

Virtual Reality Simulations in English Teachers' Pedagogical Practices: Systematic Literature Review

Rufi'ah Ning Asrianti

Muhammadiyah University of Purwokerto, Indonesia

Tono Suwartono

Muhammadiyah University of Purwokerto, Indonesia

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Introduction

Virtual Reality (VR) simulations have emerged as a transformative educational resource, providing innovative approaches for educators to captivate students and improve their learning experiences. The immersive environments crafted by VR enable educators to develop realistic scenarios that enhance interactive learning, allowing students to practice language skills in authentic contexts and enrich their understanding through experiential activities. With the increasing adoption of VR technology in educational settings, it is crucial to investigate the impact of these simulations on teaching methodologies and their role in enhancing pedagogical approaches, especially in language instruction.



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This paper seeks to synthesize existing research on applying VR simulations in English language instruction, emphasizing the advantages and obstacles educators encounter in this developing area, as noted by Ozkan (2017). Although VR provides engaging learning experiences, its integration into education faces numerous challenges, including restricted resources and differing degrees of technological skill among educators (Lawrence & Ahmed, 2020). It will examine the benefits and challenges of VR and investigate how it can improve student engagement and motivation in language learning. The immersive learning environments offered by VR enhance language comprehension and retention (Pan et al., 2021), highlighting the crucial influence that heightened engagement and understanding exert on student learning outcomes.

This paper offers insights into the effective implementation of VR and provides practical guidance for educators and educational institutions looking to integrate VR technology into their English language teaching practices (Li et al., 2021). As VR becomes increasingly integrated into education, it is essential to explore strategies to support the transition for instructors and students alike. This encompasses the training of educators, the creation of suitable curriculum materials, and the assurance that every student has fair access to this technology, irrespective of their background or learning environment (Tschanz & Baerlocher, 2022). It can pinpoint optimal strategies for equipping educators with the skills to effectively utilize VR, create pertinent curriculum resources, and guarantee that technology is accessible in various educational environments. The primary objective is to incorporate VR in manners that improve student involvement and educational results in English language teaching. Furthermore, it is essential to consistently assess the effects of VR experiences on language acquisition by collecting input from educators and learners to guarantee continuous enhancement in the integration process.

Partnerships between technology creators and educators will be essential in developing VR resources that are both captivating and educationally sound. Through the establishment of strong collaboration between the two parties, educational institutions can fully leverage the capabilities of VR to develop tailored and meaningful learning

experiences for varied student groups while simultaneously enhancing their comprehension of intricate topics. This iterative and collaborative approach aims to integrate VR into English language instruction, aligning with educational standards and responding to the evolving needs of students in a dynamic learning environment (Andrade, 2022). Therefore, the key research questions are as follows:

1. How do VR simulations modify the instructional methodologies of English language educators?
2. What is the teacher's perspective on the efficacy of VR simulations in improving their teaching methodologies?

Methodology

Process of Study and Literature Search

The systematic review included peer-reviewed journal papers that fulfilled all inclusion criteria. A preliminary scoping analysis identified seven databases, relevant keywords, and search terms suitable for inclusion in a systematic literature review. The literature search employed a straightforward method utilizing keywords. The study identifies virtual reality as a pedagogical tool for enhancing experiential learning. Consequently, search terms such as "virtual reality as a pedagogical tool" and "virtual reality for teaching English" were utilized in Google, Google Scholar, InterDok, ProQuest, Scopus, Semantic Scholar, and SearchPlus. Through this search, 41 articles were identified, from which the 12 most relevant articles were selected for this review.

Selection Process and Inclusion Criteria

A total of 41 articles were identified in the search results, of which 12 were selected for further analysis. The selection of the 12 articles was based on the relevance of virtual reality as a pedagogical tool and its application in teaching English. From 2020 to 2024, articles from reputable and established publishers were selected, excluding conference papers, theses, and reports.

Results and Discussion

Incorporating Virtual Reality (VR) in English language instruction demonstrates considerable potential to improve learning outcomes in diverse educational settings. Virtual reality fosters enhanced engagement and practical language application through the creation of immersive and interactive environments, effectively overcoming the limitations commonly associated with traditional methods. Virtual reality can replicate authentic language scenarios, enabling learners to engage in contextual practice, thereby enhancing comprehension and retention (Sabadosh & Baranovska, 2024).

Tabel 1. Systematic literature review

Author and year	Main Findings	Limitation
Yuseon et al., 2024	- The relationship between virtual reality and English language acquisition is notably beneficial. - A meta-analysis involving 461 participants from six studies was performed to validate academic achievement in VR-based English education. The authors conducted a systematic review of the literature on VR-based English education, analyzing different facets of the studies.	Not mentioned
Peixoto et al., 2021	- The correlation between immersive virtual reality and foreign language acquisition is notably advantageous, especially in contrast to traditional educational methods. - The relationship between immersive virtual reality and user motivation and pleasure is notably favorable. - The study highlighted limitations, including a limited number of studies and gaps in the literature, and offered recommendations for future research and advancements in this field.	- Insufficient sample size of the evaluated research - Deficiencies in the literature about this subject - Absence of detailed information on the particular studies and their techniques

Parmaxi, 2023	- Virtual reality is an indispensable instrument for language acquisition; nonetheless, it encounters obstacles related to technological setup and educational foundation. - Recent evaluations particularly addressing the use of VR in language acquisition are scarce, notwithstanding the existence of general reviews on the educational utilization of VR.	- Technical configuration challenges of VR in language learning - Pedagogical grounding challenges of VR in language classrooms - Necessity for further research and implications for researchers and practitioners
Pinto et al., 2021	- Over fifty percent of the analyzed research indicated that virtual reality technology including gaming tactics can facilitate foreign language acquisition. - The predominant dependent variable examined was "learning," the major technology utilized was augmented reality, the most often explored educational levels were primary and lower secondary, and the most prevalent language studied was English. - The authors advocate for the utilization of virtual reality and gaming to complement, rather than wholly supplant, conventional second language acquisition methods.	Not mentioned
Bahari, 2022	- The evaluation identified a greater volume of research on the application of virtual reality for teaching listening and speaking abilities than for reading and writing skills. - The review systematically categorized the data about the advantages and obstacles of employing VR for language acquisition across several linguistic competencies (listening, speaking, reading, writing). - The review presented pedagogical implications for educators on the advantages of utilizing virtual reality to teach language skills, with consequences for improving digital language pedagogy.	Not mentioned

Ece et al., 2023	- Virtual reality technologies substantially enhance student performance in English as a foreign language (EFL) instruction. -The evaluation was confined to the EFL setting, and subsequent research should investigate the application of VR in other language learning environments.	- The evaluation is limited to the EFL (English as a Foreign Language) setting and excludes the application of VR in other foreign language learning environments. - The evaluation just discusses future work directions, without detailing what those directions include.
Hamilton et al., 2021	- The majority of research identified a notable benefit of employing immersive virtual reality (I-VR) in education relative to non-immersive approaches. - A limited number of research indicated no substantial disparities in learning results between I-VR and non-immersive approaches. - Merely two investigations identified unequivocal adverse effects associated with the use of I-VR.	- Brief intervention durations in the analyzed studies - Absence of evaluation on long-term information retention - Concentration on select academic disciplines (e.g., biology, physics) - Insufficient methodologies employed to measure learning outcomes in the analyzed research - There is a necessity for more stringent research incorporating suitable evaluation metrics, intervention attributes, and educational results.
Esteves et al., 2023	- China and Taiwan exhibited the biggest volume of papers concerning iVR applications for English language acquisition. - The visual and aural senses were predominantly utilized in the examined iVR applications, whereas touch and proprioception were engaged to a lesser degree.	- The suggestions are exclusively derived from a systematic literature study; future research incorporating interviews with VR specialists may yield fresh insights and facilitate amended recommendations.
Altun, H. K., and Lee, J., 2020	- Vocabulary was the primary focus for Augmented Reality, whereas speaking was emphasized for Virtual Reality. The analysis highlighted the benefits and obstacles related to the implementation of immersive learning technology in English Language Teaching (ELT).	Not mentioned
Adams et al., 2021	- The research performed a thematic analysis of the current literature about the application of virtual reality (VR)	Not mentioned

	in education across many disciplines. - The researchers employed the activity system (AS) paradigm to examine the literature and examples, aiming to elucidate the intricate connections between VR technology and the human learning process. - The research offers recommendations for instructional design and implementation of VR in education, grounded in the activity system framework insights.	
Pataquiva and Klimova, 2022	- Virtual Reality (VR) and Augmented Reality (AR) technologies enhance second language (L2) acquisition more effectively than conventional learning techniques. - Virtual Reality (VR) and Augmented Reality (AR) can facilitate second language acquisition for students throughout a spectrum of skill, from novice to expert levels. - Improvements were observed just in listening and reading skills, whereas speaking and writing skills were unaffected by the usage of VR and AR.	- Limited sample sizes - Brief study duration - Minimal engagement with the technology, often restricted to a single session - Absence of follow-up assessments to evaluate long-term learning outcomes - Excessive dependence on quantitative data - Possible novelty effects stemming from the innovative nature of VR/AR technologies.
Lampropoulos and Kinshuk, 2024	- Gamification and virtual reality enhance many educational theories and methodologies, and their incorporation into education can improve and revolutionize conventional teaching and learning, receiving favorable evaluations from both students and educators. - Gamification aspects substantially influenced pupils' performance. - Gamified virtual reality learning environments provided more motivation, engagement, and interactivity for students, as well as enhanced options for individualized and collaborative learning in contrast to traditional classroom settings.	- The study encompassed a wide scope, imposing no restrictions on educational level, study kind, topic matter, or publication year. - The quality of the included studies was assessed using the MMAT, which may be regarded as a restriction for the overall quality of the examined data. - The study examined several outcomes, encompassing student attitude, behavior, mentality, and cognitive, physical, and social-emotional development, which may serve as a strength but also provide a possible constraint regarding the depth of analysis for any one result.

Virtual Reality as a Pedagogical Tool

Numerous studies underscore the revolutionary potential of VR in improving English language acquisition and teaching approaches. Yuseon et al. (2024) emphasize the significantly advantageous correlation between virtual reality and language acquisition, substantiated by a meta-analysis including 461 participants that confirm academic success in VR-based education. Peixoto et al. (2021) highlight the benefits of immersive VR compared to conventional approaches, associating it with heightened user motivation while also acknowledging drawbacks such as inadequate sample sizes in current studies. Parmaxi (2023) recognizes virtual reality as crucial for language acquisition; however, obstacles are encountered with technology infrastructure and educational principles. Pinto et al. (2021) endorse the utilization of virtual reality and gaming as supplementary instruments in language acquisition rather than substitutes for traditional approaches. The analysis effectively argues for VR as a significant educational tool, notwithstanding the research deficiencies and practical obstacles that require more investigation. Future research should concentrate on bridging these gaps by investigating bigger sample sizes and establishing standardized frameworks for the efficient integration of VR into language learning curricula. Elaborating on these elements would not only augment the credibility of study outcomes but also provide educators with practical insights into optimal strategies for employing VR in varied educational settings. Incorporating VR technology into language education may provide immersive experiences that include students in authentic situations, therefore improving their conversational abilities and cultural comprehension. Through the simulation of genuine encounters, virtual reality may connect theoretical understanding with practical application, equipping students to confidently address real-world communication issues. This novel method fosters active learning and facilitates peer cooperation, enabling students to refine their language abilities in a friendly and dynamic environment. Collaborative settings can enhance motivation and retention since learners are more inclined to engage thoroughly with the topic when they perceive themselves as part of a community. This sense of belonging can motivate

students to take chances in their language usage, ultimately resulting in enhanced fluency and competency as they navigate various linguistic environments collectively.

It is essential to recognize the complex role of virtual reality in language acquisition. A significant benefit of VR, as indicated by Yuseon et al. (2024), is its capacity to immerse learners in virtual worlds that replicate authentic language usage. This immersion facilitates language acquisition by providing students with genuine, contextual experiences that extend beyond conventional classroom environments. For example, virtual reality allows learners to participate in interactive conversations in many contexts, such as purchasing food in an international restaurant or having business meetings. This experiential learning method corresponds with the tenets of communicative language education, prioritizing practical application above memory. Nonetheless, the meta-analysis conducted by Yuseon et al. (2024) emphasizes the necessity for bigger and more extensive research since their conclusions, while favorable, are constrained by the narrow scope of the six studies incorporated.

Peixoto et al. (2021) emphasize that VR not only enhances engagement but also substantially increases user motivation and enjoyment, hence cultivating a learning environment that promotes active student participation. This involvement is especially pertinent in language acquisition because learner motivation serves as a critical determinant of achievement. Peixoto et al. (2021) emphasize that the research environment is fragmented, characterized by inadequate sample sizes and literature gaps that restrict the generalizability of findings. Parmaxi (2023) highlights the technological and infrastructural hurdles encountered by educators in the use of VR. The lack of standardized technology frameworks in educational institutions sometimes leads to uneven implementation of VR, hence confounding the assessment of its efficacy across various situations. The infrastructure constraints, coupled with insufficient pedagogical guidance on the proper integration of VR into the curriculum, impede widespread adoption.

Furthermore, the results from Pinto et al. (2021) indicate that VR and gamification ought to be utilized as supplementary instruments rather than substitutes for conventional language teaching. This viewpoint is significant, as it frames VR not as

a groundbreaking solution but as an augmentation of current methodologies. The immersive and gamified aspects of VR can stimulate students' intrinsic incentives, enhancing the engagement and enjoyment of the learning experience. Pinto et al. (2021) assert that excessive dependence on VR, without meticulous integration with conventional approaches, may result in superficial learning outcomes, particularly in domains necessitating profound language analysis, such as grammar and syntax.

A persistent problem in several research is the short duration of VR treatments, which, as Hamilton et al. (2021) observe, hinders the assessment of long-term learning retention. In the realm of language acquisition, it is crucial to assess not just immediate engagement but also the long-term retention of vocabulary, grammatical structures, and communication methods by learners. Prolonging the length of VR-based therapies and integrating longitudinal research would yield more definitive insights into the durability of VR-enhanced learning outcomes.

VR Simulations Significantly Modify the Instructional Methodologies of English Language Educators

The use of VR simulations profoundly alters the instructional approaches of English language teachers by improving student engagement, enabling actual language use, and promoting the adoption of varied teaching tactics. Research demonstrates that VR generates immersive settings that enhance motivation and engagement, as evidenced by Peixoto et al. (2021), who identified a positive association between immersive VR experiences and user motivation, beyond that of conventional educational approaches. Moreover, Yuseon et al. (2024) assert that VR facilitates contextualized language practice, enabling learners to participate in genuine conversation situations, thereby enhancing experience learning. This transition prompts educators to integrate established pedagogies with contemporary technology, as asserted by Pinto et al. (2021), who support the use of VR as an adjunct rather than a substitute for conventional approaches. Furthermore, the adaptation of VR to many learning styles requires tailored education, as Bahari (2022) observes that VR applications frequently emphasize the enhancement of listening and speaking abilities. The effective integration of VR highlights the necessity for sufficient professional development to

prepare educators with the requisite abilities to manage these emerging technologies, an issue identified by Parmaxi (2023). The integration of VR in language instruction promotes a more participatory, pragmatic, and learner-centered pedagogical approach. This transition not only improves engagement but also equips students for real-world communication situations, connecting theoretical knowledge with practical practice. The capacity of virtual reality to provide immersive settings enables learners to practice language skills contextually, enhancing the relevance and effect of the learning experience. As educators adopt these revolutionary technologies, continuous research and cooperation will be crucial to enhance best practices and optimize the efficacy of VR in language acquisition. This dedication to ongoing enhancement will guarantee that VR technology develops alongside educational requirements, ultimately revolutionizing language acquisition and cultivating a generation of learners prepared for global communication.

The impact of VR simulations on English language instruction is substantial, indicating that this technology redefines classroom dynamics and necessitates a shift in pedagogical methodologies. Virtual reality creates an immersive learning environment that differs from traditional methods, which emphasize passive knowledge acquisition. Peixoto et al. (2021) highlight that the increased motivation and engagement provided by VR arise from its capacity to actively involve learners, converting them from passive observers into participants in genuine language-use contexts. This paradigm shift necessitates that English language educators reevaluate their roles, transitioning from mere knowledge transmitters to facilitators of meaningful and interactive learning experiences. Virtual reality facilitates a comprehensive learning experience, allowing students to utilize their language skills in contextually pertinent scenarios that reflect real-world communication challenges. Yuseon et al. (2024) indicate that contextualized language practice through VR improves both the comprehension of linguistic structures and the pragmatic application of language. This approach allows learners to understand nuances such as tone, body language, and cultural references, which are crucial for effective communication.

The incorporation of virtual reality in language education necessitates that educators implement a more adaptive and personalized instructional approach. Bahari (2022) indicates that VR tools are frequently developed to address particular language skills, including listening and speaking, suggesting that educators should customize their instructional approaches to accommodate varied student requirements. VR platforms are particularly effective for students who face challenges with traditional language learning methods, as they provide a multisensory and interactive experience that accommodates diverse learning styles. This customized approach poses challenges, especially regarding teacher preparation and professional development. Parmaxi (2023) highlights that the effective implementation of VR necessitates that educators possess both the technological and pedagogical skills required to utilize these tools proficiently. Inadequate training may leave educators unprepared to effectively integrate VR into their curricula, resulting in superficial applications of the technology that do not fully leverage its potential. Professional development and ongoing support are crucial to ensure that VR enhances traditional language teaching methods rather than merely supplementing them.

The integration of VR in English language instruction promotes a student-centered, participatory approach, transitioning the emphasis from teacher-led instruction to collaborative learning environments. Pinto et al. (2021) contend that the integration of gamification elements in virtual reality enhances community and cooperation among learners, enabling them to practice language skills in group environments that replicate real-world social interactions. The collaborative aspect enhances linguistic competency and builds students' confidence and social skills, which are essential for effective communication. The immersive characteristics of VR facilitate experiential learning, enabling students to participate in role-playing activities or problem-solving tasks that necessitate the use of the target language in significant contexts. This active involvement facilitates the connection between theoretical knowledge and practical application, enhancing the learning experience.

The Teachers' Perspectives on the Efficacy of VR Simulations

The perspectives of teachers regarding the effectiveness of VR simulations in enhancing their teaching methodologies indicate a complex but predominantly favorable view, as evidenced by systematic reviews.

Parmaxi (2023) observes that teachers regard VR as a crucial instrument for language acquisition; however, they face challenges concerning technological infrastructure and the necessity for enhanced pedagogical frameworks. This indicates that educators acknowledge the transformative potential of VR while also highlighting the necessity of adequate training and support for its effective integration into instructional practices. Peixoto et al. (2021) demonstrate that teachers view immersive VR experiences as significantly beneficial, especially in improving student motivation and engagement relative to conventional methods. This is consistent with the findings of Yuseon et al. (2024), who demonstrate that VR's capacity to enhance contextualized language learning and practical application is viewed favorably by educators.

Bahari (2022) notes that current research predominantly emphasizes the development of specific language skills, such as listening and speaking, rather than offering a comprehensive understanding of the broader implications of VR for teaching methodologies. This indicates that educators might possess a constrained view of the comprehensive advantages and difficulties linked to the incorporation of VR into their methodologies.

Systematic reviews indicate that teachers perceive VR simulations as effective for enhancing language instruction. However, they highlight the necessity for strong technological support, pedagogical training, and a comprehensive understanding of the application of these technologies across different language domains.

An analysis of teachers' perspectives indicates a complex understanding of the potential for VR simulations to improve instructional methods, reflecting both optimism and concerns regarding its implementation. Parmaxi (2023) indicates that educators perceive VR as a transformative tool for language acquisition; however, they frequently face substantial barriers concerning technological infrastructure and

pedagogical frameworks. These challenges indicate that, despite positive perceptions of VR's advantages, many educators feel inadequately prepared to effectively incorporate these tools into their instruction. The constraints of technical support within educational institutions and inadequate training programs contribute to the disparity between acknowledging the potential of virtual reality and its effective implementation in practice. The situation is exacerbated by the absence of clear guidelines for teachers on adapting traditional methodologies to VR-enhanced lessons, potentially resulting in fragmented or inconsistent application of this technology in educational settings.

Peixoto et al. (2021) emphasize that teachers recognize VR's potential to enhance student motivation and engagement. However, most research primarily examines the short-term effects of VR on student performance, neglecting its long-term implications for teaching methodologies. This aligns with Bahari's (2022) findings, which indicate that the current literature predominantly focuses on the development of specific language skills—mainly listening and speaking—rather than examining the wider impact of VR on pedagogical approaches. This emphasis on particular competencies may restrict teachers' understanding of how VR can enhance various aspects of language learning, including reading, writing, and grammar instruction. The absence of extensive research regarding the integration of VR into a comprehensive language curriculum may result in uncertainty among educators about how to fully utilize its potential across various language domains. Teachers acknowledge the immediate benefits of virtual reality in enhancing student motivation and fostering immersive learning environments. However, they necessitate additional research-based guidance and institutional support to effectively integrate these technologies into their pedagogical practices.

Conclusion

The incorporation of virtual reality (VR) in English language education signifies a significant development, with the potential to improve teaching methods and student learning results. Multiple studies, including those by Yuseon et al. (2024) and Peixoto

et al. (2021), indicate that VR enhances student motivation and engagement by providing immersive experiences that support contextualized language practice. This enhances the learning environment and promotes active participation, enabling learners to engage with real-world communication scenarios more confidently and competently.

The implementation of VR in educational settings presents several challenges. Educators acknowledge the necessity of a strong technological framework and thorough pedagogical training to successfully incorporate VR into their instructional methods.

Educators typically view VR positively; however, there is a clear necessity for further research to overcome existing limitations, including small sample sizes and a narrow focus on particular language skills. Future research should focus on developing standardized frameworks to enhance the integration of VR in language acquisition across various educational contexts. This dedication to ongoing enhancement will improve the effectiveness of VR tools and ensure their evolution in response to the changing requirements of language learners. Embracing VR technology enables educators to establish dynamic, collaborative learning environments that equip students for global communication, thereby transforming the field of language education.

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About the Authors

Ruffi'ah Ning Asrianti is a civil servant in the field of education and a dedicated English teacher at SMP Negeri 1 Baturaden, Banyumas, Central Java Province, Indonesia. She is currently pursuing a master's degree at Universitas Muhammadiyah Purwokerto, Indonesia and possesses a bachelor's degree in English Language Teaching. She is recognized for her innovative teaching methods in English and actively participates in a variety of best-**practice** writing competitions. In 2023, she was awarded the competition's top prize for her exceptional contribution.

E-mail: r.ningasrianti@gmail.com

ORCID: 0009-0009-1673-3499

Tono Suwartono is a Professor of English Language Teaching at Universitas Muhammadiyah Purwokerto, Indonesia. He holds a bachelor's degree in English Language Teaching, a master's degree in Linguistics for Language Teaching, and a Ph.D. in Language Education. In addition, he is an internationally certified TESOL trainer. He has conducted countless research studies and extensively published articles in national, international, as well as reputable international journals. He has travelled to tens of countries to present at conferences. He has also productively authored books. He has trained thousands of teachers nationwide. Besides working for the Govt programs such as Independent Watch Team for the school national examination and Instructor and Supervisor for Teacher Certification Program, he also serves as a peer reviewer for several journals within Indonesia and beyond, including seven internationally reputed journals indexed in Scopus.

E-mail: suwartono@ump.ac.id

ORCID: 0000-0002-9615-2257