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# Designing Environment-Based Interactive Multimedia for Enhanced Language Learning in Indonesian Language and Literature Education Program

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**ABSTRACT**

Traditional teaching methods in the "Learning Models" course of the Indonesian Language and Literature Education program often lack engagement and contextual relevance. This study aims to develop and assess the feasibility of environment-based interactive multimedia as an innovative instructional tool to improve comprehension and application among prospective teacher candidates. This research employed a developmental approach, incorporating data from observations, interviews, and questionnaires. A product assessment questionnaire served as the primary instrument. Feasibility was evaluated through expert validation and user testing, including individual and small group trials. Both qualitative and quantitative descriptive analyses were used to interpret the data. The developed multimedia product demonstrated high feasibility scores: content expert validation (91.5%), instructional design expert validation (91.5%), media expert validation (94.0%), individual trial (94.7%), and small group trial (88.2%). All results fall within the "very good" or "good" categories, indicating strong validity and practicality. Findings suggest that environment-based interactive multimedia enhances learner engagement and supports effective instruction in teacher education. The product is well-suited for integration into the "Learning Models" course. The multimedia product is highly feasible for educational implementation. Further research is recommended to examine its effectiveness across other courses and learner populations.



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## 1. INTRODUCTION

The development of media in the course of Innovative and Effective Models of Indonesian Language Learning is crucial for improving the quality of education, especially in the Indonesian Language and Literature Education Study Program. In this digital era, conventional teaching methods that are often

monotonous can no longer keep up with the demands of modern learning, which requires high levels of engagement and motivation from students. Interactive multimedia has proven to be a more effective learning tool compared to traditional methods due to its ability to provide a more immersive and dynamic learning experience (Praheto et al., 2020a); (Danabaeva, 2023). However, in the context of teacher education, the main focus is not only on the achievement of student learning outcomes but also on how prospective teacher students can understand, develop, and effectively apply language learning models with the help of multimedia technology.

In the Indonesian Language and Literature Education Study Program, prospective teacher students are expected not only to study theory but also to be able to use innovative media to be applied in the classroom. Here is where the role of interactive multimedia based on the environment becomes important, as it provides a direct learning experience that is relevant to the context of real teaching. Previous research by (Anasti, 2021) indicates that interactive multimedia e-modules can enhance the quality of Indonesian language learning at the higher education level, which is also relevant to the teaching needs in the Indonesian Language and Literature Education Study Program.

This research starts from the main issue of the lack of contextual, innovative, and engaging language learning methods that can be clearly understood by prospective teacher students. Traditional methods that focus solely on theory often do not provide a real picture of how learning models should be applied in practice. As a result, students do not gain a sufficient understanding of how to develop and implement effective teaching strategies. (Lees et al., 2020). Thus, there is a need for interactive media that not only presents teaching materials but also clearly demonstrates how models of Indonesian language learning are implemented. The proposed solution in this research is the development of interactive multimedia based on the environment, created by lecturers, which can serve as a teaching aid in the course on Models of Indonesian Language Learning. By using this media, students can learn how to teach more effectively by studying just one medium developed by researchers. In that media, students can understand the specifications of the material, teaching techniques, and the direct implementation of learning models (Kumar et al., 2021); (Astiti et al., 2024). Thus, they not only grasp the theory but also witness the real application of language teaching methods.

The gap identified in this research is the lack of multimedia learning tools specifically designed for prospective teacher students in the context of learning the Indonesian language. Most of the existing multimedia focuses only on improving the learning outcomes of final-year students, without giving adequate attention to how prospective teacher students can understand and practice language learning models (Wang & Zhang, 2023); (Abdulrahaman et al., 2020). This limits the effectiveness of the tool in preparing students to become competent and creative teachers in the future. The main objective of this research is to develop and evaluate the effectiveness of interactive multimedia based on the environment as a support tool for students in the course on models of Indonesian language learning. This research aims for prospective teacher students to understand how the teaching models taught in lectures are applied in real situations with the help of interactive media. By directly observing the implementation of these learning models through the media developed by the lecturers, students will be able to map out and adjust teaching techniques that are relevant to the teaching contexts they will face in the future.

The novelty of this research lies in the use of interactive multimedia as a learning tool for university students, not just for school students. This approach provides students with the opportunity to learn about language learning models through a single media integrated into their teaching, allowing them to see how teaching strategies can be developed, implemented, and evaluated effectively. It offers a new perspective on how prospective teachers can learn from interactive media specifically designed for them, enhancing their readiness to teach. (Muhammadiah et al., 2022).

The scope of this research involves the development, implementation, and evaluation of environment-based interactive multimedia in the Indonesian Language and Literature Education Study Program. This research will assess the effectiveness of interactive multimedia in helping students understand and master language learning models, as well as evaluate how well this media functions as a relevant and contextual teaching aid. A comparative analysis will also be conducted to determine whether

this approach is more effective than the traditional teaching methods currently in use. This research aims to provide innovative solutions for prospective teacher students so that they not only understand language learning theories but also master and apply language learning models through interactive experiences using relevant and contextual environment-based interactive multimedia. This is expected to enhance students' competencies in designing and implementing effective and creative language teaching methods in the future.

The development of interactive multimedia tailored for language and literature learning plays a crucial role in addressing the challenges of student engagement and the limitations of traditional teaching methods. In line with the research problem, the integration of multimedia tools can significantly enhance students' understanding and motivation, which are important aspects in language and literature education. As demonstrated by Hamzah & Aman (2023), interactive multimedia can enhance student engagement and understanding by presenting language concepts in a dynamic and interactive manner. In this context, this research that emphasizes environment-based multimedia deepens this approach by integrating local contexts and cultural elements, making the learning experience more relevant and meaningful. This is supported by the Cognitive Theory of Multimedia Learning, which highlights that learning becomes more effective when visual and verbal elements are combined to reduce cognitive load and enhance knowledge retention.

In this study, the use of multimedia that integrates local history, landscapes, and cultural references allows students to take advantage of multimodal learning and contextualization, which deepens their understanding of language and literature. Al-Sabbagh (2023) also supports this approach, noting that multimedia using interactive modalities such as video, audio, and text can enhance vocabulary mastery and overall language comprehension. Thus, this research provides a new contribution by emphasizing the contextual and cultural relevance in multimedia design, distinguishing it from previous studies that focused on interactivity in general. An approach like the one applied in this research is also supported by (Riskasari et al., 2020), who articulate the potential of interactive multimedia transformation in language and literature education, especially in the context of the Fourth Industrial Revolution. The study shows that multimedia tools that integrate text, images, audio, and animation can enhance student engagement and foster critical thinking skills. Adapting multimedia-based learning methods connected to the local environment, as done in this research, becomes increasingly important to align educational practices with contemporary technological advancements.

This research problem aims to address the gap between theoretical concepts and real-life experiences in language education, aligning well with a culturally responsive learning approach. The relevance of culture and environment is crucial to facilitate meaningful learning, as explained by Sapi et al. (2023), who highlight the importance of cultural and environmental factors in enhancing student engagement in language learning. This research shows that the quality of culturally relevant content and the effectiveness of technology play a key role in shaping a successful learning environment, especially in the context of e-learning. This supports the proposed environment-based multimedia approach, where local elements such as cultural symbols, folklore, and social practices become an integral part of the learning process, making it more relevant and meaningful for students, especially those being taught.

Al-Sabbagh (2023) also supports this idea by demonstrating that personalized instructional design, which takes into account students' learning styles and cultural contexts, can enhance their engagement and understanding. In this study, the use of multimedia content tailored to the local context of students will enable them to connect academic concepts with their own life experiences. This not only facilitates their understanding of the material but also deepens their engagement with the content being taught. Research conducted by Olufunke et al. (2022) emphasizes that authentic multimedia reflecting students' real-world experiences can enhance their understanding and engagement, thereby supporting the use of an environment-based approach.

In addition, Peng et al. (2019) emphasize the importance of adaptive learning and personalization in enhancing cultural and environmental relevance in language education. By integrating smart technology that adapts to individual needs, this approach enables a deeper and more responsive learning experience

that takes into account students' cultural backgrounds. This is relevant to this research, which emphasizes the importance of local context in language and literature learning, ultimately helping to bridge the gap between abstract academic material and the real-world of students. Thus, your research not only addresses the need for more culturally relevant teaching methods but also provides innovative solutions to enhance student motivation and understanding.

This research contributes significantly to the development of innovative, interactive, and contextual multimedia tools for language and literature learning. By integrating environmental elements and local cultural content with advanced multimedia technologies, the study introduces a novel instructional approach that fosters immersive and personalized learning experiences. Prior studies, such as Praheto et al. (2020b), have shown that interactive multimedia—especially those incorporating audio, video, and authentic contexts—can significantly enhance student outcomes in Indonesian language learning.

Supporting this, Hamzah and Aman (2023) developed an interactive multimedia application for Islamic preschool education using the Multimedia Development Life Cycle (MDLC) framework. While their focus was on religious content, the core principle—developing engaging educational media—applies equally to language and literature instruction. Sumiarni et al. (2024) also emphasize the need to equip educators with digital literacy and multimedia skills to improve Arabic language instruction, reinforcing the importance of teacher readiness in utilizing such tools effectively.

Further, Riofrío-Calderón and Ramírez-Montoya (2022) highlight how digital mediation fosters interaction and collaboration in online learning, which is essential for creating meaningful educational experiences. Amawi (2024) adds that interactive videos significantly enhance language skills and learner motivation, particularly in EFL contexts. These findings align with the objectives of this study, which aims to develop and assess the feasibility of environment-based interactive multimedia for the "Learning Models" course in the Indonesian Language and Literature Education program.

The significance of this research lies in its potential to create a more engaging, contextualized, and effective learning environment. By merging local content with innovative technology, the multimedia tool developed in this study is expected to enhance teaching quality, support deeper student engagement, and serve as a model for broader application in language education.

## 2. METHODS

This research uses the research and development (R&D) method. Development research is an effort to develop and produce a product in the form of materials, media, tools, and/or learning strategies, used to address learning problems in the classroom/laboratory, and not to test theories. (Tegeh dan Kirna, 2010). The model of media learning development used is the Hannafin and Peck model, which consists of three main stages. This model is easier to understand and can be developed in a short time, but with evaluation and revision at each stage, the development continues to align with the desired goals. The stages in the Hannafin and Peck model include needs assessment, design (development and implementation), with evaluation and revision at each stage (Tegeh et al., 2014). The Hannafin and Peck model is illustrated as follows.

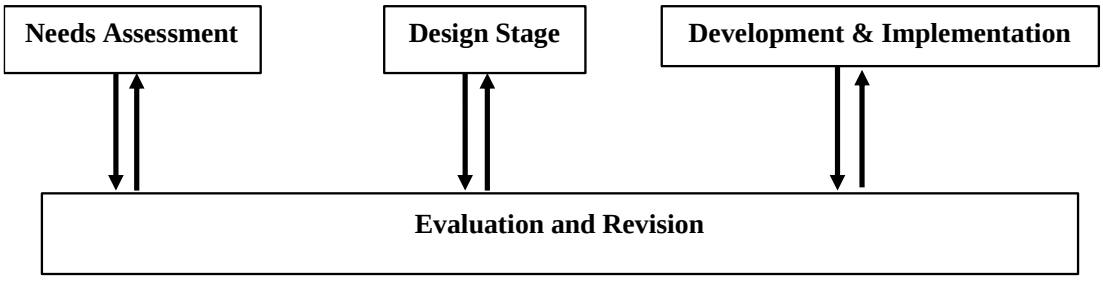


**Figure 1.** Hannafin and Peck Development Model

At the needs assessment stage, an analysis is conducted on the needs for product or learning media development, and the results are then consulted with the lecturers of the Language Learning Models course to obtain feedback. At the design stage, development focuses on creating the learning media design, including flowcharts and storyboards. A flowchart is a graphic representation of an algorithm or procedure for solving a problem. (Lasminiasih, 2016). The third stage involves development and implementation, where new learning programs are developed and tailored. The completed learning products are then evaluated and revised by the supervising lecturer and experts to ensure they meet the needs and are ready for implementation in teaching.

The subjects of the trial in this research involved a material expert, a design and learning media expert, and three students (one high-achieving student, one average, and one low-achieving) for individual trials. Additionally, six students (two high-achieving, two average, and two low-achieving) served as subjects for small group trials. Two data analysis techniques used are qualitative and quantitative descriptive analysis. The research instrument consists of a questionnaire for evaluation by expert specialists. This research uses three data collection methods: interviews, questionnaires, and observations. The collected data consists of qualitative and quantitative data. Qualitative data consists of responses with criteria such as Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). Quantitative data consists of scores generated from assessments by subject matter experts, design experts, media experts, as well as results from individual and small group trials, using a Likert scale that converts qualitative data into numerical values.

## 3. FINDINGS AND DISCUSSION

### *3.1 Findings*

This research was designed using the Hannafin and Peck model. In the first stage, known as needs analysis, an assessment is conducted regarding the needs in the development of learning media. Observations at the school, the distribution of questionnaires to understand the characteristics of students, and observations of lecturers in online learning indicate that the facilities in the program are adequate and the lecturers are proficient in using technology such as WhatsApp, Google Classroom, blogs, and YouTube. However, a problem was found where students feel bored with monotonous and less interactive learning media.

The second stage is the design stage, which focuses on solving the problems identified in the previous stage. The design in the form of a flowchart and storyboard is consulted with the supervising lecturer to obtain suggestions and feedback. The third stage involves the development and implementation of new learning media, which is then evaluated and revised by lecturers and experts, resulting in a product suitable for implementation. This stage includes activities such as integrating, developing, and creating new learning programs. After that, the developed learning product is evaluated and revised by the supervising lecturers and expert specialists, ensuring that the tools meet the needs and are ready to be applied in the direct learning process. Several screenshots from the developed application are displayed in Figure 2.

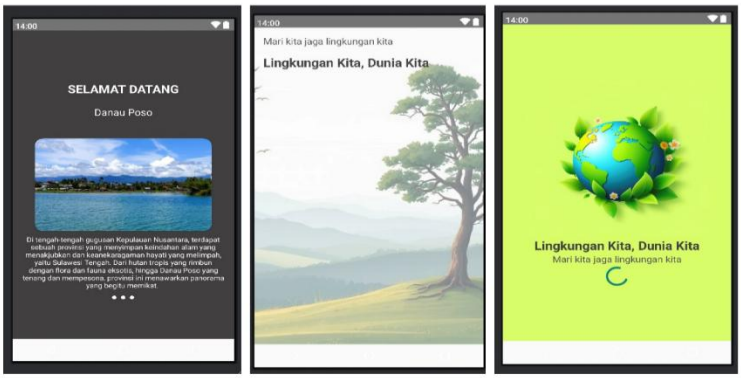


**Figure. 2.** Screenshot of the Application

The validity of this learning media can be seen from the results of the questionnaire filled out by experts and students. Testing was conducted with subject matter experts, instructional design experts, media experts, and students through individual and small group trials. The results of the expert evaluation for the Indonesian Language Learning Models course show a percentage of 92.8%, which falls into the very good category, indicating that the product is deemed suitable for use. The expert evaluation for the learning design also yielded a percentage of 92.8%, with a recommendation for use after considering the provided suggestions. The expert evaluation for the learning media produced a percentage of 93.1%, also in the very good category, making it suitable for use with suggestions for improvement. Individual trials involving 3 students from the Indonesian Language and Literature Education program achieved a result of 94.2%, which falls into the very good category, while small group trials showed a score of 89.75%, categorized as good. Therefore, this product is deemed suitable for use, taking into account the provided suggestions. The validity results are summarized in Table 1.

**Table 1.** Results of the product validity test

| No | Subject of the Trial | Validity Result (%) | Qualification |
|---|---|---|---|
| 1 | Content Expert Test | 91.5 | Very Good |
| 2 | Learning Design Expert Test | 91.5 | Very Good |
| 3 | Learning Media Expert Test | 94.0 | Very Good |
| 4 | Individual Trial | 94.7 | Very Good |
| 5 | Small Group Trial | 88.2 | Good |

From all the tests conducted with experts in content, design, and media based on various evaluations of specialists in the fields of content, design, and learning media, this media received a number of inputs and suggestions. From the subject matter experts, the recommendation was made to further detail the indicators used in the learning media. The learning design expert suggested that the media should better accommodate the diverse learning styles of students. Meanwhile, from the learning media design experts, the suggestions provided include: (1) adjusting the volume button based on student requests, (2) not using text and audio simultaneously, and (3) incorporating discussions in the exercise section. When tested on students, both through individual trials and small group sessions, this media received various positive comments with no feedback regarding improvements.

In terms of validity, this media is rated very well by subject experts, as it presents learning materials that are relevant to the Course Learning Outcomes (CPMK), Sub-CPMK, Teaching Materials, and Success Indicators derived from reliable sources. This media is also equipped with interactive learning evaluations.

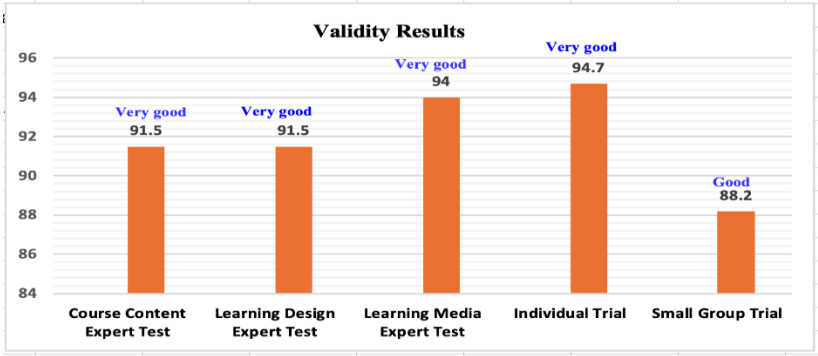


**Figure 3.** Validity Results

The validity from the learning design experts also shows very good results. This shows that the media gives students significant control over its operation, allowing them to tailor their learning to their individual needs, whether visual, auditory, or kinesthetic. This approach aligns with the principle that interactive multimedia should empower students by giving them greater control over their learning process. Learning media experts also assess this media as very good because it has utilized various multimedia elements such as images, text, sound, animation, and video, all packaged in an engaging manner. The multimedia components used, such as text, graphics, audio, video, and animation, all support students' comfort and motivation in learning. This media is also equipped with user control features that facilitate interaction.

### *3.2 Discussion*

The validity of the environment-based interactive multimedia developed in this study was supported by empirical testing, which yielded "very good" results in individual trials and "good" results in small group trials. These findings align with previous research demonstrating the effectiveness of interactive multimedia in enhancing student learning outcomes. For instance, Diartha, Sudarma, and Suwatra (2019) found that interactive multimedia significantly improved science learning outcomes among fifth-grade students at SDN 2 Banjar Bali. Similarly, Abdurrahman et al. (2020) reported improvements in student achievement in integrated social studies through the use of interactive learning media, indicating the broad applicability and effectiveness of multimedia tools in diverse subject areas.

One of the key strengths of the multimedia developed in this study is the inclusion of dubbing by the instructor, which provides clear explanations and reinforces the presence of the teacher within the learning environment. This approach creates a more personalized and supportive learning atmosphere, which can enhance student comprehension and engagement (Mayer, 2009). Additionally, the media integrates concise illustrative videos that are optimized for file size, ensuring accessibility while also catering to diverse learning preferences, such as visual and auditory styles (Fleming & Mills, 1992). These design choices reflect the importance of developing instructional tools that are both pedagogically sound and technically efficient.

Interactive multimedia grounded in environmental contexts offers several advantages. According to Sanjaya (2014), such multimedia can accommodate a variety of learning styles, support self-paced learning, and present diverse content formats, all of which contribute to a richer learning experience. It also promotes meaningful learning by connecting abstract concepts to real-life situations, a pedagogical strategy that enhances knowledge retention and application (Ausubel, 1968). Furthermore, previous research emphasizes that multimedia empowers learners by giving them control over their learning pace and environment, increases motivation, and provides immediate feedback (Istiqlal, 2017; Kuswanto & Walusfa, 2017).

Given these findings, the developed environment-based interactive multimedia shows strong potential for implementation in the "Language Learning Models" course. Its design supports dynamic

and student-centered instruction, helping to reduce monotony while increasing student involvement and interest in the material. This aligns with constructivist learning principles, which advocate for active, contextualized, and learner-driven experiences (Jonassen, 1991). Therefore, the multimedia tool not only validates previous findings but also expands upon them by incorporating environmental elements and teacher interaction, offering a novel and effective approach to language and literature education.

## 4. CONCLUSION

This research successfully demonstrates that developing and implementing environment-based interactive multimedia in the Language Learning Model course in the Indonesian Language and Literature Education Study Program significantly enhances students' understanding and engagement. This research contributes to the ever-evolving body of knowledge by demonstrating that interactive multimedia based on the environment, which incorporates elements of local culture, physical surroundings, history, and daily life, can provide a more contextual and meaningful learning experience. This finding aligns with previous research highlighting the role of multimedia in enhancing motivation and learning outcomes, but it provides new insights into the importance of contextual relevance. This research emphasizes that interactive multimedia based on the environment tailored to students not only enhances understanding but also fosters a deeper connection between theoretical concepts and real-life experiences.

The implications of these findings are very important for lecturers and curriculum developers. Interactive multimedia based on the environment offers a promising solution to address the challenges of modern language education by making learning more engaging, relevant, and accessible. This approach is very valuable in a culturally diverse environment, where the integration of local elements can enhance students' cultural awareness and identity. In addition, the research findings indicate that such multimedia can be an effective tool for prospective teachers, helping them develop more creative and context-appropriate teaching strategies.

Although the results are quite promising, this research also identifies several challenges, particularly related to access to technology and infrastructure. A small number of students report difficulties in using multimedia due to technical limitations, highlighting the digital divide that still exists in the world of education. Future research should focus on addressing these technological barriers and exploring the scalability of environment-based multimedia in various educational contexts. The development of interactive multimedia based on the environment not only advances the quality of language education in Indonesia but also offers a model for integrating elements of local culture and the environment into educational tools. This research provides a foundation for further exploration of how technology can be used to create more engaging, contextual, and effective learning experiences in language education and beyond.

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