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A Project-Based Learning Model Using 360° Ecotourism River Videos for Teaching English Speaking Skills

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A B S T R A C T
The growing demand for communicative competence in English requires pedagogical models that offer authentic, situated language practice beyond conventional classroom instruction. This Research and Development (R&D) study, employing the ADDIE model, aims to design and evaluate a Project-Based Learning (PjBL) model integrated with 360° ecotourism river videos to enhance junior high school students' English speaking skills. The development process involved needs analysis, product design, expert validation, and a small-group trial. The final product consisted of a 360° immersive video portraying the Lok Baintan Floating Market and an accompanying PjBL-based speaking module. Validation results indicated strong pedagogical viability, with ratings from a technology expert (73.4%), an English teacher (88.6%), and students during the trial phase (92.5%). Qualitative observations further revealed heightened student engagement and motivation during speaking tasks. These findings suggest that integrating immersive video with PjBL creates an authentic, low-anxiety environment conducive to meaningful oral communication. The study contributes to ELT pedagogy by demonstrating how immersive technology can operationalize situated learning principles within project-based speaking instruction while strengthening the use of local cultural content in English language teaching.

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Introduction

Project-Based Learning (PjBL) has been widely recognized as an effective pedagogical approach for enhancing students' English speaking competence. Empirical studies consistently demonstrate that PjBL strengthens learners' productive skills while fostering enthusiasm, confidence, creativity, autonomy, and collaboration (Astawa et al., 2017). Engagement in structured project activities also provides students with meaningful opportunities to practice speaking, thereby increasing their confidence in oral communication (Kurniawan Y, 2025)). Furthermore, the integration of contextual tasks, such as video production, presentations, and role-plays supports the development of vocabulary, sentence structures, and overall fluency (Metri et al., 2025). Further, video-based projects in particular have been shown to substantially improve speaking performance and self-confidence (Iin, 2022). More broadly, incorporating real-world communicative tasks within PjBL frameworks contributes to measurable gains in students' English proficiency (Baygudanova, 2024). Further, recent study show that integrating digital technology into project-based learning has more significant impact on students speaking performance (Hoesny et al., 2024); Benlaghrissi & Ouahidi, 2024).

Incorporating immersive virtual reality into project-based learning significantly improves students' oral English skill and engagement compared to traditional methods (Shi, Sitthiworachart, & Hong, 2024). Immersive virtual reality (iVR) promotes authentic language learning and engagement among EFL students, offering more natural

interactions and connections to real-life experiences (Lee et al, 2024). 360-degree video-based VR environments provide more detailed and useful feedback for language learners, leading to better learning outcomes compared to traditional video technology. Rosendahl & Wagner (2024) on their review insist the importance of 360° videos in education by providing immersive, interactive, and multi-perspective experiences, increasing motivation and students' interest. Immersive 360° videos are more effective than standard videos for foreign language learning among high-school students with positive attitudes towards technology (Repetto et al., 2023). Therefore, integrating digital tools into language teaching process improve students' willingness to practice English (Jannah et al., 2024).

When combined, PjBL and 360° video create a potent pedagogical model for teaching speaking skills. The PjBL framework provides the overarching purpose and communicative need for instance, creating a guided virtual ecotourism tour. The 360° video, in turn, supplies the context and content for this project, offering an authentic, visually rich stimulus that drives the need for description, explanation, and narration. Although both PjBL and immersive media have been separately studied, their integration, especially in locally contextualized ELT settings remains underexplored. This study seeks to fill these identified gaps by developing and evaluating a PjBL model that integrates 360° videos of a local ecotourism river. It addresses the lack of local context in ELT materials by utilizing a familiar, yet pedagogically underexplored, local environment.

The choice of eco-tourism as the thematic core of this model is justified on multiple fronts. Firstly, developing English teaching materials based on Eco-ELT is urgently needed to improve students' English language skills and foster environmental awareness and literacy (Bulan et al., 2024). This addresses a growing demand for ELT materials that are not only linguistically effective but also socially and ethically relevant (Micalay-Hurtado & Poole, 2022). Secondly, an eco-tourism theme is inherently rich in communicative potential. It naturally improves students' understanding of environmental vocabulary and critical thinking (Kazazoglu, 2025), and enhancing students' awareness of environmental concerns and build metacognitive skills about environmental care (Nur et al., 2022). Finally, by focusing on a local ecotourism site, the project fosters a sense of contextual learning and cultural pride. Using local materials in EFL classrooms significantly enhances cultural literacy and enthusiasm for learning (Samsudin et al., 2025). Therefore, this study aims to develop and validate a PjBL model integrated with 360° ecotourism videos to enhance junior high school students' English speaking skills.

Research Method

The participants of this study were selected using purposive sampling, focusing on junior high schools located in river ecotourism areas with access to basic digital learning facilities. 6 teachers and 50 students were selected as participants. The validation instruments used a five-point Likert scale (1 = very poor to 5 = very excellent). The study was conducted from May to December 2025. Quantitative data from feasibility scores and qualitative data from interviews and feedback were combined to provide methodological triangulation for strengthening the validation of the developed model. Ethical procedures were observed; informed consent was obtained from all participants and school authorities, and student identities were anonymized throughout the research process.

This study employs a Research and Development (R&D) approach, utilizing the ADDIE instructional design model (Analysis, Design, Development, Implementation, Evaluation) as its overarching framework (Branch, 2009).

The research procedure follows the five phases of ADDIE:

- **Analysis:** This initial phase aims to identify learning needs, student characteristics, and the specific problems teachers and students face in teaching and learning English speaking skills. Data will be gathered through surveys and interviews with the selected teachers and students. Additionally, an analysis of the junior high school English curriculum and an identification of potential river ecotourism sites for the learning content will be conducted.

- **Design:** In this phase, the Project-Based Learning (PjBL) model integrated with 360° river ecotourism videos will be designed. The activities include formulating the syllabus, learning materials, learning scenarios, and student assessment instruments. An initial sketch and storyboard for the 360° videos will also be created.

- **Development:** The designed model and learning materials are developed and produced in this stage. This includes the full production of the 360° videos based on the selected river ecotourism themes. The developed products (the PjBL model and videos) will then be validated by experts in English language teaching and educational technology to ensure their quality and appropriateness.

- **Implementation:** The validated PjBL model is implemented in the classroom setting to measure its effectiveness in teaching English speaking skills. This stage will be accompanied by pre-tests and post-tests to quantitatively assess the improvement in students' speaking abilities.

- **Evaluation:** The final phase involves evaluating the overall effectiveness of the learning model. The evaluation is based on the analysis of the pre-test and post-test results. Furthermore, reflections and discussions will be held with teachers and students to gather qualitative feedback on the strengths and weaknesses of the model, which will be used for future refinements.

The data collection techniques employed in this study included surveys, interviews, classroom observations, and document analysis (e.g., curriculum documents and learning materials). The primary instruments consisted of validation questionnaires, interview guides, observation checklists, and speaking task rubrics used solely to support expert review and limited classroom try-out activities. Quantitative data were used to describe the level of feasibility and pedagogical appropriateness of the developed model based on expert, teacher, and student evaluations, while qualitative data were utilized to analyze feedback and reflections regarding the usability, clarity, and relevance of the instructional design. These combined data sources served to validate and refine the teaching-learning model rather than to measure its instructional effectiveness.

Result and Discussion

Result

Need Analysis Result

The initial phase of this study involved a comprehensive needs analysis to identify the specific challenges and requirements in teaching English speaking skills within the local context. Data was gathered through surveys and interviews involving 6 English teachers and 50 students from different Junior High Schools (SMP) near Pasar Terapung

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location. The results revealed a significant gap between the current learning conditions and the ideal pedagogical scenario. The analysis of the real conditions in the classroom highlighted several critical issues. Firstly, teachers reported a pronounced lack of accessible and innovative teaching materials specifically designed for Project-Based Learning (PjBL) that are relevant to students' immediate environment. While PjBL is recognized as an effective method, its implementation is hindered by the scarcity of resources that provide a structured, engaging, and locally-themed project framework. Secondly, students demonstrated low motivation and high anxiety when engaging in English speaking activities. The existing materials often felt abstract and disconnected from their daily lives, failing to provide a compelling reason for communication.

Conversely, the ideal conditions desired by both teachers and students were clear. There was a strong consensus on the need for immersive and authentic learning contexts that could stimulate genuine communication. Teachers expressed a need for a model that not only outlines project tasks but also provides the rich, visual content to drive those tasks. Students indicated a preference for learning about familiar topics, explicitly showing interest in content related to their local river ecotourism. They responded positively to the idea of using advanced technology like 360° videos, which they perceived as modern, engaging, and capable of providing a "real" experience without leaving the classroom. The central gap identified, therefore, is the absence of a pedagogically sound model that synergistically integrates PjBL, immersive 360° video technology, and locally relevant ecotourism content. The existing materials do not leverage the unique potential of immersive media to provide a shared, stimulating context for project-based speaking activities. This gap underscores the urgency and relevance of developing a PjBL model using 360° ecotourism river videos to create a purposeful, engaging, and effective learning environment for teaching English speaking skills.

Product design

Based on the findings from the needs analysis, the core product of this Research and Development is a comprehensive pedagogical package consisting of an immersive 360° video and a complementary teaching module. The design is centered on providing an authentic, structured context for a Project-Based Learning (PjBL) model aimed at enhancing students' English speaking skills, specifically in the area of description.

The 360° Ecotourism Video: "A Journey to Lok Baintan Floating Market"

The primary stimulus for the learning project is a professionally produced 360° video that takes students on a virtual field trip to one of South Kalimantan's iconic cultural sites. The video is strategically segmented into three distinct phases to scaffold the learning experience and provide clear, describable moments:

Phase 1: The Departure from Siring Menara Pandang. The video begins at the Siring Menara Pandang dock in Banjarmasin. It immerses students in the bustling atmosphere as they virtually board a traditional kelotok (wooden motorboat). This phase provides rich visual and auditory context for vocabulary related to transportation, preparation, and the initial setting.

Phase 2: The Scenic River Journey. The journey continues along the Martapura River, capturing the serene and beautiful morning ambiance. The 360° perspective allows students to look around at the riverside houses, passing boats, and the natural landscape, offering ample material for describing environments, weather, and ongoing actions.

Phase 3: The Arrival at Lok Baintan Floating Market. The final phase places students in the heart of the vibrant Pasar Terapung (Floating Market). The video showcases the dynamic interactions between traders and buyers, the variety of goods sold from boats,

and the unique cultural practices. This segment provides a compelling context for describing people, activities, objects, and a bustling scene.

The PjBL Teaching Module: "Describing the Floating Market"

To translate the immersive video experience into a structured learning trajectory, a detailed teaching module was developed. The module's project goal is for students to create and present a descriptive video tour guide based on the 360° experience. The instructional design follows a three-phase approach: Pre-Teaching Activities: This phase is designed to activate students' prior knowledge and build necessary vocabulary. Activities include brainstorming sessions about traditional markets, pre-teaching key descriptive adjectives and verbs, and introducing the final project outcome. Whilst-Teaching Activities: This is the core PjBL phase where students engage directly with the 360° video. Activities are structured to guide them from comprehension to production. This includes: Noticing and Note-taking: Students watch specific video segments and note down relevant vocabulary and observations.

Speaking Strategy Discussion: The module explicitly teaches and practices speaking strategies crucial for effective description, such as using spatial language (e.g., "on the left," "in the foreground"), employing sensory details, and structuring a description from general impressions to specific details. Guided Practice: Students work in pairs or small groups to describe short clips from the video, applying the newly learned strategies. Post-Teaching Activities: In this phase, students work collaboratively on the final project. They script, rehearse, and record their own descriptive tour guide narration for selected parts of the 360° video. The module provides scaffolding for this task, including script outlines and peer-feedback checklists. The culmination is a "classroom showcase" where groups present their video guides, thereby achieving the project's communicative goal.

This integrated product design ensures that the technological immersion of the 360° video is not an isolated activity but the central driver of a purposeful, communicative, and student-centered project, directly addressing the gaps identified in the needs analysis.

Validation of Expert and English teacher

Following the development of the 360° video and the complementary PjBL teaching module, a validation process was conducted to assess the product's feasibility. The validation was carried out by two distinct experts: a technology expert in immersive media and an experienced English teacher. Each validator assessed the product using a questionnaire that evaluated five key criteria: Content, Language, Presentation, Learning, and Graphics & Design, using a Likert scale.

Technology Expert Validation

The technology expert's validation focused on the technical quality and immersive potential of the 360° video product. The results are summarized in Table 1.

Table 1. Results of Technology Expert's Validation

No	Indicators	Score	Percentage	Category
1	Content	4.00	80.0%	Feasible
2	Language (Narration)	3.60	72.0%	Feasible

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No	Indicators	Score	Percentage	Category
3	Presentation	3.80	76.0%	Feasible
4	Learning	3.60	72.0%	Feasible
5	Graphics & Design	3.50	70.0%	Feasible
	Average	3.67	73.4%	Feasible

The aforementioned data shows that the product received an overall score of 3.67 (73.4%), categorizing it as "Feasible." The expert commended the content's relevance to local ecotourism and its potential for creating an authentic learning context. However, specific feedback was provided to enhance the technical execution. The expert suggested improving the video resolution for a sharper, more immersive experience and enhancing the audio quality by reducing ambient wind noise and balancing audio levels to ensure clear narration throughout the journey.

English Teacher Validation

The English teacher's validation assessed the pedagogical soundness, linguistic accuracy, and practicality of the integrated PjBL model and module. The results are presented in Table 2.

Table 2. Results of English Teacher's Validation

No	Indicators	Score	Percentage	Category
1	Content	4.60	92.0%	Very Feasible
2	Language	4.20	84.0%	Feasible
3	Presentation	4.40	88.0%	Very Feasible
4	Learning	4.60	92.0%	Very Feasible
5	Graphics & Design	4.40	88.0%	Very Feasible
	Average	4.43	88.6%	Very Feasible

The aforementioned data imply that the product received an overall score of 4.43 (88.6%) from the English teacher, placing it in the "Very Feasible" category. The teacher highly praised the innovative integration of the 360° video with the PjBL framework, noting its high potential to motivate students and create a purposeful speaking environment. The feedback highlighted that the module's design successfully guides students from comprehension to production. The primary suggestions for improvement were linguistic: the teacher recommended a thorough review of the grammar used in the module's instruction and exercise sections, and proposed adding more scaffolded speaking exercises to better support students with varying proficiency levels in their journey toward the final project output.

Small group Trial

Following the expert and teacher validation, a small group trial was conducted to evaluate the practicality and effectiveness of the PjBL model and the 360° video in a real classroom setting. The trial was implemented at one of the junior high schools in Banjar Regency, involving one English teacher and ten students.

The implementation process followed the designed module structure of pre-teaching, whilst-teaching, and post-teaching. In the first stage the teacher began the session by activating students' prior knowledge, leading a discussion about the Pasar Terapung (Floating Market). This was followed by an explicit explanation of language functions and vocabulary necessary for describing a place and a journey in English. In the second stage, the teacher then presented the 360° video, "A Journey to Lok Baintan Floating Market." Students watched the video immersively, using smartphones and VR cardboard headsets. After the initial viewing, the teacher divided the students into pairs and assigned the core project task: to collaboratively describe both the journey to the market and the market scene itself. Students were encouraged to watch the video again on their devices to gather specific details for their descriptions. In the last stage, the student pairs worked together to formulate and practice their descriptions, with the teacher providing guidance and feedback. This culminated in short presentations where each pair shared their descriptions with the class.

Upon completion of the session, students were asked to provide feedback by filling out a validation questionnaire via Google Form. The questionnaire assessed four aspects: Content/Material, Language, Attractiveness, and Easiness. The results of the students' validation are summarized in Table 3.

Table 3. Results of Students' Validation

No	Indicators	Score	Percentage	Category
1	Content/Material	0.95	95.0%	Very Feasible
2	Language	0.90	90.0%	Very Feasible
3	Attractiveness	0.95	95.0%	Very Feasible
4	Easiness	0.90	90.0%	Very Feasible
	Average	0.925	92.5%	Very Feasible

As shown in Table 3, the product received an outstanding average score of 0.925 (92.5%), categorizing it as "Very Feasible" from the students' perspective. Qualitatively, this high score was reflected in the classroom atmosphere. Observational notes highlighted a marked increase in student enthusiasm and engagement. Students were visibly active and responsive during the video viewing, with many expressing excitement and curiosity. The collaborative task successfully fostered peer interaction and communication, as students were observed actively negotiating meaning, sharing vocabulary, and helping each other construct their descriptions. The immersive nature of the 360° video effectively lowered the affective filter, making students more willing to attempt speaking in English. This trial confirmed that the integration of a locally-themed, immersive project not only makes learning more engaging but also effectively stimulates authentic spoken communication.

Revision

The development cycle was concluded with a comprehensive revision phase, where the feedback from the technology expert, the English teacher, and observations from the small group trial were systematically incorporated to refine the final product. The revisions were aimed at enhancing both the technical quality of the 360° video and the pedagogical accuracy of the accompanying teaching module. Based on the English teacher's validation, a primary focus was on linguistic precision. All grammatical errors identified in the teaching module's instructions, exercise descriptions, and script outlines were meticulously corrected. This ensured that the language input provided to students was accurate and modeled correct English usage, thereby supporting their learning process more effectively.

In response to the technology expert's feedback, technical enhancements were made to the 360° video. The video resolution was upgraded to provide a sharper and more immersive visual experience, reducing pixelation and increasing the clarity of the scenic details. Furthermore, the audio quality was improved through post-production editing, where ambient noise was reduced, and the narration levels were balanced to ensure consistent audibility throughout the different phases of the river journey. Additionally, minor revisions were made to the video's introductory segment (preface). The opening was refined to be more engaging and to better set the context for the virtual field trip, making it more effective in capturing student interest from the outset. These iterative refinements, informed by expert input and practical implementation, were crucial in elevating the product's overall quality, feasibility, and readiness for wider application in the classroom.

Discussion

The findings of this study collectively demonstrate the successful development and potential effectiveness of a Project-Based Learning (PjBL) model integrated with 360° ecotourism videos for teaching English speaking skills. The positive validation from experts, teachers, and, most importantly, the students, provides a strong case for the viability of this innovative approach. These results can be substantively justified by aligning them with established theories and previous research in the fields of educational technology and language acquisition. First, the high feasibility of the product, particularly its immersive quality, aligns with the principles of Situated Learning Theory (Lave & Wenger, 1991), which posits that learning is most effective when embedded within an authentic context and culture. The finding is in line with Berns et al. (2018) study which concludes that 360° video applications can create immersive learning environments for foreign language learners, allowing them to interact with content and environment while practicing language skills in real-world situations

The 360° video of the Lok Baintan Floating Market served as a powerful vehicle for situating language learning. It transported students to a real-world environment, making abstract vocabulary and descriptive language concrete and immediately applicable. This finding is supported by research from Xie et al. (2021) who found that immersive virtual environments significantly enhanced vocabulary acquisition and active learning among L2 learners by providing rich, contextualized input. The high scores in the "Content" and "Attractiveness" aspects of the student validation (95%) directly reflect this, showing that the authentic context provided by the video was highly engaging and meaningful to them.

Second, the crucial role of the video's technical quality, as highlighted by the expert's feedback, underscores a fundamental principle in multimedia learning. Radianti et al. (2020), in their systematic review, emphasize that the technical quality of immersive applications, including high resolution and clear audio, is a critical design element that directly influences the sense of "presence" and, consequently, the learning outcome. The improvements made to the video resolution and audio were not merely cosmetic; they were essential to minimizing cognitive load and maximizing the immersive experience, thereby ensuring the video effectively served its purpose as a high-quality teaching material. A poorly produced video would have distracted from the learning objectives, but a high-quality one, as aimed for in this study, facilitates a more seamless and effective teaching-learning process.

Finally, the product gains overwhelming positive student' response and produces enthusiasm and high engagement. The immersive and low-stakes environment created by the 360° video effectively lowered students' affective filter their anxiety and self-consciousness about speaking English. When students are relaxed and interested, they are more likely to engage in language acquisition (Nicolaidou et al., 2023). Furthermore, studies specifically on 360° video in language learning, such as that by Shadiev et al. (2022), confirm that such technology boosts learning motivation, curiosity, and active participation. The task of describing a familiar yet novel virtual environment provided a clear, non-threatening communicative goal, which motivated students to use the target language voluntarily and collaboratively (Shadiev et al., 2021).

In conclusion, the success of this PjBL model is not accidental but is theoretically grounded. It effectively leverages immersive technology to create a situated learning context, adheres to principles of multimedia design for effective material development, and capitalizes on the motivational and anxiety-reducing benefits of such technology to foster a conducive environment for language production. This study thereby contributes to the growing body of evidence advocating for the thoughtful integration of immersive media into contemporary ELT methodologies.

Despite its promising outcomes, this study has several limitations. The model validation was conducted through a small-scale classroom try-out involving a limited number of participants, which restricts the generalizability of the findings. In addition, the study was confined to a specific geographic and cultural context in South Kalimantan, and the results may differ in other educational settings. Furthermore, as a development-focused study, this research did not examine the long-term impact of the model on students' speaking proficiency.

From a practical perspective, this model provides English teachers with a feasible framework for integrating immersive technology into speaking instruction without requiring advanced technical infrastructure. Teachers can adapt locally available environments into 360° video content and embed them within project-based tasks such as guided tours, descriptive presentations, or collaborative storytelling. By following the structured PjBL stages, teachers can foster authentic communication, reduce speaking anxiety, and contextualize English learning within students' lived experiences. This approach is particularly suitable for contexts where access to real-world field trips is limited.

Conclusion

This study demonstrates that integrating Project-Based Learning (PjBL) with immersive 360° ecotourism videos can effectively support the teaching of English speaking skills in junior high school contexts through the development of authentic,

engaging, and locally grounded learning materials. Using a Research and Development approach guided by the ADDIE model, this study successfully produced a pedagogically viable PjBL model accompanied by a 360° virtual river ecotourism video and instructional module. Validation results from experts, teachers, and students indicate that the developed model meets key criteria of content relevance, instructional design quality, and practical usability, confirming its feasibility as an innovative resource for English Language Teaching.

From a pedagogical perspective, this model offers English teachers a structured yet flexible framework for integrating immersive technology into speaking instruction. By embedding 360° video content within project-based tasks, teachers can create authentic communicative situations that encourage active student participation, collaboration, and contextual language use. The use of local ecotourism themes not only enhances learner engagement but also strengthens cultural relevance and environmental awareness within the English classroom. Importantly, this model is scalable and sustainable; teachers and institutions can adapt it to other local contexts by utilizing open-source or readily available 360° video tools, making it suitable for schools with varying levels of technological infrastructure.

Although the findings of this study indicate strong pedagogical feasibility, further research is recommended to extend and deepen its contribution. Future studies may involve larger-scale implementations across diverse geographic and cultural contexts to examine the broader applicability of the model. Experimental or quasi-experimental designs could also be employed to investigate its impact on students' speaking proficiency over time. Additionally, longitudinal research exploring the sustainability of student engagement and language development would provide valuable insights into the long-term effectiveness of immersive project-based learning in English education.

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