

Semi-Immersive Virtual Reality (VR) as Media in Teaching English at an Indonesian Private University

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Abstract

This study examines the efficacy of semi-immersive virtual reality (VR) in enhancing English language learning to address the challenges learners face in traditional educational settings. By employing 360-degree web-based imagery, we sought to create a more captivating and engaging educational experience. The research involved 20 students from the English Education Study Program, who participated in a series of immersive learning activities designed to augment their linguistic skills. Data collected through comprehensive surveys revealed a significant preference for the semi-immersive VR approach among participants. They expressed enthusiasm not only for the material's visual appeal but also for the comfort and flexibility the VR environment provided during the learning process. These insights suggest that integrating visual and interactive elements into language education can foster a deeper connection to the material, thus enhancing motivation and retention. The results show that learners found the semi-immersive VR technique helpful in enhancing literacy-related learning experiences, particularly by raising awareness of digital literacy, engagement, and comprehension. Although these results demonstrate the educational potential of VR, more studies using objective literacy tests are required to confirm its effect on real skill development. Moreover, this study underscores the transformative potential of semi-immersive VR in language education, highlighting its capacity to enhance engagement and effectiveness in the learning environment. In conclusion, our results advocate for the strategic integration of advanced technological resources into English language curricula, which could lead to improved student outcomes and a more enriched educational experience. Such advancements are crucial for preparing students to meet the demands of an increasingly digital world.

Keywords: *Semi Immersive; Virtual Reality; Teaching Media; English Language Learning; Technology*



1. Introduction

Language has a vital role in enabling social connections among people. English is widely regarded as a global language. The English language is intricately intertwined with every facet of existence. English has been taught in Indonesia from elementary to higher school levels. (Prayatni, 2019), but most students are still poor at expressing their ideas, opinions, or thoughts in English. Several issues hinder the achievement of effective teaching and learning of English as a Foreign Language (EFL) in Indonesia. Teacher credentials, poor English competence, class size, student motivation, classroom-centered instruction, and limited learning resources impact the success of teaching and learning English as a Foreign Language (EFL) (Sulistiyo, 2016). In the era of Smart Society 5.0, teachers and learners must go beyond traditional learning methods. Instead, they should prioritize integrating technology and Technological Knowledge (TK) into the learning process to enhance engagement and stimulation (Alotumi, 2023). TK is a component of TPACK, a current trend among educators. Technology in education will enable students and educators to manage the learning process more effectively through greater flexibility. Virtual Reality-based media is currently a trending topic in the field of education (Setiawan et al., 2018).

Virtual reality refers to a collection of technologies and computer gear that, when integrated, generate a fully immersive simulation of a three-dimensional environment (Marougkas et al., 2023). A virtual environment is typically a simulation of a physical climate created through three-dimensional settings that include depth perception, noises, and interactive consoles for user engagement (Lee & Shea, 2020). User movement can be monitored using a head-worn device or motion sensors. Virtual reality is used in various domains, including video games, engineering, education, psychiatric therapy, e-commerce, marketing, and art. It is used in third-person games to provide gamers with a genuine digital environment in which they can engage, distinct from the physical world. Computer-aided design (CAD) software enables engineers and students in the engineering and education fields to alter and refine their designs as if interacting with a tangible object. (Neelakantam & Pant, 2017) Virtual reality (VR), also known as immersive multimedia or computer-simulated reality, is a computer-based technology that recreates a real or fictional world and simulates the user's physical presence and surroundings, enabling interaction. Virtual realities are artificially generated experiences that can simulate sensory perceptions such as sight, touch, hearing, and smell (Maxwell, 2018). Virtual Reality (VR) within the TPACK (Larsen, 2023) framework shows that integrating this technology can enrich the learning experience by combining content knowledge, pedagogy, and technology. In teaching English as a foreign language (EFL), VR enables the simulation of English-speaking environments that closely resemble real-world situations, thereby supporting practical and interactive learning (Nasrullah et al., 2025).

Moreover, teachers can use virtual reality (VR) simulation technology to design and produce multidimensional, interactive audiovisual and operational experiences. Teachers can design and develop multidimensional, interactive, audiovisual, and hands-

on simulation-based learning games that use virtual reality (VR). Within the educational setting, users can assume the role of the main characters in the game and navigate through many simulated teaching environments simultaneously. They can perceive and manipulate their surroundings, as in the real world. (Zhou, 2024). It is indicated that VR has vast potential to transcend traditional educational limitations (Martín-Gutiérrez et al., 2017; S. Cai et al., 2022; Annamalai et al., 2023). Building on prior findings on the implementation of virtual reality in certain levels or grades of education, this paper analyses EFL students' perceptions of using web-based virtual reality as a teaching medium in higher education in Indonesia.

1.1. Virtual Reality (VR) In Education

Virtual Reality (VR) has been experiencing rapid growth in both technology and community. The computational capacity of machines and devices has grown substantially, along with significant improvements in coding efficiency. An increasing number of individuals have acquired VR devices due to the growing popularity of impactful VR games and videos. Virtual reality (VR) devices are increasingly user-friendly, rapidly expanding the VR community, including the Education Sector. (Cai et al., 2023);(MUZ & YÜCE, 2023). Virtual reality (VR) in education provides learners with an immersive and interactive learning experience, enabling them to grasp complex concepts and ideas more efficiently and effectively (Abdullah et al., 2025). VR technology has empowered educators to create diverse educational experiences, ranging from virtual excursions to intricate simulations, that can captivate students and facilitate their learning. Besides that, utilizing virtual reality (VR) in education has the potential to completely transform the learning process for students by providing immersive and fascinating experiences that can significantly boost their understanding of the subject matter. Offering an immersive virtual reality (VR) experience can link abstract ideas to real-world applications, thus equipping students with the confidence to confront future challenges (Marougkas et al., 2023).

One of the famous VR formats is 360-degree video. A 360-degree video is created by capturing moving images from all directions simultaneously, starting at a specific place. By using 360-degree photos and videos, we can create a virtual classroom that closely resembles reality. Within this virtual environment, students can engage in focused and tailored lectures. (Gorman et al., 2022). 360-degree pictures, often called panoramic, omnidirectional, or spherical videos, are a developing multimedia technology that provides users with a fully immersive viewing experience (Anwar et al., 2020). The 360-degree image allows students to access the location and obtain details and specific information by moving the image. The user felt it was exciting and compelling for teaching and learning. (Jitmahantakul & Chenrai, 2019); (Beverly et al., 2022);(Mokhtar et al., 2021).

The research concludes that 360° video is an effective educational tool that meets the growing educational demands, enhances the teaching and learning process, and fosters students' motivation, active participation, and engagement, making learning more effective. (Lampropoulos et al., 2021). Subsequently, utilizing the 360° Video enriches the learning process by offering teachers a thorough and immersive experience.

The expansive perspective of the video facilitates a more profound comprehension of the situation (Radu et al., 2021). Another study concluded that encouraging the integration of 360-degree videos in teacher education enhances teacher observation skills (Kosko et al., 2021).

1.2. Technological Pedagogical Content Knowledge (TPACK)

Implementing the TPACK framework to include technology in classroom instruction is complex. To effectively design their instructional program, faculty learners must strategically plan, carefully select, skill-fully utilize, expertly model, and seamlessly integrate the domains of content knowledge (CK), pedagogical knowledge (PK), technological knowledge (TK), technological pedagogical knowledge (TPK), technological content knowledge (TCK), and technological pedagogical content knowledge (TPACK) (Lisa et al., 2021) (Zhang & Chen, 2022). Simultaneously, it is essential for students to actively engage in diverse instructional activities and teaching encounters, including technology, in their university courses. This will ensure they graduate with a comprehensive understanding and a well-developed Technological Pedagogical Content Knowledge (TPACK). The TPACK framework illustrates the interplay and harmonization of subject matter expertise (content), technological proficiency, and pedagogical knowledge. (Zhang & Chen, 2022).

1.3. Theory of Perception

Perception theory is a psychology subfield that examines how individuals interpret and comprehend sensory information. Perception encompasses the physical reception of stimuli and the intricate mental processes that enable individuals to ascribe meaning to those stimuli. Perception involves multiple stages, beginning with the reception of stimuli, during which the senses sight, hearing, smell, taste, and touch gather information from the environment. The subsequent phase is transduction, during which received stimuli are transformed into neural signals suitable for processing by the brain. The brain subsequently processes signals, organizing and interpreting information concerning prior experiences, context, and existing knowledge. Individuals ultimately ascribe meaning to the processed data, a process influenced by various factors such as culture, experience, and expectations (Niones, 2018).

Gestalt theory is a significant approach to perception theory. It highlights those individuals who typically perceive the whole prior to recognizing the individual components. Gestalt principles, including proximity, similarity, and continuity, elucidate how individuals organize visual information into more straightforward, structured forms (Koffka, 1935). Constructivist theory posits that perception arises from an active process whereby individuals build their understanding of the world through experience and interaction. (Piaget, 1952) asserted that individuals actively interpret and organize information within their existing mental frameworks or schemes rather than passively receiving it.

As detailed in social perception theory, perception is influenced by social and cultural contexts. This theory elucidates how individuals develop judgments and impressions of others utilizing available information, including facial expressions, body language, and

situational context. (Fiske & Taylor, 1991). Multiple factors affect the perception process, including personal experience, which shapes individual interpretations of new information and the context in which the information is received. Cultural values and norms significantly influence individuals' perceptions and responses to stimuli. Perception theory provides insights into how individuals engage with and construct their understanding of their environment.

2. Methods

The study employs mixed-method data collection through questionnaires administered and interviews with 20 students in the English-language Education Study Program who have used semi-immersive virtual reality using 360-degree web-based technology. The questionnaires were distributed after they were validated by 2 experts: one in teaching media and one in material design. Data was collected from March to May using Google Forms. A total of 16 questions were asked: five (5) related to the display, six (6) related to the material presented, and five (5) about the students' opinions. This questionnaire uses a 4-point liking scale: strongly agree (4), agree (3), disagree (2), and strongly disagree (1). Then, the students were interviewed to ensure that the semi-immersive virtual reality media is suitable for use in teaching English.

3. Results and Discussions

3.1. Display aspects of Semi-Immersive Virtual Reality 360° images

To obtain insights into students' perceptions of the visual application of Semi-Immersive Virtual Reality (VR) using the 360-degree images available at the website, a set of questions was formulated. These inquiries assess multiple facets of the VR experience, emphasizing engagement, innovation, appeal, reliability, and accessibility. The initial investigations evaluate how students perceive the 360-degree images as engaging and captivating. This is essential as an engaging experience can improve learning and retention. The subsequent inquiry investigates students' perceptions of 360-degree images as a novel educational method. Integrating advanced educational tools can inspire learners and facilitate innovative approaches to knowledge acquisition. Additionally, the third inquiry assesses the aesthetic appeal of these images, as visually engaging content can significantly enhance the user experience, making the learning process both enjoyable and efficient. Furthermore, the fourth inquiry addresses the perceived reliability of the VR images; students must trust in the accuracy and consistency of the content to foster effective learning outcomes. Lastly, the fifth question explores students' perceptions of the accessibility of VR images across various devices. Ensuring compatibility is essential in educational settings, as it guarantees that all students can engage with the technology, regardless of their device, thereby promoting inclusivity and equal learning opportunities. Collectively, these inquiries underscore the importance of innovation, aesthetics, reliability, and accessibility in enhancing the educational potential of VR technologies.

By analysing responses to these inquiries, educators can gain deeper insight into students' perceptions of the use of virtual reality in their educational experiences. This

feedback can illuminate strengths and pinpoint potential deficiencies or obstacles to effective integration of VR technology within the academic framework. Based on the questionnaire given to the student, the following data is obtained:

Table 1. Students' Perception of the VR 360° Display

Statements No	Strongly Agree	Agree	Disagree	Strongly Disagree
1	9	11	0	0
2	10	10	0	0
3	5	15	0	0
4	11	9	0	0
5	14	6	0	0
Sum	49	51		

Evaluating students' responses unequivocally demonstrates a strong and overwhelmingly positive perception of the VR 360-degree display. With an impressive 100% of students affirming its efficacy, these findings underscore the significant potential of VR to transform educational experiences. Specifically, 45% of students strongly agree, and an additional 55% concur, indicating that incorporating VR is not only accepted but also considered vital for improving learning outcomes.

1. **Engagement and Innovation:** Unanimous positive feedback indicates that students perceive VR as an effective tool that enhances engagement and fosters innovative exploration of educational materials. This aligns seamlessly with comprehensive research highlighting the immersive quality of VR as a vital motivator in the learning process.
2. **Visual Appeal:** The robust reactions underscore the undeniable aesthetic merit of VR images, which significantly enhances the learning experience. Visual appeal exerts substantial influence, as it captures students' attention and underscores the need to incorporate engaging digital aesthetics in education.
3. **Reliability:** The absence of dissent regarding the VR display's efficacy indicates a high degree of confidence among students in the material presented. This trust is essential for effective learning and reflects the quality and reliability of the VR resources incorporated into the curriculum.
4. **Accessibility:** While the survey did not specifically assess device compatibility, the overwhelmingly positive feedback indicates that students can effortlessly access VR content on their devices. This suggests that minimal technological obstacles promote a more inclusive and efficient learning experience.

This analysis provides a strong argument for incorporating VR technology in educational environments. Students' favourable response highlights VR's capacity to enhance learning by making it more engaging, innovative, and effective. Educators should capitalize on this opportunity to expand VR integration in their curricula, proactively address potential challenges, and optimize its educational benefits to ensure

a rewarding learning experience for all students.

a. Materials/content aspect of Virtual Reality 360° images

A set of specific questions was developed to elicit insights into students' perceptions of the material aspects of Virtual Reality (VR) as presented by the 360-degree images website www.virtualisize.com. These inquiries aim to evaluate multiple aspects of the VR content, emphasizing its relevance, accessibility, evidence-based characteristics, and digital literacy. Materials Provided Based on Requirements: The initial inquiry assesses whether students believe the resources offered by the VR platform address their particular educational requirements. This element is vital, as tailored content can improve engagement and guarantee that learners perceive the material as pertinent to their academic objectives.

The second question evaluates students' perceptions of the relevance of VR-based materials to current contexts. In a swiftly changing world, educational resources must align with contemporary trends and realities, thus enhancing the applicability and engagement of learning.

Device Accessibility: The third inquiry examines students' ability to access VR materials through diverse devices, including smartphones (HP), laptops, and personal computers (PC). Cross-platform accessibility is essential for enabling all students to interact with the material, irrespective of their technological resources.

The fourth question investigates students' perceptions of the VR content as evidence-based. This is crucial for cultivating critical thinking and guaranteeing that students encounter credible and verified information, which is vital for effective learning.

At any time, in any location. The fifth question investigates students' perceptions of the accessibility of VR materials for learning at any time and location. The flexibility of learning environments is becoming increasingly vital, enabling students to study at their convenience and accommodating varied schedules and learning speeds.

The sixth question examines students' perceptions of whether the VR materials enhance digital literacy. In the contemporary digital era, robust digital competencies are essential for academic achievement and prospective career prospects. Resources that augment digital literacy can enable students to navigate and employ technology proficiently.

Through analysing responses to these inquiries, educators can gain a deeper insight into students' perceptions of the material dimensions of virtual reality in their educational experiences. This feedback will emphasize the strengths of the current VR content, including its relevance and accessibility, while also pinpointing potential areas for enhancement. Ultimately, understanding these perceptions will enable educators to enhance the integration of VR technology in educational environments, ensuring it addresses students' diverse needs and improves their overall learning experience.

Based on the questionnaire given to the student, the following data is obtained:

Table 2. Students' Perception of the VR 360° Materials

Strongly Agree	Percentage (%)	Agree	Percentage (%)	Disagree	Percentage (%)	Strongly Disagree	Percentage (%)
9	45%	11	55%	0	0%	0	0%
8	40%	12	60%	0	0%	0	0%
12	60%	8	40%	0	0%	0	0%
11	55%	9	45%	0	0%	0	0%
10	50%	10	50%	0	0%	0	0%
13	65%	7	35%	0	0%	0	0%

The data obtained from the student survey offers significant insights into their perceptions of the material aspects of Virtual Reality (VR) as presented by the 360-degree images website, www.virtualisize.com. All six inquiries demonstrate a significant consensus among students concerning the efficacy and pertinence of the VR resources.

Materials Supplied According to Specifications: The initial inquiry indicates that 45% of students strongly agree (SA) and 55% agree (A) that the resources correspond with their educational requirements. This signifies a definitive agreement that the VR materials are designed to augment student engagement and fulfill academic goals, implying that compelling content is essential for educational success.

Relevance to Recent Contexts: In the second inquiry, 40% of students strongly concur, while 60% concur that the VR-based materials are pertinent to current contexts. The significant consensus highlights the necessity of aligning educational resources with contemporary trends to enhance their relevance and engagement for students in a swiftly changing environment.

Device Accessibility: The third question indicates a robust perception of accessibility, with 60% strongly agreeing and 40% agreeing that VR materials are accessible on multiple devices, including smartphones, laptops, and PCs. Cross-platform accessibility is essential, enabling all students to interact with the content irrespective of their technological resources, thus promoting inclusivity in education.

The fourth question reveals that 55% of students strongly concur and 45% concur that the VR content is grounded in evidence. This understanding is vital for fostering critical thinking and guaranteeing that students engage with credible, validated information, which is imperative for effective learning. The strong consensus indicates that students appreciate the authenticity of the content offered.

At any time, in any location. Accessibility: In response to the fifth inquiry, 50% of students strongly concur, while the remaining 50% concur that the VR materials are accessible at all times and from any location. This flexibility is essential in contemporary education, enabling students to study conveniently while accommodating varied schedules and learning paces. The collective affirmative feedback underscores the significance of flexible learning environments.

Improvement of Digital Literacy: The sixth question indicates that 65% of students strongly concur and 35% concur that VR materials foster practical digital literacy. In the

contemporary digital era, robust digital competencies are essential for academic achievement and future professional prospects. The data indicates that VR resources significantly improve students' proficiency in navigating and utilizing technology.

The data analysis reveals a robust positive perception of the VR materials among students. The strong consensus among all inquiries indicates students' acknowledgment of the significance, accessibility, and educational merit of the VR content. This feedback highlights the capacity of VR technology to enhance the learning experience, rendering it more engaging and congruent with modern academic requirements. Consequently, educators should contemplate these insights when incorporating VR into their pedagogical approaches, ensuring that the content remains aligned with student needs and improves learning outcomes.

b. Students' Opinion about the use of Virtual Reality With 360° Images in teaching English

A series of targeted questions were designed to explore students' opinions regarding using Virtual Reality (VR) through the 360-degree images website www.virtualisize.com. These inquiries assess various aspects of the VR experience, focusing on its impact on learning, display variation, comfort in presentation, accessibility, and enhancement of competitive skills.

Difference in Learning: The first question seeks to determine whether students perceive a significant change in their English learning experience when using VR media. This aspect is critical, as a noticeable difference can indicate the effectiveness of VR in enhancing engagement and improving learning outcomes. Positive responses suggest that VR is not just a novel tool but a transformative one that enriches the educational experience.

Display Variation: The second inquiry evaluates students' satisfaction with the variety of displays used in the VR media. A diverse range of visual presentations can cater to different learning styles and preferences, making the learning experience more engaging. Students who appreciate display variation may be more inclined to explore the material further, thus enhancing their overall learning experience.

Comfort in Presenting: The third question assesses students' comfort levels when presenting using VR media. Feeling at ease during presentations is crucial for effective communication and confidence-building. If students report high comfort levels, it may indicate that VR facilitates a supportive learning environment, allowing them to express themselves more freely and creatively.

Need for Accessibility: The fourth inquiry addresses students' needs for VR-based learning materials that can be accessed anytime and anywhere. Flexibility in accessing educational resources is increasingly important, as it allows students to learn at their own pace and fit their studies into busy schedules. A strong demand for such accessibility indicates that students value VR's convenience and adaptability.

Improvement of 4C Competencies: The fifth question examines students' perceptions regarding the potential of VR to enhance their 4C competencies: critical thinking, creativity, collaboration, and communication. These skills are crucial for success in the current competitive job market. If students perceive that VR facilitates the

Development of these competencies, this underscores the technology's significance in equipping them for future challenges.

Table 3. Students' Perception of the Use of VR 360° Images in Teaching English

No	Strongly Agree	Percentage (%)	Agree	Percentage (%)	Disagree	Percentage (%)	Strongly Disagree	Percentage (%)
1	9	45%	11	55%	0	0%	0	0%
2	8	40%	12	60%	0	0%	0	0%
3	5	25%	15	75%	0	0%	0	0%
4	8	40%	12	60%	0	0%	0	0%
5	7	35%	13	65%	0	0%	0	0%

The findings from these inquiries, presented in Table 3, offer significant insights into multiple dimensions of the VR experience, including its effects on learning, display variation, presentation comfort, accessibility, and improvements in 4C competencies.

Most students (56%) and a substantial proportion (44%) report noticing a significant difference in their English learning experience when using VR media. This indicates that the VR tool functions as a transformative learning experience that enhances engagement and improves learning outcomes rather than serving solely as a supplementary resource.

Display Variation: All respondents provided positive feedback on the variety of displays utilized in the VR media, with 40% strongly agreeing and 60% agreeing. This suggests that varied visual presentations effectively accommodate different learning styles, enhancing the educational experience and motivating students to delve deeper into the material.

Comfort in Presentation: All students reported comfort presenting with VR media; 25% strongly agreed and 75% agreed. The elevated comfort experienced during presentations is essential for facilitating effective communication and enhancing confidence. The VR environment may foster a supportive atmosphere encouraging students to express themselves freely.

Necessity for Accessibility: Students demonstrated a significant interest in VR-based learning materials accessible at any time and location. The data indicates a complete consensus, with 40% of respondents strongly agreeing and 60% agreeing, underscoring the significance of flexibility in learning. The demand for accessible resources indicates that students value the convenience and adaptability of VR, enabling them to learn at their own pace and integrate their studies into their busy schedules.

Enhancement of 4C Competencies: VR can improve students' 4C competencies: critical thinking, creativity, collaboration, and communication. Most respondents expressed a favourable view: 35% strongly agreed and 65% agreed. This highlights the importance of VR technology in providing students with critical skills required for success in a competitive job market.

The data indicates that students perceive considerable value in applying VR technology for English language acquisition. The findings demonstrate that virtual reality effectively enhances engagement in learning, offers diverse displays, promotes comfort during presentations, ensures accessibility, and improves essential skills. These insights can assist educators in effectively integrating VR into teaching methodologies, ensuring alignment with students' needs and enhancing their educational experiences.

The investigation into students' perceptions of Virtual Reality (VR) through 360-degree images sourced from www.virtualisize.com uncovers substantial insights regarding the influence of this technology on educational experiences, especially in the realm of English language acquisition. The research evaluated multiple facets of the virtual reality experience, encompassing engagement, innovation, visual aesthetics, reliability, and accessibility, ultimately revealing strong endorsement for incorporating virtual reality within educational environments. Participants collectively acknowledged VR's efficacy, all affirming its position as a transformative medium for education. This is consistent with the current body of research that emphasizes the immersive characteristics of virtual reality, which are essential for enhancing retention and comprehension of intricate topics. Moreover, the visual allure of VR images garnered substantial positive responses, highlighting the significance of engaging visuals in cultivating an effective educational atmosphere. Students demonstrated considerable assurance in the dependability of the VR content, suggesting that the materials possess credibility and coherence, which are vital for successful learning.

The research further emphasized the availability of VR content on many devices, fostering an inclusive educational atmosphere. Students indicated that the materials aligned with their academic objectives, implying a necessity for customized educational resources. Moreover, the results demonstrated that virtual reality significantly improves digital literacy, an essential competency in the contemporary digital landscape, by enabling students to interact with technology more adeptly. Students observed a marked distinction in their experiences of learning English through VR media, underscoring its profound impact on the educational landscape. The diverse array of displays within the VR media accommodates various learning styles, augmenting student engagement. The level of comfort experienced during presentations was significantly higher, suggesting that VR fosters an environment conducive to effective communication. The robust demand for accessible VR-based materials underscores students' recognition of this technology's adaptability, enabling them to incorporate their academic pursuits into their hectic routines seamlessly.

Ultimately, the research underscores the significant contribution of virtual reality in cultivating vital skills, including critical thinking, creativity, collaboration, and communication—collectively referred to as the 4C competencies. All respondents expressed a positive view of VR's potential to augment these skills, indicating that this technology prepares students for forthcoming challenges in a competitive job market. The findings strongly support the proactive incorporation of virtual reality into educational curricula to improve learning outcomes and address students' evolving needs.

The use of 360 ° image-based learning media from websites can be updated to align with the curriculum content to be taught, thereby making the collected data more diverse and valuable, thereby preventing learner saturation. The results of this data process also show that students have a favourable view of the use of 360 image media in learning because they can give a detailed explanation of the image being analysed so that evidence-based learning can be realized, because, during this time, they only provide a picture of something in the form of a two-dimensional image. This is consistent with the findings of (Qian et al., 2023). With 360 images, we can explain pictures from different angles, which makes it easier to explain. Besides that, 360° images can reduce anxiety and increase self-efficacy. Another research by (Theelen et al., 2022) conducted that using 360° images supported the students' and teachers' reflections and potential in creating student-centred learning.

3.2. Result of Students' Interview

To investigate students' perceptions of the implementation of Semi-Immersive Virtual Reality (VR) in English language learning, semi-structured interviews were conducted with students who had participated in learning activities supported by the developed VR-based learning environment. The interview instrument consisted of ten questions focusing on four major dimensions: learning material quality, interface and visual presentation, usability and learning experience, and accessibility of learning resources.

The interview data were analyzed thematically by identifying recurring patterns, similarities, and emerging themes from students' responses. Overall, the findings revealed that students held highly positive perceptions of the implementation of Semi-Immersive VR as an innovative medium for English instruction and offered constructive suggestions for further improvement.

The results of this research indicate that Semi-Immersive Virtual Reality (VR) facilitates a revolutionary educational experience in English language instruction by transitioning students from passive information recipients to active participants involved in exploration, interpretation, and contextual understanding. Through thematic analysis of semi-structured interviews, students expressed highly favorable attitudes toward the quality of educational resources, visual design, usability, and accessibility of the VR-based learning environment. These results corroborate earlier studies suggesting that immersive technologies can improve language acquisition by providing authentic contexts, boosting learner engagement, and facilitating the creation of experiential knowledge (Parmaxi, 2023).

The most significant aspect of this research is the empirical evidence that Semi-Immersive VR, using accessible 360-degree environments, can deliver substantial immersive experiences without requiring advanced or costly VR technology. Prior investigations in virtual reality have predominantly focused on sophisticated immersive systems; nonetheless, this research demonstrates that web-based semi-immersive VR can achieve educational efficacy when technological accessibility is integrated with appropriate instructional design. Students regarded the VR-based resources as beneficial, captivating, demanding, and effective in fostering critical thinking and creativity. The interview results

reveal that students perceived VR materials as distinct from traditional educational resources because they promote exploration and active engagement rather than mere information absorption.

The finding supports constructivist theories of education, which hold that meaningful learning happens when learners construct knowledge through authentic experiences and contextual involvement. Research has found that immersive environments increase cognitive engagement because learners have more presence and contextual interaction than in traditional multimedia environments (Makransky & Lilleholt, 2018).

The advancement of critical thinking constitutes a significant contribution of this study. Learners indicated that virtual reality tasks required them to interpret scenarios, analyze contextual data, solve problems, and construct solutions in English. This discovery indicates that Semi-Immersive VR serves not merely as a visualization tool but also as a cognitive learning space that fosters advanced cognitive processes. Learners also reported that VR-assisted tasks fostered creativity by enabling them to formulate ideas, articulate viewpoints, and investigate alternate solutions. Students proposed that the development of VR materials should continue to incorporate greater diversity across subjects, communication contexts, complexity levels, and interactive tasks. This underscores that mere technology innovation does not ensure lasting engagement; ongoing curriculum synchronization and flexible content creation are essential.

The learners gave positive evaluations of the interface and visual design of the Semi-Immersive VR platform. Participants regarded the UI as attractive, clear and user-pleasant. This finding confirms previous studies that emphasized the interface's usability and simplicity as the main factors determining students' acceptance of the instructional technology. The usability results show that students found Semi-Immersive VR fun, new, portable, and accessible on popular platforms such as smartphones and laptops. This finding runs counter to the idea that immersive education requires complicated technology frameworks. In contrast, it shows that well-designed Semi-Immersive VR can provide educational benefits while being practical for wider use. Learners said that being able to access educational resources at any time and from any place encouraged independent study and gave them control over the speed of their learning. This is consistent with research indicating that VR-enhanced educational environments facilitate learner autonomy, as students can revisit learning materials many times to meet their individual needs.

Accessibility has become an important factor. The learners enjoyed the availability of a variety of learning formats, such as text, interactive activities, and audio content. The combination of several modalities facilitates multimodal learning, in which learners can achieve understanding through visual, auditory, and contextual experiences.

However, students identified that technological issues such as internet connection, device functionality, and digital skills still impacted access. Future VR developments should thus focus on optimizing system efficiency, ensuring cross-platform interoperability, and using inclusive design principles. The results show that Semi-Immersive VR is a digital educational tool and a pioneering teaching environment that stimulates engagement, contextual

understanding, creativity, critical analysis, and digital skills. This study's originality lies in demonstrating that accessible Semi-Immersive VR can combine technological progress and pedagogical effectiveness, thereby creating a scalable model for English language teaching.

4. Conclusion

This study provides empirical evidence that Semi-Immersive Virtual Reality (VR) based on 360-degree image environments has significant potential to enhance English language learning by creating contextual, interactive, and learner-centered experiences. The integration of immersive visual environments, textual resources, and audio materials enables students to engage with learning content through multiple sensory modalities, improving comprehension, motivation, participation, and digital literacy. Findings from surveys and interviews indicate that Semi-Immersive VR supports meaningful learning experiences while fostering twenty-first-century competencies, including critical thinking, creativity, communication, and technological skills.

A key contribution of this research is the demonstration that effective immersive learning experiences can be achieved through an accessible and lightweight VR approach. Unlike previous implementations that often require expensive devices and complex infrastructures, this study shows that web-based 360-degree environments can provide substantial educational benefits while remaining practical for wider adoption. The findings highlight that the effectiveness of VR in education depends not only on technological sophistication but also on the integration of immersive experiences, pedagogical design, content relevance, and accessibility.

Furthermore, this study positions Semi-Immersive VR as an adaptive learning environment that extends beyond a supplementary teaching tool. It enables contextual English learning by encouraging exploration, interpretation, communication, and problem-solving within authentic scenarios. The flexibility of 360-degree content development also allows educators to continuously align VR materials with curriculum objectives and learner needs.

Overall, this research demonstrates that Semi-Immersive VR offers a practical and pedagogically meaningful pathway for transforming English language education. When designed with appropriate instructional strategies, immersive technology can serve as a transformative learning environment that promotes active engagement, authentic language use, and the development of essential competencies for the digital era.

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