and included real-world tasks such as ordering food in a virtual restaurant. Video recordings of the lessons (254 minutes) were analyzed to assess task alignment with TMTBLT principles and their impact on learning and interaction. This paper aims to offer practitioners insights on effectively integrating VR into TMTBLT by discussing both the successful and unsuccessful aspects of tasks.

Keywords: *Technology-mediated task-based language teaching (TMTBLT); Virtual Reality (VR); immersive language learning; metaverse.*

1. Introduction

Task-based language teaching (TBLT) is an approach to language learning that emphasizes interaction in the target language, linking classroom learning with real-world language use (Nunan, 2004). Tasks are designed to be purposeful and mimic features of language used in everyday life (e.g., purchasing a ticket at a train station). An integral aspect of TBLT is the focus on meaning over strict grammatical forms, as meaning is primary in all successful interactions.

The rapid technological advancements of the 21st century along with the blending of Web 2.0 technologies as media of instruction led González-Lloret and Ortega (2014) to refine the TBLT framework. Specifically, they coined the term Technology-mediated task-based language teaching (TMTBLT) to give a more congruent

understanding of the relationship between technology and tasks. Indeed, the emergence of innovative technologies like Virtual Reality (VR) and the affordances of specific applications or software may determine what instructors can do with this technology and which teaching approach they will follow (Smith & González-Lloret, 2018) while implementing TMTBLT.

VR can be divided into two distinct categories: low-immersion VR and high-immersion VR (Kaplan-Rakowski & Gruber, 2019). When using low-immersion VR, a user “sees the virtual environment on a screen in front of them, while still being surrounded by the real world. On the other hand, with high-immersion VR, a user is fully visually and auditorily immersed in a virtual 360° environment by means of a VR headset such as the Meta Quest 2.” (Sadler & Thrasher, 2023, p. iii). In low-immersion environments, a user navigates the environment typically by means of a keyboard and mouse, whereas in high-immersion environments, a user does so by means of VR controllers which can provide realistic, haptic feedback and create a more immersive experience.

Research has found that VR can be used to enhance TMTBLT. Specifically, it has been shown that purposeful, real-world tasks in social high-immersion VR can increase learner autonomy (Jauregi-Ondarra et al., 2022b) as learners make authentic use of the target language in realistic, simulated contexts from a first-person perspective. Studies have also shown that VR can promote the extent to which users perceive a task to be authentic and foster student engagement (Lee et al., 2023; Lee et al., 2024). Based on the affordances of VR like immersion, interaction, simulation (Lan, 2020) and embodiment (Sadler & Thrasher, 2023), this paper aims to apply the TMTBLT framework to analyze a series of language tasks carried out in VR, focusing on how certain affordances of VR can be harnessed to enhance TBLT.

The data for this paper come from a case study on immersive learning in the metaverse (Thrasher et al., 2024), which focused on the implementation of eight pedagogical tasks in Immerse (<https://www.immerse.com/>), an educational metaverse language learning platform, over an 8-week period. Participants were 6 L1 Japanese adult students learning English through weekly 30-minute group lessons. All lessons were designed around TBLT principles and, therefore, provided students with a real-world task that they needed to accomplish throughout the lesson (e.g., ordering a meal in a virtual fast-food restaurant). Lessons were video recorded for further analysis and analyzed manually for how well they aligned with TMTBLT principles. The aim of this paper is to apply the TMTBLT framework to VR settings, which to the authors’ knowledge has not been used in previous research on VR. By analyzing successful and unsuccessful tasks, this paper advances understanding of how the affordances of VR can be harnessed to design pedagogically-appropriate TMTBLT activities.

2. Method

2.1 Context and participants

Participants in this case study were employees of a Japanese education company who were given the opportunity through their employer to participate in a VR English program on the Immerse platform. They were all working professionals in the Education industry who chose to participate in this project in an effort to improve their English speaking skills and speaking confidence.

Participants’ ages ranged from 30-54 years old. They had various levels of prior experience learning English and self-reported their English proficiency to range from pre-A1 to B2 on the Common European Framework of Reference (CEFR) scale prior to the start of the study.

As part of the program, participants attended 30-minute weekly group lessons with other employees for an 8-week period. These lessons were all designed following TMTBLT principles in order to give employees the chance to practice English in relevant contexts that they could apply directly to their lives. All lessons were led by an experienced language instructor of Immerse. For data collection, all lessons were video-recorded for further analysis which yielded 254 minutes of recordings. Three researchers then transcribed the video recordings using ELAN software and analyzed them manually through detailed field notes and discussions using the TMTBLT framework to understand a) how well they aligned with TMTBLT principles and b) how they impacted students’ learning process and interactions with their classmates.

2.1.1. Immerse

Immerse is a social VR platform specifically designed for language teaching and learning. Unlike other VR language learning platforms that focus on solo learning experiences (e.g., Mondly, NounTown), Immerse prioritizes human-to-human interaction and is primarily used for live language instruction. The platform offers over 40 different virtual scenes (e.g., a fast food restaurant, a home, a zoo) where students can meet with teachers and peers to practice their speaking skills in real time.

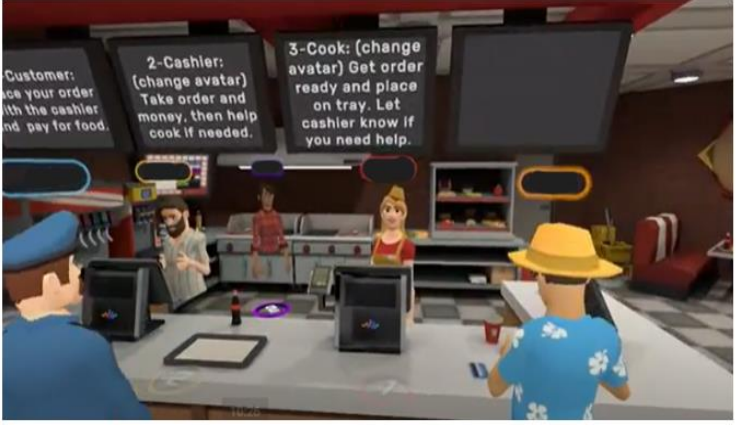
All of Immerse’s environments are highly interactive to add realism to the learning experience. For example, in the airport scene, students can scan their passport, print their boarding pass, check in for their flight, go through airport security with their belongings, and be greeted by their flight attendant after they board their plane. These interactions were designed to increase the sense of embodiment that students experience during lessons and to add a sense of realism that can contextualize the language learning process.





Students can use either a computer (low-immersion VR) or a Meta Quest 2, 3, or Pro VR headset (high-immersion VR) to access Immerse. Both modalities give students access to identical content, although the high-immersion version of the platform offers a more immersive, realistic experience. In this study, participants could choose which modality they preferred to use while in lessons.




2.1.2. VR-mediated tasks

Each week, participants’ lessons were designed around achieving a single main communicative task and were scaffolded to ensure that participants could successfully complete the task by the end of the 30-minute period. They typically began with an introduction, followed by a presentation of the communicative scenario, sometimes using a whiteboard to have students practice specific grammar, and culminated in a role play or immersive experience that targeted the task at hand. Feedback and reflection time were also incorporated into each lesson. Table 1 gives an overview of the main tasks that participants had to accomplish each week.

Table 1. The eight tasks the participants carried out during the 8-week period.

Week	Task	Visual
1	Both placing and taking down an order at a fast food restaurant.	

2	Discussing frequency of activities and daily routines.	
3	Stating a complaint to the waiter/waitress at a restaurant.	
4	Talking about future plans with friends.	
5	Inviting friends to do something on the weekend and accepting invitations.	

<p>6</p>	<p>Describing animals and their abilities.</p>	
<p>7</p>	<p>Navigating airport security and discussing a problem experienced while traveling (e.g., losing luggage)</p>	
<p>8</p>	<p>Telling a story about a place the student had visited or lived.</p>	

3. Findings and Discussion

Gonzalez-Lloret and Ortega (2014) emphasized that the pedagogical approach of TBLT can be enriched by the infusion of new technologies, but also that new technologies can more greatly benefit language learning when motivated by TBLT. They identified five key principles that are necessary for successfully blending technology and TBLT: 1. *Primary focus on meaning*, 2. *Goal orientation*, 3. *Learner-centeredness*, 4. *Holism*, and 5. *Reflective learning*. During the pandemic, when social distancing dictated learners' lives, Gonzalez-Lloret (2020) revised this list by adding a sixth principle: *Tasks should promote true collaboration and learner interaction*. This principle emphasized how TBLT in online spaces can foster meaningful learner interactions through collaborative tasks, which is also a central focus of this paper.

Applying the 5 TMTBLT principles to participants' VR tasks

The tasks that participants completed over the 8-week period were analyzed to understand how well they aligned with Gonzalez-Lloret and Ortega's (2014) proposed principles for TMTBLT.

Regarding Principle 1 – “*Primary focus on meaning*”, Gonzalez-Lloret and Ortega (2014) argue that particular language foci should be hidden or implicit from the learners for a good part of the task to avoid spoon-feeding them with specific phrases they are supposed to say. Even though grammatical forms are not the ultimate goal in the first principle, the instructor in the VR-mediated tasks began each lesson by highlighting the grammar focus and giving participants' alternative language structures to follow by writing them down on an interactive board. Initially this grammatical orientation appeared to confuse participants, especially the ones with a lower-level of English, but unlike traditional classrooms, participants were able to, eventually, deviate from strict grammar and produce language forms themselves through interacting with the board (i.e., arranging words into correct categories and phrases) and incorporating objects (i.e. using virtual money to pay for their food, grilling burgers, etc.) that allowed them to have more pragmatic negotiations of meaning-making and engage in more incidental learning activities (González-Lloret, 2020).

The tasks were also “goal-oriented” (Principle 2) with clear objectives that mimicked real-life interactions with concrete outcomes to achieve. As seen in Table 1, the communicative purpose of task 1 was to place an order as a customer and take down an order as an employee. In task 7 participants navigated airport security and communicated a problem they had experienced as customers. The participants in the VR environment did not solely mimic real-life scenarios, they learnt “by doing” (Nunan, 2004), while being immersed in a fast-food restaurant with a menu in front of them or handling a flight problem with airport staff at the check-in. Being less aware of time and more detached from the real world (Lan, 2020), without being confined in conventional learning spaces, enabled participants to become more self-directed and responsible for their own learning (Jauregi-Ondarra et al., 2022b). For example, in task 1, a fast-food role-play, participants practiced placing and taking orders, navigating the challenges of handling virtual money, and even changing avatars to assume different roles, which enhanced “learning-by-doing” of the goal-orientated lesson.

According to Gonzalez Lloret (2020), “tasks need to address learners' needs and wants and they need to engage their linguistic, nonlinguistic, and digital resources, that is, tasks need to be *learner-centered*” (Principle 3) (p. 2). Unlike many VR language learning applications that promote individual experiences, the social platform used in this study enabled participants to meet and interact in this series of immersive lessons in simulated, real-time sessions, and practise their oral skills in a real Community of Practice (CoP) with members of a different gender, level, life experiences, hobbies, etc. (González-Lloret, 2020). Moreover, a learner-centered activity is rooted in constructivist learning theory, which aims to enhance learning by involving learners in a dynamic environment that helps them to make associations of what they learn with the real world (Lan, 2020). Collaboration in a task, for example, is a learner-centered activity (Gonzalez Lloret, 2020; Jauregi Ondarra et al., 2022b). The VR-mediated tasks in Immerse initially seemed to be more teacher-centered since the instructor highlighted the grammatical focus (as mentioned above) at the beginning of the lesson. Gradually, though, she allowed the participants to think and work together on their dialogues, intervening only, when necessary, thus acquiring the role of a facilitator. She consistently endeavored to demonstrate to the participants how to effectively utilize the affordances of the immersive environment to foster more collaboration between them. Participants learnt how to give each other the “thumbs-up” when a correct answer was given. Moreover, they clapped to show their encouragement or to reward their fellow students, and they also engaged in guessing games.

The affordances of the immersive environment also enabled participants to work together in tasks. In task 4, for instance, through the sense of touch (haptics), participants explored the rich elements of the environment and picked up objects to mime out various activities and have their peers guess what they were going to do through Q&A while simultaneously using the target language. It is also important to mention that, apart from their linguistic needs, the participants had the opportunity to practise their digital literacy skills in low-immersion VR (using a mouse, a keyboard, and a monitor) and high-immersion VR (using a VR headset) (Dhimolea et al., 2021) while carrying out the tasks. These digital literacy skills evolved over time as participants became more proficient in navigating Immerse. Initially, significant time was spent on teaching participants how to use controls and manage technical issues such as using various tools in their virtual backpacks, but as the weeks progressed, participants'

confidence and ability to interact with the digital environment improved markedly, improving their overall learning experience.

Principle 4, “*holism*”, refers to the complex notions of “authenticity” and “real-world relationship” with language use, acknowledging the interconnected relationship of learner interaction with the tasks, the goals of the tasks, the outcomes, etc. (Gonzalez-Lloret & Ortega, 2014) as opposed to language instruction in formal environments. Many elements were conducive to the realization of the oral interactions. First and foremost, the plethora of VR environments in Immerse gave the participants the opportunity to simulate many experiences they would have in real-life, allowing them also to negotiate feelings such as enthusiasm (i.e. playing darts, entering a pool, etc.), curiosity (i.e. trying to figure out the word for *burrrito*), portrayal of their personal taste (i.e. adding bacon in their burger), support (i.e. giving the thumbs-up to a fellow student for identifying the correct food on the food counter), etc. Moreover, it is important to stress how the sensory-rich environments in Immerse allowed participants to remain engaged, even during moments when they were not directly interacting with the lesson (i.e. through the navigation and perception of space, hearing the sounds of objects, trying to manipulate objects, etc.).

“*Reflective learning*” (Principle 5) focuses on the learning processes, and not on the learning content (Nunan, 2004). In contrast to most VR research studies that have relied on single interventions, the eight VR-mediated tasks in this paper come from a case study on learning processes in the metaverse (Thrasher et al., 2024) conducted over an 8-week period. This extended exposure to tasks allowed participants to gradually progress their linguistic productivity, advance their familiarity with low-immersion and high-immersion VR technologies (i.e. handling objects or placing objects in their backpack became gradually easier) and grow their intercultural awareness (i.e. teleport to Hamburg, Germany to look at the TV Tower, find information about Rantau mountain in Malaysia, etc.). Moreover, participants received a reflection email after each lesson, prompting them to consider what they learned, identify areas that needed further practice, and plan how to address those needs. When there was time at the end of lessons, the instructor also spent a few minutes asking participants reflection questions (e.g., “What did you learn today?”) about their experience.

Even though the tasks presented in this paper adhere to the TMTBLT principles, some were less effective than others. For instance, task 6 “*Describing animals and their abilities*” was not particularly successful as it was predominantly grammar-oriented, and the topic also did not seem to align well with the interests of the adult learners. Talking about the abilities of animals (i.e. what a cheetah can or cannot do) did not capture the interest of the target group and the choice of the environment (the zoo) did not provide participants with ample opportunities to interact with elements. As a result, they were mostly confined to a specific area by the board, which limited their ability to navigate, touch objects, and engage with the virtual surroundings like in other tasks. Moreover, in earlier lessons, some of the actions students were asked to perform in the virtual environment were too difficult and disrupted the flow of the lesson. For example, in week 2, students were asked to put objects from around the home in their virtual backpacks which proved to be technologically challenging and time-consuming.

4. Conclusions

This paper aims to provide language practitioners with theoretical insights on the pedagogical integration of VR in TMTBLT and on how certain VR affordances can be harnessed to enhance collaborative tasks in immersive spaces. Both the successful and unsuccessful aspects of tasks were examined to see how the TMTBLT principles align with VR-mediated tasks. Given the affordances of VR environments such as simulation of authentic contexts, a sense of presence, embodied learning opportunities, as well as the ‘experiential’ nature of TBLT through ‘learning by doing’, we can create a synergy between the implementation of VR as digital tool and the pedagogical application of TBLT in immersive spaces for language learning education.

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References

- Dhimolea, K.T., Kaplan-Rakowski, R., & Lin, L. (2021). A systematic review of research on high-immersion virtual reality for language learning. *SSRN*. <https://ssrn.com/abstract=3863724>
- González-Lloret, M. (2020). Collaborative tasks for online language teaching. *Foreign Language Annals*, 53(2), 260-269.
- González-Lloret, M., & Ortega, L. (Eds.). (2014). *Technology-mediated TBLT: Researching technology and tasks*. John Benjamins Publishing Company.
- Jauregi-Ondarra, K., Christoforou, M., & Boglou, D. (2022b). Initiating meaningful social interactions in a high-immersion self-access language learning space. *JASAL Journal*, 3(2), 86–102.
- Kaplan-Rakowski, R. & Gruber, A. (2019). *Low-immersion versus high-immersion virtual reality: Definitions, classification, and examples with a foreign language focus* (pp. 554–557). Proceedings of the Innovation in Language Learning International Conference 2019. Florence: Pixel. Retrieved from ResearchGate.
- Lan, Y. J. (2020). Immersion, interaction and experience-oriented learning: Bringing virtual reality into FL learning. *Language Learning & Technology*, 24(1), 1–15. <http://hdl.handle.net/10125/44704>
- Lee, S. M., Yang, Z., & Wu, J. G. (2023). Live, play, and learn: Language learning engagement in the immersive VR environment. *Education and Information Technologies*, 1-22. <https://doi.org/10.1007/s10639-023-12215-4>
- Lee, S. M., Wang, X., Park, I., & Lestiono, R. (2024). “It feels so real!” Situated authentic language learning in immersive virtual reality. *Education and Information Technologies*, 1-23. <https://doi.org/10.1007/s10639-024-12807-8>
- Nunan, D. (2004). *Task-Based Language Teaching*, Cambridge, UK: Cambridge University Press.
- Sadler, R., & Thrasher, T. (2023). XR: Crossing Reality to Enhance Language Learning. *CALICO Journal*, 40(1), i-xi. <https://doi.org/10.1558/cj.25517>
- Smith, B., & González-Lloret, M. (2021). Technology-mediated task-based language teaching: A research agenda. *Language Teaching*, 54(4), 518-534. <https://doi.10.1017/S0261444820000233>
- Smith, M. & McCurrach, D. (2021). The Usage of Virtual Reality in Task-Based Language Teaching. In Proceedings of the 28th Korea TESOL International Conference: Re-envisioning ELT Altogether, All Together. 1 edn, vol. 28, KOTESOL Proceedings, KOTESOL, Seoul, Korea, pp. 153-165.
- Thrasher, T., Christoforou, M. & Ijiri, A. (2024). Virtual Reality-Mediated Language Learning: A Case Study of Immersive Learning in the Metaverse. In Vurdien, R. & Chambers, W. (Eds.). *Technology-Mediated Language Learning and Teaching*. IGI Global. <https://doi.org/10.4018/979-8-3693-2687-9>