



CHALLENGES AND OPPORTUNITIES OF INTEGRATING VR IN ELT: A CASE STUDY IN A PESANTREN

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Abstract

This study explores English teachers' perceptions of using Virtual Reality (VR) in language teaching at Darul Ulum Jombang, an Islamic boarding school in Indonesia. Using a descriptive qualitative approach, five junior and senior high school teachers were interviewed. Results show that VR increases student engagement, enhances contextual language use, and supports memory retention. However, teachers also reported challenges, including limited technical infrastructure, lack of training, and time-consuming preparation. The study highlights the need for institutional support to fully integrate VR into English teaching. These findings contribute to the growing research on immersive technologies in education, especially in traditional learning environments.

Keywords: *English Language Teaching, Immersive Learning, Teacher Perceptions, Virtual Reality*

INTRODUCTION

In the modern era, technology plays a significant role in transforming the educational landscape. One of the most exciting and innovative tools in recent years is Virtual Reality (VR). VR allows users to experience an immersive, three-dimensional environment that simulates real-life situations. In education, VR has been praised for its ability to engage learners in interactive experiences that enhance comprehension and memory retention (Marougkas, Troussas, Krouska, & Sgouropoulou, 2023). This technology is particularly valuable in language learning, where it can create simulated contexts such as visiting a foreign country, ordering food in a restaurant, or interacting in a public space using the target language. These experiences provide students with authentic language practice that traditional methods often fail to offer (Schorr, Plecher, Eichhorn, & Klinker, 2024).

In English language teaching (ELT), VR has the potential to bridge the gap between



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the classroom and the real world by making language use more meaningful and engaging. For example, students can explore virtual museums or participate in simulated interviews, helping them learn vocabulary and expressions in context. As language learning becomes more communicative and immersive, VR offers a valuable alternative to passive learning through textbooks and worksheets. With the added benefit of being fun and motivating, VR can encourage students to participate more actively in lessons.

Despite these advantages, VR is still relatively new in many educational settings, especially in Islamic boarding schools, or *pondok pesantren*, in Indonesia. These schools often focus on traditional religious studies, and integrating new technologies such as VR requires adjustments in curriculum, teaching methods, and teacher readiness. In the pesantren complex of Darul Ulum Jombang, a few English teachers have recently started experimenting with VR in their classrooms. They hope that VR can support more engaging and effective language learning, but they also encounter several challenges. These include limited access to VR tools, lack of training, and the additional time needed for planning VR-based lessons.

Understanding how teachers perceive VR is crucial, as their attitudes influence whether and how they implement new technologies in their classrooms. Teachers who have positive perceptions are more likely to experiment, innovate, and adapt their teaching to include new tools. On the other hand, those who feel uncertain or overwhelmed may avoid using technology even when it is available. Therefore, exploring teacher perceptions can help identify both the opportunities and the barriers in using VR for language instruction, especially in specific educational contexts such as pesantren.

Several previous studies have examined how teachers perceive VR in various countries and educational settings. A study conducted by Khukalenko, Kaplan-Rakowski, and An. (2022) found that they generally held positive attitudes toward VR's immersive and motivational aspects. However, they also noted practical concerns such as lack of time, insufficient technical support, high costs, and the need for professional development. This study highlights that although teachers see the potential benefits, they require adequate support to implement VR effectively.

In Indonesia, Sujarwo, Japar, & Sumantri (2024) revealed that while teachers welcomed the innovation, they also suggested that the VR materials needed improvement to better align with curriculum goals and students' needs. Similarly, Gorman, Hoermann, Lindeman, and Shahri (2022) reported that students were highly motivated and participated more actively during VR lessons. However, the teachers also faced technical difficulties and found that preparing for VR-based lessons was more time-consuming than regular classes.

Beyond Indonesia, research on pre-service teachers found that although trainees were excited about the engaging nature of VR, many felt insecure about using it due to limited experience and knowledge. They also raised concerns about the cost of equipment, classroom management, and student safety during VR sessions Mouw, Fokkens-Bruinsma, and Verheij, (2020). These international studies show that teachers across different contexts value the potential of VR but also share common concerns.

While these studies offer useful insights, there remains a research gap in understanding teacher perceptions of VR in Indonesian Islamic boarding schools. Most studies so far have focused on urban schools or public institutions, not pesantren environments. Moreover, no known research has focused on the specific context of Darul Ulum Jombang, one of the largest pesantren complexes in East Java, Indonesia. Given that pesantren often integrate religious, academic, and cultural education, introducing VR into their English language classrooms offers a unique case for study.

This research aims to fill that gap by investigating how English teachers in Darul Ulum perceive the use of VR in their teaching. By listening to the voices of teachers who are actively trying to apply this technology in their classrooms, the study can provide valuable information for policymakers, school leaders, and developers of educational technology.

This study focuses on three research questions:

1. What are English teachers' perceptions of using VR in their classrooms at Darul Ulum schools?
2. What benefits and challenges do they identify in using VR for English teaching?
3. How do their experiences and views compare with those reported in previous studies?

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By exploring these questions, this research seeks to contribute to the understanding of VR integration in under-researched educational environments and support efforts to make English learning more immersive and effective through the use of innovative technologies.

RESEARCH METHOD

Research design

This study used a descriptive qualitative research design, which is appropriate for exploring individuals' experiences, perceptions, and attitudes in depth within a real-life context. Since this research aims to understand how English teachers in pesantren settings perceive the use of Virtual Reality (VR) in their classrooms, a qualitative approach allows for a richer understanding of the participants' views and the educational context in which they teach.

Research location

The research was conducted in several schools that are part of the Darul Ulum Jombang pesantren complex in East Java, Indonesia. This pesantren is well known for its combination of religious and general education, making it a unique and meaningful setting to examine the integration of modern technologies such as VR in language teaching. Although pesantren are often seen as traditional institutions, some schools within the Darul Ulum network have started to explore educational innovations, including the use of digital tools.

Participants

Five English teachers participated in this study. They were selected through purposive sampling, a method commonly used in qualitative research to identify participants who have relevant experience or knowledge about the research topic. Specifically, the researchers selected teachers who had either already used VR in their classrooms or had shown an interest in doing so. The participants included two teachers from SMP/MTs (junior high level) and three from SMA/MA (senior high level). This combination allowed the study to explore perceptions across different levels of secondary education within the pesantren context.

Data collection

Data were collected using semi-structured interviews, which are flexible but guided by a set of predetermined open-ended questions. This format allowed the researchers to explore the participants' perceptions while also giving room for them to share their thoughts and experiences freely. Each interview lasted between 45 and 60 minutes and was conducted in a quiet setting at the school to ensure comfort and focus.

The interview questions were designed to explore several key areas: (1) Teachers' experiences with VR in English language instruction, (2) Perceived benefits and challenges of using VR in teaching, (3) Training and preparation needed to implement VR effectively, (3) Availability of VR-related materials and tools, and (4) Perceptions of institutional support, including support from school leadership and infrastructure. The interviews were conducted in Indonesian to ensure that participants could express themselves clearly and comfortably. Each session was recorded, with participants' consent, and later transcribed for analysis.

The collected data were analyzed using thematic analysis, a common method in qualitative research for identifying and interpreting patterns or themes in textual data. The steps included reading and re-reading the interview transcripts to become familiar with the data, then coding important phrases and sentences that reflected key ideas or concerns raised by the participants. These codes were then grouped into broader themes.

Several recurring themes emerged from the analysis, including: (1) Increased student engagement and motivation, (2) Teachers' confidence and readiness in using new technology, (3) Technical limitations, such as insufficient devices and internet connectivity, (4) The need for professional training and curriculum-aligned VR materials, and (5) Suggestions and recommendations for improving VR implementation in pesantren schools.

These themes were then compared with findings from previous research to identify similarities and differences. For example, studies by Kinanti (2024) and Asril, Syafril, Engkizar, and Arifin (2023) similarly highlighted the dual reality of enthusiasm and barriers, which helped validate the findings and provided a richer interpretation of the data.

Through this analysis, the study aimed not only to describe the perceptions of English teachers at Darul Ulum but also to contribute to the growing body of knowledge on

technology adoption in culturally specific educational environments, such as Islamic boarding schools.

FINDINGS AND DISCUSSION

Findings

The results of this study are based on interviews with five English teachers from junior and senior high schools at Darul Ulum Jombang. The data revealed two main themes: (A) the perceived benefits of using Virtual Reality (VR) in English teaching, and (B) the challenges faced during its implementation.

Perceived Benefits of Using VR

1) Increased Student Engagement and Motivation

All five teachers reported that their students were more active and focused when learning with VR. They noted a clear difference in student behavior compared to traditional teaching methods. One senior high school teacher shared:

“My students were more focused and excited when using VR; it’s very different from the usual PowerPoint or textbook.”

Teachers observed that even students who were usually passive became more interested and involved. They described the VR learning sessions as lively, with students asking questions and responding more actively.

2) Authentic and Contextualized Language Use

VR provided opportunities for students to practice English in realistic settings. Teachers mentioned that students seemed more confident when speaking English in these virtual environments. For instance, one junior high school teacher explained:

“In a VR café scene, students practiced ordering food. It felt real and made their English more meaningful.”

Through these simulated scenarios, students learned how to use language in context, which helped them understand vocabulary and expressions more naturally. Teachers believed this method made learning more relevant and easier to apply in real life.

3) Improved Retention Through Visual and Experiential Learning

Teachers also observed that students remembered more details after VR lessons. The combination of visual scenes, interactive features, and immersive experiences helped students connect ideas and vocabulary to real-world objects.

A teacher shared:

“After the VR lesson about city landmarks, they remembered more details than usual, even the names of places and directions.”

Participants noted that this improvement in memory was especially strong in students who were visual learners or those who had difficulty with abstract content in traditional textbooks.

B. Challenges in Implementing VR

1) Time-Consuming Preparation

All five teachers expressed concern about the time needed to prepare for VR-based lessons. They had to spend hours looking for the right content, testing devices, and adjusting lesson plans. A senior teacher said:

“It takes me hours to prepare a VR lesson. I must test everything beforehand to avoid wasting class time.”

Some also mentioned that preparing backup plans was necessary in case of technical failure, which added to their workload.

2) Technical and Infrastructure Issues

The second major challenge was related to technology and infrastructure. Teachers reported slow internet, outdated devices, and problems with compatibility between VR content and available hardware. One teacher commented:

“Sometimes the Wi-Fi is too slow, or the video doesn’t play properly. Students get distracted while waiting.”

These issues disrupted the learning process and sometimes caused frustration for both teachers and students. As a result, teachers felt discouraged from using VR frequently.

3) Lack of Confidence and Training

Even though all teachers had positive attitudes toward VR, they admitted feeling unsure about how to use it effectively. Most had not received formal training and were unsure how to create or adapt their own VR content. One participant noted:

“I’m interested in VR, but I still don’t know how to create my own interactive content. We need workshops.”

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The teachers expressed a desire for practical training sessions, not just theoretical introductions. They believed that gaining more hands-on experience would boost their confidence.

4) Limited Institutional Support

Teachers felt that their schools were not yet fully prepared to support VR integration. They pointed out the need for clear policies, funding, and collaboration between administrators and teachers. As one teacher stated:

“We need more than just enthusiasm. The school must support us with equipment, content, and policy.”

Without support from school leadership, teachers found it hard to sustain the use of VR in the classroom. They felt that meaningful implementation would require commitment at the institutional level.

Table 1. Summary Table of Research Findings

Category	Theme	Description	Sample Teacher Quote
Benefits of Using VR	1. Student Engagement & Motivation	Students showed more interest and active participation during VR-based lessons.	“My students were more focused and excited when using VR; it’s very different from the usual...”
	2. Contextual Language Practice	VR allowed students to practice English in real-life scenarios, making learning more meaningful.	“In a VR café scene, students practiced ordering food. It felt real and made their English...”
	3. Visual Learning & Retention	Students remembered vocabulary and content better due to immersive visuals and interaction.	“After the VR lesson about city landmarks, they remembered more details than usual...”
Challenges in Using VR	1. Time-Consuming Preparation	Lesson planning and device setup required extra time and effort from teachers.	“It takes me hours to prepare a VR lesson. I must test everything beforehand...”
	2. Technical & Infrastructure Issues	Slow internet and outdated devices often interrupted the learning process.	“Sometimes the Wi-Fi is too slow, or the video doesn’t play properly. Students get distracted...”
	3. Lack of Confidence & Training	Teachers needed more training and guidance to feel confident in using or creating VR content.	“I’m interested in VR, but I still don’t know how to create my own interactive content...”
	4. Limited Institutional Support	Lack of funding, policy, and administrative backing hindered consistent implementation of VR.	“We need more than just enthusiasm. The school must support us with equipment, content, and policy.”

Discussion

The findings of this study show that English teachers at *pesantren* Darul Ulum Jombang perceive Virtual Reality (VR) as a useful and exciting tool for language teaching. Their responses reflect both enthusiasm and concern, showing a balance between hope for innovation and awareness of practical limitations. These results are consistent with and add to previous research from other contexts.

One of the main benefits teachers noticed was increased student engagement and motivation. This aligns with the findings of Mahmoud, Harris, Yassin, and Hurkxkens (2020) and Asril et al., (2023) who also found that VR makes learning more immersive and enjoyable. In educational psychology, this benefit is related to the theory of intrinsic motivation (Deci & Ryan, 2000), which suggests that students are more motivated when they feel curious and enjoy the activity itself. VR creates realistic, fun, and visually rich experiences that trigger this kind of motivation. It moves students from passive learning (just listening) to active learning (doing and experiencing), which is known to improve outcomes.

The second benefit is that VR provides contextual and real-life language practice. Teachers in this study described how students could practice English in virtual cafes, museums, and cities. This supports the findings of Garcia, Kauer, Laesker, and Nguyen (2019), who argue that VR helps students "live the language." In second language acquisition theory, communicative competence is best built through interaction in meaningful contexts (Canale & Swain, 1980). Therefore, using VR in English classes can simulate natural situations, making speaking and listening skills more relevant and effective.

Teachers also noticed better memory retention due to the visual and immersive elements of VR. This finding echoes Amin, Ousta, Yusoff, and Malik (2020), who highlighted how 3D visuals support long-term memory. From a cognitive psychology perspective, dual coding theory (Paivio, 1990; Kinanti, 2024) explains this effect: when students process both verbal and visual information together, they are more likely to remember what they learn. VR naturally combines audio, visual, and kinesthetic inputs, helping students store and retrieve knowledge more easily.

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However, despite these positive aspects, all teachers experienced challenges. The first issue was time-consuming preparation, including finding or creating suitable content, setting up the tools, and solving technical problems. This supports findings by Stranger-Johannessen and Fjørtoft (2021), who reported that VR use often adds extra pressure on teachers' planning time. From a teacher workload perspective, such demands may reduce motivation and increase teacher burnout (Bonner, Lege, & Frazier, 2023), especially when there is little institutional support.

Another major issue was technical problems, including slow Wi-Fi and limited access to modern devices. These issues match studies in both developed and developing countries (e.g., (Korabayev, Ergashev, Mahsudov, & Mamatova, 2024; Rahiem, 2020). Such challenges can disrupt the lesson flow, frustrate students, and reduce the effectiveness of the learning experience. These obstacles also reflect what the Technology Acceptance Model (TAM) explains: even if users believe a technology is useful, they may resist using it if it is hard to use or unreliable (Davis, 1989).

A significant concern was teachers' lack of confidence and training. Even though teachers were open to VR, many did not feel prepared to design lessons or solve technical problems. This is similar to what Cooper et al. (2019) found in Australia, where pre-service teachers liked VR but felt unready to use it. Educational psychology highlights the importance of self-efficacy—the belief in one's ability to succeed (Bandura, 1997). When teachers do not feel confident, they are less likely to adopt new methods, even when those methods are beneficial.

Finally, the lack of institutional support—such as equipment, training, and curriculum guidance—was a major barrier. This concern is not new. Research in Oman and Indonesia has emphasized that schools must invest not just in technology but also in teacher capacity and infrastructure (Al-Mahdy, Hallinger, Emam, & Al-Harhi, 2021; Widodo & Akbar, 2024). From a systems perspective, innovations like VR can only succeed when all parts of the educational system—teachers, school leaders, policy makers—work together. Without structural support, even the best technologies may fail to reach their full potential.

In short, the study shows that while VR has real promise for English teaching—especially in terms of motivation, engagement, and contextual learning—there are clear practical challenges that must be addressed. Teachers are willing and curious, but they need training, support, and reliable infrastructure. These findings not only match those from other regions but also highlight the unique needs and potential of integrating VR in pesantren-based education in Indonesia.

CONCLUSION

This study explored the perceptions and experiences of English teachers at Darul Ulum Jombang regarding the use of Virtual Reality (VR) in language teaching. The findings show that VR can significantly increase student engagement, motivation, and learning outcomes by providing immersive, authentic, and visually rich experiences. Teachers reported that VR helped students use English in real-life contexts, improved their speaking confidence, and enhanced memory retention through visual interaction. These benefits demonstrate that VR has strong potential to support communicative and contextual learning, especially in settings like pesantren, where access to real-life English environments is limited.

However, the study also identified several challenges that must be addressed for successful implementation. Teachers faced difficulties with lesson planning, technical issues, lack of confidence, and limited institutional support. These challenges reflect wider problems seen in both developing and developed educational systems. For VR to become a sustainable tool in English teaching, schools need to provide proper training, adequate equipment, reliable internet, and strong administrative backing. With these supports in place, VR can become an effective and innovative method for enhancing language education, even in traditional or resource-limited environments.

REFERENCES

- Al-Mahdy, Y. F. H., Hallinger, P., Emam, M., & Al-Harthi, K. (2021). Supporting teacher professional learning in Oman: The effects of principal leadership, teacher trust, and teacher agency. *Educational Management Administration & Leadership*, 52(1). Advance online publication. <https://doi.org/10.1177/17411432211064428>

- Amin, H. U., Ousta, F., Yusoff, M. Z., & Malik, A. S. (2020). Modulation of cortical activity in response to learning and long-term memory retrieval of 2D versus stereoscopic 3D educational contents: Evidence from an EEG study. *Computers in Human Behavior*, *114*, 106526. <https://doi.org/10.1016/j.chb.2020.106526>
- Asril, Z., Syafril, S., Engkizar, E., & Arifin, Z. (2023). Advancing educational practices: Implementation and impact of virtual reality in Islamic religious education. *Jurnal Pendidikan Islam*, *9*(2), 199–210. <https://doi.org/10.15575/jpi.v9i2.20567>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.
- Bonner, E., Lege, R., & Frazier, E. (2023). Teaching CLIL courses entirely in virtual reality. *CALICO Journal*, *40*(1), 45–67. <https://doi.org/10.1558/cj.22676>
- Canale, M., & Swain, M. (1980). Theoretical bases of communicative approaches to second language teaching and testing. *Applied Linguistics*, *1*(1), 1–47. <https://doi.org/10.1093/applin/I.1.1>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319–340. <https://doi.org/10.2307/249008>
- Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01
- Garcia, S., Kauer, R., Laesker, D., & Nguyen, J. (2019). A virtual reality experience for learning languages. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems* (Paper EA06). Association for Computing Machinery. <https://doi.org/10.1145/3290607.3313253>
- Gorman, D., Hoermann, S., Lindeman, R. W., & Shahri, B. (2022). Using virtual reality to enhance food technology education. *International Journal of Technology and Design Education*, *32*(4), 1–19. <https://doi.org/10.1007/s10798-021-09669-3>
- Khukalenko, I. S., Kaplan-Rakowski, R., & An, Y. (2022). Teachers’ perceptions of using virtual reality technology in classrooms: A large-scale survey. *Education and Information Technologies*. Advance online publication. <https://doi.org/10.2139/ssrn.4074142>
- Kinanti, C. S. (2024). Exploring the potential of VR technology in education in Indonesia. *Devotion: Journal of Community Service*, *5*(7), 742–748. <https://doi.org/10.59188/devotion.v5i7.746>
- Korabayev, S., Ergashev, O., Mahsudov, Sh. A., & Mamatova, S. (2024). Exploring common technical issues in modern technology. *BIO Web of Conferences*, *145*, 03016. <https://doi.org/10.1051/bioconf/202414503016>
- Mahmoud, K., Harris, I., Yassin, H., & Hurkxkens, T. J. (2020). Does immersive VR increase learning gain when compared to a non-immersive VR learning experience? In P. Zaphiris & A. Ioannou (Eds.), *Learning and collaboration technologies: Human and technology ecosystems* (pp. 480–498). Springer. https://doi.org/10.1007/978-3-030-50506-6_33

- Maroungkas, A., Troussas, C., Krouska, A., & Sgouropoulou, C. (2023). Virtual reality in education: A review of learning theories, approaches and methodologies for the last decade. *Electronics*, 12(13), 2832. <https://doi.org/10.3390/electronics12132832>
- Mouw, J., Fokkens-Bruinsma, M., & Verheij, G.-J. (2020, June). *Using virtual reality to promote pre-service teachers' classroom management skills and teacher resilience: A qualitative evaluation*. In F. García-Peñalvo (Ed.), *Proceedings of the Sixth International Conference on Higher Education Advances (HEAd'20)*. Universitat Politècnica de València. <https://doi.org/10.4995/HEAd20.2020.11049>
- Paivio, A. (1990). *Mental representations: A dual coding approach*. Oxford University Press.
- Rahiem, M. D. H. (2020). Technological barriers and challenges in the use of ICT during the COVID-19 emergency remote learning. *Universal Journal of Educational Research*, 8(11B), 6124–6133. <https://doi.org/10.13189/ujer.2020.082248>
- Schorr, I., Plecher, D. A., Eichhorn, C., & Klinker, G. (2024). Foreign language learning using augmented reality environments: A systematic review. *Frontiers in Virtual Reality*, 5, Article 1288824. <https://doi.org/10.3389/frvir.2024.1288824>
- Stranger-Johannessen, E., & Fjørtoft, S. O. (2021). Implementing virtual reality in K–12 classrooms: Lessons learned from early adopters. In M. A. Casalino, G. Chiusano, A. Khoroshilov, & V. Uskov (Eds.), *Smart education and e-learning 2021*. Springer. https://doi.org/10.1007/978-981-16-2834-4_12
- Sujarwo, Japar, & Sumantri, S. (2024). The effect of virtual reality learning media on student social studies learning outcomes in junior high schools. *KnE Social Sciences*, 9(2), 263–269. <https://doi.org/10.18502/kss.v9i2.14853>
- Widodo, Y. B., & Akbar, K. F. (2024). Effectiveness of technology use in Indonesian high schools: Student engagement, school capacity, teacher performance. *International Journal of Business Law and Education*, 5(1), 615–627. <https://doi.org/10.56442/ijble.v5i1.442>