

# Game on! Digital Gaming and Augmented Reality/Virtual Reality in Language Learning

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## ABSTRACT

Digital games have become an important educational tool for learning and teaching. The development of such games has advanced from 2D, desktop-based technologies to 3D, augmented reality (AR) / virtual reality (VR)-based technologies. Yet digital game-based language learning (DGBLL) with AR/VR has only recently started to be investigated, owing to the emerging availability of these new technologies. This position paper begins with a short review of the educational benefits of DGBLL, followed by a discussion of the use of AR/VR in language learning. To illustrate the potential use of AR/VR in DGBLL, recent empirical studies are reviewed. Based on this analysis, a new model for integrating AR/VR in DGBLL is proposed. The paper ends with suggestions for how DGBLL with AR/VR technologies can be used in future educational endeavors.

## KEYWORDS

AR, Digital Game-Based Language Learning, Model, Suggestions, VR

## INTRODUCTION

The digital gaming industry is booming, as highlighted by the World Economic Forum (Read, 2022). Several factors are driving this trend, including the ability of digital games to relieve stress and anxiety during the COVID-19 pandemic, the increasing number of digital game championships, and the widespread use of mobile devices among the younger generation across the globe (Read, 2022). In language learning, digital game-based language learning (DGBLL) is particularly useful in promoting learners' linguistic acquisition, with benefits ranging from increased motivation for learning to facilitated reading comprehension and improved short-term memory (Xiong et al., in press; Zou et al., 2021). When properly guided by teachers, learners can develop their linguistic knowledge and skills within context-aware, multimodal, and interactive environments (Hung et al., 2018).

A recent review by Xu et al. (2020) found that a significant proportion of DGBLL studies have been conducted in the United States or Taiwanese contexts. In contrast, other educational settings have rarely been investigated. This gap may be attributed to varying social tolerances toward digital

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games in education in different settings. Considering that commercial games often include the use of deadly weapons, violence, and foul language (Reinhardt, 2019), it is understandable that language teachers exercise caution when implementing DGBLL.

To ensure a positive and rewarding DGBLL experience, Dixon et al. (2022) argue that several variables need to be considered. These factors include the purpose of a game (entertainment vs. education), teacher prompts, interactions among players (single vs. multiplayer), and the inclusion of linguistic input and output. However, previous research has largely centered on traditional 2D games. Thus, there is a pressing need to explore the potential of 3D games in DGBLL, given the advancements in immersive technologies such as augmented reality (AR) and virtual reality (VR) (Wu et al., 2024b). With the evolution of AR and VR, the educational landscape has been presented with new opportunities for more immersive and engaging learning experiences. 3D games, when integrated with these technologies, have the potential to offer a more realistic and interactive environment for language learners. This development could enhance their motivation (Lee & Ahn, 2024).

To keep pace with these social and technological developments, DGBLL requires significant change. Yet achieving such change is a daunting challenge for language teachers and learners without appropriate guidance and sufficient support (Peterson & Jabbari, 2022). This is the starting point for this position paper. Specifically, we wish to generate insights to help guide language teachers, educators, and researchers concerning how best to leverage AR and VR when applying DGBLL.

## DIGITAL GAMEPLAY AND LANGUAGE LEARNING

Digital gameplay has emerged as an innovative and engaging approach to language learning (Peterson & Jabbari, 2022). An important reason for its popularity in education is the alignment of social interaction in gameplay with key constructs in mainstream learning theories. In particular, sociocultural theory (SCT; Vygotsky, 1978) emphasizes that learning is fundamentally a social process, and that knowledge is constructed through interaction with others within a cultural context. Since digital gameplay is often undertaken via multiplayer mode and features collaborative tasks that require players to work together, achieve common goals, negotiate meanings, and share strategies, it is well suited to help language learners advance their acquisition and use of the target language through communicative and collaborative activities (Jabbari & Eslami, 2019).

Studies have demonstrated the potential of digital gameplay in language learning. For example, massive multiplayer online games enable players to engage in identity play, allowing them to practice the language by taking on different roles in an environment that is less anxious and more fun than traditional classrooms (Reinhardt, 2019). Therefore, this way of learning can increase learners' language proficiency and confidence. Additionally, games can promote the development of both receptive and productive language skills (Aydın & Çakır, 2022; Jabbari & Eslami, 2019). For receptive skills, exposure to new vocabulary in a digital gaming context aids the memorization and understanding of new words. In addition to vocabulary learning, reading fluency and comprehension skills can be advanced thanks to in-game instructions, narratives, or dialogues (e.g., Tan & Tan, 2020). For productive skills, digital multiplayer games can simulate conversational situations, providing a platform for learners to interact with other players and thus practice their speaking skills (Reinders & Wattana, 2015a). Moreover, some games simulate real-life scenarios where language is used, such as ordering food in a restaurant or navigating a foreign city, providing practical language skills that can be applied in the real world (Zou et al., 2021). Moreover, a recent study by Wu et al. (2025) highlights the role of games in advancing English language learners' incidental acquisition of English swear words. Learners in this study viewed games as essential in shaping their identity as proficient and trendy language users.

Digital games can also enhance learners' metacognitive skills, including problem solving and critical thinking abilities, which are essential for language learning (Lee, 2022). Furthermore, the interactive nature of games can stimulate cognitive functions like memory and attention, aiding

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