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Enhancing English Speaking Skills Through A Website Used 360-Degree Materials: An Empirical Study

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Abstract

This research examines the influence of 360-degree web-based resources on improving English-speaking proficiency in students, emphasizing their effects on engagement and educational outcomes. Results demonstrate a notable enhancement in speaking abilities, with average scores increasing from 70.5 to 85.7 following the intervention, thereby illustrating the effectiveness of immersive learning environments. The interactive characteristics of 360-degree materials engage students, promote self-directed learning, and cater to various learning styles, while also offering opportunities for practice in real-world contexts. The study highlights the significant role of social interaction enabled by immersive tools, where peer collaboration improves communicative competence through meaningful dialogue and negotiation of meaning. The findings indicate potential; however, the mixed feedback from 35% of students highlights the necessity for continuous evaluation and adjustment of these educational resources to adequately address diverse learner expectations. This study identifies critical deficiencies in comprehending the specific attributes of 360-degree materials that most effectively enhance engagement and learning outcomes among varied student demographics. The website platform that hosts these 360-degree materials is essential to the educational process. It functions as a delivery mechanism for immersive content while also improving interactivity via user-friendly interfaces and accessibility options. This allows students to access materials at any time and from any location, fostering a flexible learning environment that accommodates individual needs. The implications for language education suggest the need for a multifaceted approach that incorporates immersive technologies into curricula, while promoting collaboration among educators, technologists, and curriculum developers to establish dynamic learning environments. Future research should prioritize longitudinal studies to evaluate the long-term impacts of 360-degree materials on language acquisition, examine their integration with other pedagogical strategies, including task-based and experiential learning, and explore effective teacher preparation for the utilisation of these technologies. Focusing on these areas will improve language education and result in more comprehensive educational practices and outcomes.

Keywords: Website-based learning; Teaching materials; Speaking skills; Learning environment

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INTRODUCTION

At the end of the twentieth century, the increasing global interaction of people through international flows of money, ideas, and cultural products had made the terms "global village" and "global language" quite fitting in describing the globalized world in which national borders were no longer barriers to creating one area of worldwide cooperation in all spheres of life. As English has assumed the role of the global language

in the globalized world, the educational systems of the world face new challenges in providing English language skills training to the new generation of the knowledge society. English language skills have become one of the main components of the notion of literacy (Smokotin et al., 2017). The need for effective English language education becomes increasingly evident as learners navigate various domains that demand strong communicative capabilities. Within this context, websites have become a significant medium for teaching and learning, offering essential features that enhance educational accessibility and engagement. The integration of websites into English language instruction facilitates the delivery of diverse learning resources, including interactive exercises, videos, and texts, which can cater to various learning preferences (C. pang Wang et al., 2020). Websites enable the delivery of up-to-date content, ensuring that learners have access to contemporary language usage and cultural references, which are essential for effective communication (Mustain et al., 2021a). This flexibility supports personalized learning experiences, enabling students to advance at their own pace and better accommodate their speaking skills because they are more comfortable (Pakpahan & Gultom, 2022).

Furthermore, the advent of immersive technologies—particularly the use of 360-degree images—has further transformed the field of language education. The 360-degree picture model offers learners immersive environments that simulate real-life contexts, thereby enhancing their ability to practice language learning (Huang et al., 2023a). The advantages of using 360-degree imagery are multifield; these tools promote higher levels of engagement, support experiential learning, and encourage exploration (Saniyah et al., 2023). The features inherent in 360-degree images allow students to interact with virtual spaces, enabling them to visualize language usage within authentic scenarios.

The Website for Teaching Language Learning

The study found that language exchange websites helped reduce Foreign Language Speaking Anxiety (FLSA) among Indonesian undergraduate students majoring in English education. The study used the Foreign Language Classroom Anxiety Scale (FLCAS) to assess levels of speaking anxiety at the beginning and conclusion of the course, confirming a significant decrease in anxiety after engaging with the language exchange platform. Furthermore, interviews with chosen participants provided further insights into their experiences, corroborating the idea that online language sharing promotes a more comfortable speaking environment. Overall, the findings imply that including language exchange websites in language learning can be an effective technique for relieving speaking anxiety and increasing student confidence in foreign language environments (Pakpahan & Gultom, 2022). Another research found that using Virtual Reality (VR)-based educational media dramatically improves students' English language learning experiences. The VR platform effectively overcomes the issues common to traditional approaches by providing immersive, engaging opportunities tailored to coincide with curricular results. The significant improvement in student performance, as evidenced by the rise in average pre-test and post-test scores, demonstrates the efficacy of this novel method in increasing English language competency in higher education settings (Abdullah et al., 2025).

Research demonstrates that the use of websites in language education can significantly enhance learners' motivation and engagement levels. For instance, a study by (Syakur et al., 2020) stated that the students who were taught by the "Abssyak" website could improve students' scores and attitudes towards variation and learnign innovation. The interactive nature of websites promotes active participation among learners, encouraging them to practice language skills in a dynamic and stimulating environment, which is crucial for adequate language acquisition , (Gafur et al., 2024). Furthermore, websites facilitate collaborative learning by connecting students with peers and instructors

across geographical boundaries, thereby creating a global learning community. Online discussion forums, social media platforms, and collaborative project spaces allow learners to engage in meaningful conversations, share resources, and work together on projects, which significantly enhances their communicative competence and cooperative skills(Y. Wang et al., 2019). This collaborative aspect is particularly beneficial in language learning contexts, as it enables students to practice their speaking and writing skills in authentic, communicative situations, often leading to improved language fluency and confidence (Cullum, 2020). The ability to interact with diverse linguistic and cultural backgrounds through online platforms not only enriches the learning experience but also exposes students to various dialects and linguistic nuances, further broadening their understanding of the language being studied (Murray & Ritchie, 2019). Besides that, a website offers a variety of materials and assignments for students to learn and practise their speaking abilities freely, increasing their self-reliance in the learning process; the Students stated that the website and e-book are well-designed, with a range of assignments and authentic materials that can help them enhance their speaking skills by providing more materials and exposure to Business English terminology (Mustain et al., 2021b).

Moreover, incorporating technology into language learning through websites can cater to various educational paradigms and learning styles. For instance, visual learners benefit from engaging video content and infographics. In contrast, auditory learners can engage with podcasts and audio exercises, creating a multimodal learning environment that reinforces language acquisition through multiple channels. (Platt, 2021). This adaptability to different learning preferences is a significant advantage of utilizing websites as educational tools in language instruction. In conclusion, integrating websites into language learning offers numerous advantages, including increased motivation, enhanced engagement, collaborative learning opportunities, and the ability to accommodate diverse learning styles. With ongoing advancements in educational technology, educators must utilize these resources to create innovative and effective language learning environments that equip students for successful communication in an increasingly globalized world.

The 360-Degree Picture in Teaching

The use of 360-degree images in education represents a significant advancement in immersive learning technologies. These images offer a panoramic view of environments, enabling learners to explore and interact with virtual spaces in ways that traditional media cannot. This immersive approach has been increasingly adopted in language education, as it provides learners with realistic contexts in which to practice their language skills effectively, improve their motivation, and actively participate (Lampropoulos et al., 2021). Besides that, based on (Huang et al., 2023a) The students gave positive responses to the 360-degree materials.

Enhancing Engagement, Psychomotor Skills, and Motivation

Research has shown that 360-degree images can significantly enhance engagement and motivation among students. For instance, a study by (Saniyah et al., 2023). Demonstrated that students who utilized 360-degree virtual environments for language learning exhibited higher levels of interest and participation compared to those who engaged with conventional learning materials. The immersive nature of 360-degree images enables learners to visualize language use in real-life situations, thereby facilitating a deeper understanding and retention of vocabulary and phrases. This aligns with findings from (Akgun & Atici, 2021), who noted that immersive technologies can lead to deeper cognitive engagement, psychomotor skills, and improved learning outcomes.

Interactivity and Agency

The interactive features of 360-degree images enable learners to navigate through virtual environments, making choices that affect their learning experience, the students.

By simulating authentic scenarios, such as ordering food in a restaurant or participating in a business meeting, 360-degree images provide learners with opportunities to practice. With 360-degree the students showed positive feedback in English learning (Huang et al., 2023b). speaking skills in contextually relevant situations. This experiential learning approach has been shown to enhance students' confidence and competence in using the target language. The ability to immerse students in realistic environments through 360-degree images enables contextual learning, a crucial component of language acquisition. By engaging with 360-degree images, students can enhance L2 Vocabulary learning (Papin & Kaplan-Rakowski, 2022).

Future Directions

As technology continues to evolve, the potential applications of 360-degree images in education are vast. Future research should investigate the long-term effects of using 360-degree images on language learning outcomes and explore how these technologies can be effectively integrated into various educational contexts. Additionally, studies could examine the effectiveness of combining 360-degree images with other immersive technologies, such as augmented reality (AR) and 360 Materials, to create even more engaging learning experiences and improve learner creativity(Shadiev et al., 2022). In conclusion, the integration of 360-degree images in language education offers numerous benefits, including enhanced engagement, increased motivation, and opportunities for contextual learning. As educators continue to explore innovative teaching methods, the use of immersive technologies, such as 360-degree images, will likely play a crucial role in shaping the future of language learning.

The Speaking Competence of The Students

Speaking competence is a crucial aspect of language proficiency, encompassing the ability to communicate effectively in spoken language. It involves not only linguistic knowledge but also pragmatic skills, fluency, and the capacity to engage in meaningful interactions. The development of speaking competence is essential for learners to navigate real-world communication scenarios, and it is often a primary focus in language education. As noted by (Nguyen Van Huy et al., 2024), the ability to speak a language involves the use of various linguistic structures and dynamic interactive strategies that allow individuals to participate in conversations and express their ideas clearly and effectively. Research indicates that integrating technology, including websites and immersive tools such as 360-degree images, can significantly enhance students' speaking competence. For instance, a study by Chen et al. (2018) found that students who engaged with interactive online platforms demonstrated improved speaking skills due to increased opportunities for practice and personalized feedback. Moreover, the potential for recording and playback of spoken language enables learners to self-assess their pronunciation and fluency, fostering a more reflective and autonomous approach to language learning (Li & Zhang, 2021).

The use of 360-degree images in language instruction can create authentic speaking opportunities by immersing students in virtual environments that mimic real-life scenarios. This innovative method enables educators to simulate interactions that require learners to apply their speaking skills in a contextual setting. According to (Yan et al., 2024a), such immersive experiences have been shown to enhance students' confidence and competence in speaking, as learners can practice situational dialogues—such as ordering food in a virtual restaurant or participating in a meeting—thereby applying their language participating in a job interview simulation, allowing them to use their language skills in safe and controlled environments. Such experiential learning has been shown to increase students' confidence and competence in speaking as they engage in contextualized practice (Baker, 2020). Furthermore, the collaborative functionalities provided by numerous

websites substantially improve peer contact, which is essential for cultivating speaking proficiency. Online discussion forums, collaborative projects, and group assignments enable students to participate in substantive dialogues, share ideas, and refine their speaking abilities with peers from varied cultural and linguistic backgrounds. This collaborative learning setting enhances linguistic ability and fosters vital social and communication skills (C. pang Wang et al., 2020).

In conclusion, the integration of technology, primarily websites and immersive tools such as 360-degree images, plays a crucial role in enhancing speaking competence among language learners. By providing authentic contexts for practice, opportunities for self-assessment, and collaborative platforms for peer interaction, educators can significantly support the development of their students' communicative abilities. As language education continues to evolve in the digital age, leveraging these innovative technologies will be essential for preparing students for effective communication in an increasingly interconnected world. Based on the review of related literature above, the researcher formulated some research questions

1) How do website-based 360-degree materials affect the speaking competence of English as a Foreign Language (EFL) students in higher education settings?
2) To what extent do immersive 360-degree learning environments enhance student engagement and motivation in language learning compared to traditional methods?
3) What are students' perceptions regarding the effectiveness and usability of 360-degree materials in improving their English-speaking skills and reducing speaking anxiety?

RESEARCH METHOD

This study used a pre-experimental research methodology utilizing a pre-test and post-test format to evaluate the effect of novel 360-degree materials on students' speaking abilities. The approach is appropriate for this research since it facilitates direct assessments of speaking skill pre- and post-intervention, accurately reflecting any enhancements. Approximately 20 language learners, enrolled in an English program, possess varied proficiency levels, predominantly low, facilitating the observation of the instructional intervention's impacts. Evaluations of speaking proficiency will encompass a pre-test to determine each student's baseline capabilities and a post-test to assess improvements following the utilization of the 360-degree resources. This method streamlines variable management in a natural classroom environment and facilitates precise statistical evaluation of the intervention's efficacy. The assessment instrument has been verified by two experts utilizing Aiken's V approach to ensure its relevance and reliability, with expert evaluations affirming its suitability and thoroughness, informing any required modifications before implementation.

Table 1. Speaking Rubric

No	Aspect	Criterion	Score
1	Pronunciation	Frequent incorrect pronunciation	1
		Occasional errors in pronunciation	2
		Some errors in pronunciation	3
		No errors/ minor errors	4
2	Fluency	Frequent hesitation	1
		Occasional hesitation	2
		Minor hesitation	3
		No hesitation	4
3	Accuracy	Major problems in structure	1
		Several errors in structure	2
		Minor problems in structure	3

No	Aspect	Criterion	Score
		Demonstrates mastery of structure (few errors)	4
4	Intonation	Voice is flat, and intonation patterns are not used to add emphasis or express emotion	1
		Attempts are made to use intonation, but the patterns are not always appropriate or effective.	2
		Intonation patterns are generally accurate and appropriate	3
		Intonation is used naturally and effortlessly, conveying a wide range of meanings and emotions	4

This study also utilises a survey method that involves the administration of a structured questionnaire to gather quantitative data on students' perceptions of different aspects of the 360-degree materials. The focus is on Content, Activities, Features, and Display, with five specific questions designated for each category. This method evaluates the efficacy of the materials while also examining students' views on the features integrated into the website, guaranteeing that the content is both credible and appropriate for educational purposes. The survey instrument has undergone rigorous testing and validation by two specialists in content and website design, employing the Aiken method to ensure its reliability. This thorough validation process ensures that the questionnaire is suitable and exhaustive, thus strengthening the reliability of the data gathered. Utilising this validated instrument allows for a confident analysis of student perceptions, leading to informed conclusions regarding the effectiveness and usability of the 360-degree materials within the learning environment.

RESULTS AND DISCUSSION

Implementation of the Website-Based used 360-degree image Materials.

After the pre-test, students utilised 360-degree, web-based tools to enhance their speaking abilities. These interactive technologies adhered to optimal methodologies for language acquisition by employing immersive contexts and linguistic exercises appropriate to the scenario(Madhavi, 2025). All of these elements collaborate to provide children with a comprehensive learning experience that enhances their communication skills. Establishing a web-based platform that employs 360-degree visuals for English-speaking instruction entails several essential steps. Initially, instructors must establish explicit targets, pinpointing particular speaking skills for improvement and assessing the proficiency level of the intended audience. Subsequently, the selection of suitable technologies is essential; this encompasses the choice of front-end frameworks such as React or Angular, in conjunction with 360-degree libraries like Three.js or A-Frame for efficient picture rendering. Content development ensues, involving the creation or acquisition of high-quality 360-degree imagery pertinent to speaking contexts, such as markets or tourist attractions, alongside immersive exercises that promote verbal practice. The user interface must be user-friendly and adaptive, facilitating effortless navigation across devices. The incorporation of interactive elements, including speech recognition for immediate feedback and clickable hotspots that elicit student replies, improves engagement. Thorough testing and feedback acquisition are crucial for enhancing the platform according to user experience. Educators should match this resource with the comprehensive English language curriculum, ensuring it enhances existing teaching methodologies, while also offering professional development to enable instructors to

optimise the platform's potential. Ultimately, assessing learning results using analytics will provide ongoing enhancements, fostering a dynamic environment that significantly enhances students' speaking skills and self-assurance. This novel method enhances linguistic proficiency, augments public speaking confidence, and improves receptive oral language abilities, (Annisa et al., 2025). After a set period of time spent using the immersive learning platform, students completed a post-test and received an amazing average score of 85.7. This score represents a considerable improvement over the pre-test findings, demonstrating the 360-degree materials' usefulness in fostering language development. The increase in scores, totalling 15.2 points, suggests a significant improvement in pupils' speaking abilities. While statistical analysis would ideally validate the significance of this change, the considerable increase indicates that the instructional intervention was effective. The interactive and engaging quality of the website, which allowed students to practice their speaking abilities in a low-stress atmosphere, played a role in this improvement. The enhancement can be attributed to several factors: Immersion and Engagement: The use of 360° videos has captured the attention of students, facilitating their self-directed learning of English. The impact of self-regulatory skills on the use of 360° videos is significant, as it can enhance the sense of ease and comfort for students and other stakeholders (Boudouaia et al., 2024). Feedback Mechanisms: Through interactive elements, students received immediate feedback on their pronunciation and fluency, fostering a reflective approach to language learning (Li & Zhang, 2021). And motivation: The engaging nature of the website likely contributed to heightened motivation among students, encouraging them to practice more frequently and effectively (H. Zhang et al., 2020).

Website-based 360-degree materials affect in teaching of English speaking to English as a Foreign Language (EFL) students in higher education settings

Figure 1. Students' Pretest and Post-test

The effectiveness of the website-based 360-degree materials in enhancing students' English-speaking competence was evaluated through a comparative analysis of pre-test and post-test results. This study systematically measured students' speaking abilities before and after the implementation of the immersive learning platform. The pre-test, administered before the introduction of these innovative materials, yielded an average score of 70.5 among students. This initial assessment served as a critical baseline for understanding students' speaking competencies before any intervention. The scores indicated that, while students possessed a foundational grasp of basic speaking skills, there remained substantial opportunities for improvement. This baseline data corroborates findings from existing literature, which suggests that students frequently encounter challenges with speaking proficiency, particularly in the context of foreign language acquisition. The results of this study underscore the need for targeted interventions to

bolster speaking abilities and highlight the potential of immersive learning environments like those provided by 360-degree materials to facilitate significant advancements in language proficiency.

Students' Perception in teaching English Speaking used 360 Degree Image

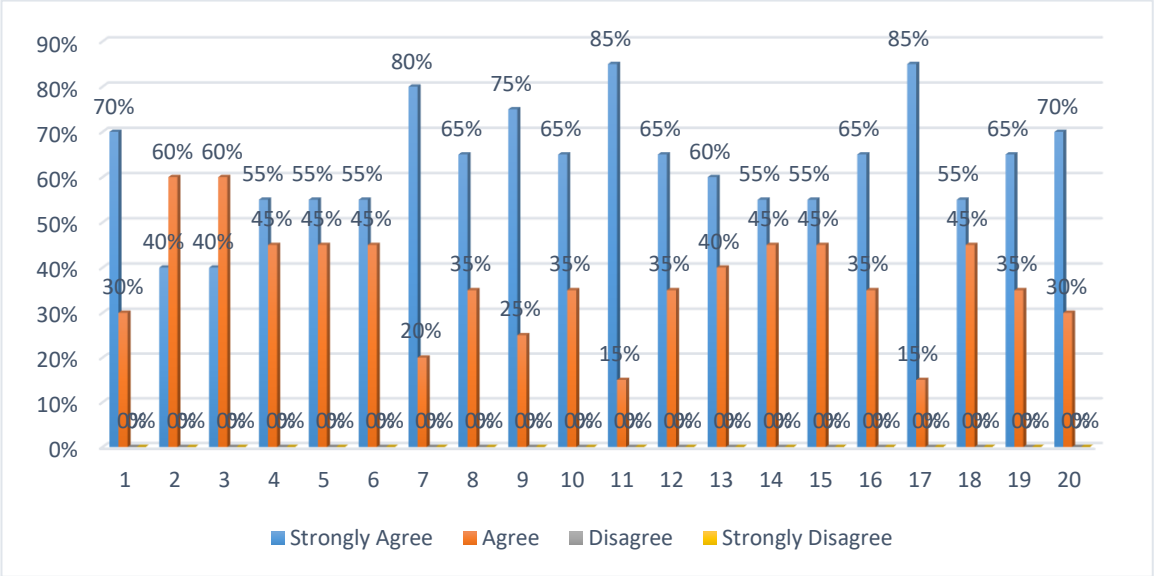

Figure 2. Students' Perception of Using Website-Based 360^0 Materials in Teaching Basic-Speaking English

The results of the questionnaire administered provide valuable insights into students' perceptions of the effectiveness and usability of 360-degree materials in language learning. The data, which shows a significant level of agreement on several metrics, is based on a total of 20 respondents. This illustrates the beneficial effect that these innovative tools have had on their learning experience. The questionnaire yielded a favorable response on the majority of items, with a substantial number of students expressing strong agreement. In particular, item 1 garnered a strong consensus among participants, with 70% expressing strong agreement and 30% agreeing that the 360-degree materials had a positive impact on their learning and engagement. The immersive environments not only captivated students' interest but also bolstered their motivation to engage in language learning activities, as evidenced by the impressive 80% agreement rate for item 7, which was one of several items indicating that a significant majority of students felt engaged while using the materials.

Furthermore, the response rates for items 2 and 3, which addressed students' assessments of the effectiveness of the materials, were 40% strongly agreeing and 60% agreeing for both inquiries. This result suggests that the majority of students acknowledged the value of the 360-degree materials in enhancing language acquisition and developing critical speaking skills. Additionally, the agreement percentages were consistently high across various items, with a consistent 55% of students strongly agreeing and 45% agreeing on items such as 4, 5, and 6. This consistency indicates that the learning materials provided uniform support to the participants in achieving their language development objectives. Item 11 is particularly noteworthy, as 85% of respondents expressed strong agreement with continuing to use such materials in future classes. This underscores the need for integrating innovative technologies into the curriculum and highlights a collective student voice advocating for enhanced learning experiences. Although the response was generally

favorable, there were instances of varying perspectives regarding particular items. For example, items 12 and 13 demonstrated a 65% agreement rate, but a substantial 35% of students expressed uncertainty or disagreement. This suggests that, although many students found the materials to be valuable, a small number of students were less convinced of their effectiveness in all respects. In general, these results provide valuable insights into students' perceptions of 360-degree materials in language learning, suggesting potential for further exploration and refinement in future implementations.

Discussion

Implementation of the Website-Based used 360-degree image Materials

The implementation of 360-degree, web-based tools in enhancing students' English-speaking competence has demonstrated promising results, as evidenced by the comparative analysis of pre-test and post-test scores. Initially, the pre-test yielded an average score of 70.5, which provided a baseline measurement of students' speaking abilities before any intervention. After utilizing the immersive learning platform for a set period, students achieved a remarkable average score of 85.7 on the post-test, indicating a significant improvement of 15.2 points. This notable change underscores the effectiveness of 360-degree materials in fostering language development, as supported by previous research on immersive learning environments. Several factors contributed to this improvement. First, the immersive nature of the 360-degree visuals captivated students' attention and facilitated a self-directed approach to learning, as noted by (Y. Wang et al., 2019), They offer a variety of multimedia content, including videos, podcasts, and interactive exercises tailored to meet different learning styles and individual preferences. This flexibility aligns with the needs of contemporary students for a personalized learning environment, facilitating access to learning materials at any time and from anywhere.

The findings indicate that integrating websites enhances learners' motivation and engagement level (Chen et al., 2018). Highlighted increased motivation among students who utilized online platforms compared to those relying on traditional instructional methods. The interactive features of websites encourage active participation, which is essential for language acquisition, as it fosters immersive learning experiences , (Suriaman et al., 2018). Another researcher also emphasizes that heightened immersion leads to a more profound commitment to the learning process. Furthermore, websites facilitate collaborative learning by connecting students with diverse peers and instructors globally. Through online discussions and collaborative projects, learners can enhance their communicative competence. The collaborative nature of these digital environments is particularly beneficial for language learners, as it provides authentic communicative situations that enhance fluency and confidence (Cullum, 2020). Additionally, the engaging quality of the website likely contributed to increased motivation among students. The interactive and low-stress environment promoted consistent practice, reinforcing the concept that motivation is crucial in language learning. As observed by (M. Zhang, 2020), a stimulating digital platform encourages students to engage more deeply with the material, leading to more effective language practice.

In conclusion, the substantial improvement in students' speaking abilities—from a pre-test average of 70.5 to a post-test average of 85.7—demonstrates the potential of 360-degree web-based materials as an effective instructional intervention. Not only does this approach enhance linguistic proficiency, but it also boosts public speaking confidence and improves receptive oral language skills. Future research could further explore the long-term impacts of such immersive technologies on language learning, as well as the underlying factors that contribute to sustained engagement and proficiency development. The incorporation of 360-degree images signifies a pivotal advancement in immersive learning. These images create authentic learning environments, enabling students to

visualize language use in real-life contexts. Research by Zhang et al. (2020) shows that students who engage with 360-degree materials experience higher levels of interest and participation compared to those using traditional resources. (Kim et al., 2022) corroborates this by indicating that immersive technologies, including 360-degree environments, lead to enhanced students' focus and interest. Interactivity is another key feature of 360-degree images, enabling learners to navigate virtual environments and make choices that impact their learning experiences while minimizing simulator sicknes (Rupp et al., 2019). Another expert stated that these environments simulate authentic situations, providing students with opportunities to practice speaking in relevant contexts, which aligns with the principles of experiential learning (Yan et al., 2024b). And (Gu, 2025) also stated that immersive environments can facilitate communication and interaction essential for language development. By practicing language skills in realistic settings, students enhance their communicative competence.

Website-based 360-degree materials affect in teaching of English speaking to English as a Foreign Language (EFL) students in higher education settings

Following the administration of the pre-test, students participated in a structured learning environment that utilized 360-degree materials tailored to enhance their speaking capabilities. These materials are designed to present immersive scenarios and provide opportunities for contextual language practice that align with contemporary theories of language acquisition (Rustam et al., 2024). By simulating real-world interactions—such as ordering food, participating in discussions, or role-playing in business meetings—students are provided with tasks that closely mirror authentic communication contexts. This method of contextual learning is instrumental in bridging the gaps often associated with traditional pedagogical practices that may fall short of providing engaging, real-life simulations (Won et al., 2023).

The analysis of pre-test and post-test scores reveals a clear advancement in the speaking competencies of the students, confirming the significance of the educational intervention. Several critical factors emerge as contributing to this marked enhancement: Immersion and Engagement: The immersive environments created with 360-degree materials enable students to engage deeply with the learning material. This engagement fosters an increased level of comfort when speaking by allowing individuals to practice their language skills in contextually relevant and meaningful scenarios (Abdul Ghani & wan daud, 2018). The dynamic nature of these engagements allows students to personalize and use language relevantly, which is beneficial for long-term retention and fluency acquisition.

Feedback Mechanisms: The 360-degree environment's interactive elements are essential for providing immediate feedback. Students can evaluate their pronunciation and fluency in real time, thereby fostering a reflective learning approach. This informal assessment fosters self-efficacy by providing students with a deeper understanding of their language use and enabling them to identify areas that require improvement. (Li & Zhang, 2021) I have emphasized the importance of providing feedback to students to cultivate a growth mindset in language learning, which, in turn, encourages them to take responsibility for their progress.

Motivation and Engagement: The engaging nature of the 360-degree materials played a crucial role in maintaining student motivation throughout the learning process. Prior research has shown that students are more motivated when they are more engaged in language-learning environments (Zhang, H., Li & Zhang, 2020). The multisensory approach maintains learners' interest and encourages active participation as they engage with the immersive content. Improved language proficiency and speaking proficiency are directly correlated with this elevated level of motivation. Social Interaction: The 360-

degree materials' collaborative features encourage social interaction among peers, allowing students to refine their speaking skills in a supportive environment. In language learning, peer-to-peer interaction is crucial for clarifying uncertainties and negotiating meaning, as demonstrated by (Kang, 2017) in his research. The 360-degree materials enhance students' fluency and simultaneously cultivate critical communication skills within a social context by offering opportunities for dialogue and discussion.

Students' Perception of teaching English Speaking used a 360 Degree Image

The findings from the questionnaire regarding students' perceptions of 360-degree resources in language learning offer valuable insights for educators and curriculum developers. Data from 20 respondents indicated a general agreement on the positive impact of these tools on student engagement and learning outcomes. Seventy percent of students strongly agreed that these materials enhanced their learning experiences, underscoring their effectiveness in engaging student interest, a crucial element for successful language acquisition, as indicated by (Weng et al., 2024). Furthermore, feedback revealed an 80% agreement on increased engagement when using these resources, highlighting engagement as a key factor in language learning success.

The questionnaire assessed the effectiveness of 360-degree resources in enhancing practical language skills, revealing that 40% of students strongly agreed and 60% agreed on their utility for language acquisition and speaking proficiency. (Ji et al., 2019) and (Blyth, 2018)support the recognition of these resources' potential to enhance cognitive learning and practical application, highlighting the dual benefits of immersive materials in language education. Uniform support was noted across multiple items, with 55% of respondents strongly agreeing and 45% agreeing regarding Items 4, 5, and 6. This feedback underscores that these resources offer significant benefits in various aspects of language acquisition, a claim supported by (Schroeter & Turner, 2024), who argue that 360-degree materials can greatly enhance student engagement. Notably, 85% of respondents indicated a preference for the ongoing use of these tools, demonstrating a significant inclination towards the integration of modern technologies in the curriculum.

The findings indicated diverse opinions; Items 12 and 13 showed a 65% agreement rate, whereas 35% of students expressed uncertainty or disagreement concerning the tools' efficacy. This divergence highlights the need for continuous evaluation and modification of educational resources to meet varied learning requirements, as noted by (Navas-Bonilla et al., 2025). These results provide several practical implications for educators. Adapting materials to suit diverse preferences and skill levels may greatly improve their efficacy. Moreover, the implementation of continuous student feedback mechanisms will enable educators to enhance these tools more efficiently. Professional development is crucial, as it equips educators with the skills necessary to effectively integrate new technologies into lesson planning, thereby significantly improving student engagement and learning outcomes. The findings suggest a positive trend in the integration of 360-degree resources in language education, supporting an approach that acknowledges and addresses the varied experiences of all learners. Incorporating these insights enables educators to create more effective, engaging, and inclusive learning experiences in language education (Elliott, 2020).

The use of 360-degree web-based materials to enhance English-speaking competence has demonstrated a significant impact on language education, evidenced by the increase in students' speaking scores from an average of 70.5 to 85.7. This illustrates the effectiveness of immersive resources in enhancing language skills and creating an engaging, motivating educational atmosphere. To optimise the advantages of these innovative tools, a series of recommendations should inform future practices. Educational institutions should prioritise the integration of 360-degree materials into English language

curricula, allowing students to practice language skills in realistic contexts, such as ordering food or participating in discussions. Customising these materials to suit individual preferences and proficiency levels will improve their effectiveness, fostering a more tailored learning environment. Furthermore, the establishment of effective feedback mechanisms is essential; offering students immediate assessments of their speaking abilities will enhance self-efficacy and foster a growth mindset.

Encouraging collaborative learning is vital, utilizing the interactive features of 360-degree materials to enhance peer interaction and social dialogue, which are crucial for language acquisition. Additionally, continuous professional development for educators is essential to ensure they are properly prepared to implement these technologies effectively. Future research must investigate the long-term effects of 360-degree materials on language learning, emphasizing the sustainability of engagement and the development of proficiency. Continuous assessment of diverse student demographics' responses to these resources is crucial, as mixed feedback highlights the necessity for adaptable materials to address the needs of varied learners. The integration of 360-degree web-based materials marks a notable advancement in language teaching practices. By adhering to these recommendations, educators can effectively utilize immersive learning environments, resulting in enhanced, engaging, and inclusive English language education.

CONCLUSION

The findings from this comprehensive exploration of 360-degree web-based resources in enhancing English-speaking competence among students reveal a substantial impact on both engagement and learning outcomes. The marked improvement in speaking abilities—evidenced by pre-test and post-test score increases—highlights the efficacy of immersive learning environments, with average scores rising from 70.5 to 85.7 post-intervention. This significant gain underscores the potential of 360-degree materials to enhance linguistic proficiency, aligning with existing literature that articulates a positive correlation between immersive technologies and language acquisition. The engaging nature of 360-degree resources captivates students' attention and motivates active participation in their learning journey. This interactive modality not only fosters self-directed learning but also provides personalized educational experiences that cater to diverse learning styles. The opportunity to practice language skills in authentic contexts—such as ordering food or role-playing in business scenarios—diminishes the gaps typical of traditional pedagogical methods, facilitating real-world language use.

Moreover, the study underscores the critical role of social interaction that these immersive environments foster. Peer collaboration enhances communicative competence, allowing students to cultivate essential speaking skills through meaningful dialogue and negotiation of meaning. The immediate feedback mechanisms enabled by interactive elements further propels student development, promoting reflection and self-efficacy in language use and creating a safer learning space for experimentation. However, the nuances observed in student perceptions indicate a pressing need for ongoing evaluation and adaptation of these educational tools. Mixed feedback revealed that 35% of students expressed uncertainty about the tools' efficacy, underscoring the importance of continual improvement and responsiveness to diverse learner needs and expectations. Thus, while the current research demonstrates the transformative potential of 360-degree materials as integrated pedagogical tools, it also highlights significant gaps in understanding which particular features most effectively drive engagement and learning outcomes across varied student populations.

The present study makes several important implications for the field of language education. Firstly, it advocates for a multifaceted approach that recognizes and addresses the diverse experiences and preferences of learners, suggesting that educators must

deliberately integrate these immersive technologies into language curricula. Furthermore, the findings indicate a need for greater collaboration among educators, technologists, and curriculum developers to create dynamic and adaptive learning environments that better support student engagement and speaking proficiency. Future research should address several critical gaps. Longitudinal studies are necessary to explore the long-term impacts of 360-degree materials on language acquisition, particularly regarding the sustainability of engagement and language proficiency development beyond immediate post-test results. Additionally, exploring the integration of 360-degree materials with other pedagogical strategies, such as task-based learning or experiential education, could further enrich students' language learning experiences.

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