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DEVELOPMENT OF SIGAMEL MOBILE LEARNING FOR ENRICHING JAVANESE VOCABULARY ACQUISITION

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Abstract

Reading is an important aspect of learning a language. One of the basic aspects of reading is the large vocabulary. Students' vocabulary acquisition can be obtained from the learning process. However, in the vocabulary learning process, problems are still caused by the limitations of the media used. The limited media used causes students' interest in learning to decrease. Responding to these problems, this research aims to develop mobile learning which can be used as an aid for learning the vocabulary of object names from gamelan musical instruments. In developing mobile learning, the research method used is research and development (R&D). The research subjects in this study are teachers, media experts, and material experts. Data collection techniques used interview techniques and questionnaire techniques. Sigamel mobile learning was developed based on analysis of problems, needs, and revisions based on expert validation results. The design validation results obtained a score of 4 from material experts in the good category while the score obtained from media experts was 4.7 in the very good category. The development of Sigamel mobile learning is worthy of being developed in Javanese language learning. The results of this research state explicitly that sigamel mobile learning can be developed into a tool for learning Javanese which focuses on noun vocabulary material. Therefore, teachers are advised to use sigamel mobile learning in learning.

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INTRODUCTION

Javanese is one of the regional languages wealth owned by the Indonesian people, and it is studied at school (Subrata et al., 2022). Javanese is a mandatory local content subject in Central Java Province in primary and secondary education. It is stated in regional regulation number 4/2012 concerning education and regional regulation number 9/2012 concerning Javanese language, literature, and script making Javanese language lessons a mandatory local content subject at all school levels in Central Java Province.

In the independent curriculum, Javanese has a function, namely, students can introduce themselves and the culture found in their region. Javanese has a strategic role in shaping students' character and personality through language learning, and introduction to culture and traditions which makes students have a sense of love and pride in their regional culture (Hasanah et al., 2020). According to Resterina (2021), cultural education needs to be instilled in basic education because the initial phase of education is the beginning of forming a child's identity. The inclusion of cultural material in learning materials is useful for cultivating and introducing a sense of love for the environment (Resterina et al., 2021). Avdiu (2019) states that basic education for students aims to get certain basic skills, such as developing cognitive and social dimensions (Avdiu, 2019).

Important aspects that need to be considered in language learning are listening, speaking, reading, and writing (Rinaldy et al., 2020). In terms of reading, it is an

important aspect to increase student literacy and it is the basis for acquiring knowledge and academic achievement (Kurniaman et al., 2018; Ratminingsih et al., 2020; Siregar et al., 2022). Where literacy skills are abilities that students must master to face the digital transformation of the 21st century (Istiningsih & Dharma, 2021). Literacy skills are also important skills to master to support students' future (Dwipayana et al., 2021). One way to improve reading skills is through students knowing new vocabulary. Learning new vocabulary is one of the basics for increasing your vocabulary in speaking. In elementary schools, the main focus of language learning is learning vocabulary (Wanzek et al., 2022). Vocabulary is a set of words that is a collection of data from a particular language (Kartikasari & Rahmawati, 2022).

In learning Javanese, especially learning vocabulary for names of objects, there are obstacles in implementing the learning. Students who take Javanese lessons have difficulty recognizing the vocabulary of the names of gamelan musical instruments. Factors that cause difficulties or obstacles are students' lack of interest in learning (Cahyani & Subrata, 2022). The teaching and learning process on the vocabulary of object names from gamelan musical instruments is still studied conventionally, namely the teacher lectures, and students listen and pay attention to the textbook (Nadhiroh & Setyawan, 2021); (Ratri & Damayanti, 2022). In learning Javanese vocabulary, there are still limitations in the media used (Amien et al., 2021). Javanese vocabulary is also considered complicated to learn because the vocabulary is rarely heard by students in everyday life (Endryanti et al., 2020) ; (Kartikasari & Rahmawati, 2022). It causes students' lack of interest in learning.

Learning in mastering the vocabulary of object names for gamelan musical instruments can run effectively when the learning can attract students' interest. Using appropriate learning media can increase students' interest and motivation to learn. The learning media used during learning has an impact on students, namely increasing students' learning motivation, attracting students' attention, and teaching materials will be more easily conveyed to students (Çetin, 2022); Moto, 2019). Professional teachers must be able to process and use learning media that is appropriate to the material being taught (Harsiwi & Arini, 2020). The selection and management of learning media by the teacher will have an impact on the learning process. Because media is used as a means of connecting the material that the teachers want to convey to their students. Media is used as a tool that can be a factor in increasing effectiveness during the learning process. Media has a strategic function and role that can directly or indirectly influence students' interest, motivation, and attention in the learning process. Media can clarify and visualize material that is still abstract so that it can help students understand the material presented (Kartikasari & Rahmawati, 2022).

In the digital era, the use of media in learning also needs to pay attention to technological developments because the field of education is a field that is influenced by technological developments. Many technology products have been used in the education sector, such as the use of mobile learning and e-learning. Integrating the use of technology in the educational sector is useful for maximizing the efficiency of the learning process (Çetin, 2022). Incedayi (2018) states that learning and teaching cannot be effective if various techniques of modern Information and Communication Technology (ICT) and innovations are not used (Incedayi, 2018). In language learning, the use of digital technology is the most interesting and widely accessed tool (Janfeshan et al., 2023). The use of technology, especially mobile devices, is also a potential resource that can be used in teaching and learning languages (Ludwig Christian, 2018). The use of mobile learning in vocabulary learning has also been applied in Arabic and English learning and its use has been stated to increase the effectiveness of language learning (Adijaya et al., 2023); (Hayatunnisa, 2024); (Nasrullah et al., 2024). One alternative to help learning Javanese noun vocabulary carried out

effectively is by developing mobile learning. However, research regarding the development of mobile learning in learning Javanese noun vocabulary is still limited.

Based on the background above, the use of mobile learning in learning Javanese noun vocabulary is very essential to develop because it can increase effectiveness and students' interest in learning. To overcome this problem, it is necessary to create mobile learning for learning the vocabulary of Javanese object names. With the development of mobile learning, it is hoped that it can help learning objectives to be achieved.

Based on previous research that developed Javanese vocabulary learning media, such as Amien's research (2021) which focused on developing learning videos regarding *ngoko* and *krama* vocabulary (Amien et al., 2021). Kartikasari's Research (2022) developed interactive learning media using PowerPoint whose material focuses on vocabulary in puppet stories (Kartikasari & Rahmawati, 2022). In addition, Ratri's research (2022) regarding the development of card media in learning *krama* and *ngoko* vocabulary (Ratri & Damayanti, 2022). Previous studies developed media for learning that still focused on ngoko and krama vocabulary and did not use mobile learning. This research has a different effort, namely to develop an application for learning the vocabulary of Javanese object names using mobile learning. The results of this research produce practical contributions regarding the steps for developing media of object name vocabulary in the Javanese language along with the appropriateness level of the media being developed.

RESEARCH METHOD

Research Design

This research used a research and development methodology to facilitate the creation of a mobile learning application, which is intended to be a tool in learning Javanese which focuses on the vocabulary of object names. The research and development method, also known as research and development (R&D), is research aimed to produce products and test the effectiveness of the products that have been produced. Research and development is longitudinal. It means that research is carried out in stages and can be carried out in multiple years (Sugiyono, 2015). This research and development will produce a product that can be used by parties who have problems. Before the product is used by parties who have problems, the resulting product must first undergo validation from experts. Development research is research that creates, produces, and develops certain products, then the produced products go through a validation process from experts to assess the suitability of the resulting product.

In the research and development developed by Soegiyono, there are 10 steps or procedures, namely identification of potential and problems, data collection, product design, design validation, design revision, product testing, product revision, usage testing, product revision, and mass production. However, this research and development was only conducted until the design revision stage. The limitations of this study emphasize the potential in the future for more comprehensive and effective improvements before wider production.

Research Participants

The research and development process in this study utilized primary data, which was gathered through interviews and questionnaires. Interviews were conducted to obtain initial data that informed the research's early stages, particularly in identifying potential opportunities and challenges. On the other hand, questionnaires were employed to validate and assess the application developed as a product of this research. The interview technique was specifically used during the initial phase, focusing on the identification of key issues and potential solutions. In contrast, the questionnaire method was used later in the process, during the design validation stage, to gather feedback on the effectiveness and quality of the application.

The data sources for this research were diverse, including second-grade teachers from SD Bangetayu Wetan 01, as well as media and material experts who served as respondents. The teachers provided valuable insights during the interview phase, offering a practical perspective on potential problems and needs in the educational context. Meanwhile, media and material experts were consulted to complete the expert validation questionnaires, offering professional assessments of the application's design and content. These expert evaluations were critical in determining the feasibility and quality of the developed learning tool.

Research Instruments

The instruments used are instruments from previous research which are then adapted to suit needs (Murniayudi & Sujarwo, 2021). The following instruments are used for validation from material experts and media experts:

Table 1
The Grid of Material Expert Validation Instrument

Indicator	Item Number	Total
Language and Writing	1, 2, 3, 4, 5, 6, 7, 8	8
Material	9, 10, 11, 12, 13, 14, 15	7

Table 1 provides a detailed outline of the validation instruments designed for evaluation by material experts. The table is organized around two key assessment indicators: language and writing, and material content. These indicators serve as the basis for evaluating the overall quality and effectiveness of the developed product. Under the language and writing assessment indicator, material experts are required to evaluate eight specific questions. These questions focus on the clarity, accuracy, and appropriateness of the language used, as well as the overall structure and coherence of the written content. The aim is to ensure that the language and writing meet academic and pedagogical standards, making the material easily understandable for its intended audience.

The second indicator, material assessment, involves the evaluation of seven questions. These questions are designed to assess the relevance, accuracy, and depth of the content provided within the application. Material experts are tasked with determining whether the educational content aligns with the intended learning outcomes and whether it is suitable for use in the specific educational context. Together, these two assessment indicators provide a comprehensive framework for evaluating both the linguistic and content-related aspects of the application, ensuring that it is both pedagogically sound and effectively communicated.

Table 2
The Grid of Media Expert Validation Instrument

Indicator	Item Number	Total
Illustrations	1, 2	2
Design	3, 4	2
Artisticness	5, 6	2
Text	7, 8	2
Simplicity	9, 10	2

Table 2 is a table containing a grid of validation instruments that will be used for validation by media experts. In this instrument, there are five indicators consisting of assessments of illustration, design, artisticness, and simplicity. Each indicator contains two questions.

Data Analysis

The data analysis technique used in this research is a product feasibility test. Feasibility test data was obtained from expert validation questionnaires. Questionnaires are used to determine the suitability of research products. This feasibility test was validated by material experts and media experts. The feasibility test was carried out using a Likert scale with a scale of 5 (Murniayudi & Sujarwo, 2021).

Table 3
Score Criteria

Criteria	Score
Very Good	5
Good	4
Good Enough	3
Poor	2
Very Poor	1

Then, the scores that have been obtained based on validation questionnaires from material and media experts are added respectively and the average value is determined. From the average value, it is then concluded according to the total score conversion table from experts (Murniayudi & Sujarwo, 2021), as follows:

Table 4
The Conversion Table of Total Score from Experts

Category	Formula	Average
Very Good	$X > X_1 + 1{,}8 \times sb_i$	> 4,2
Good	$X_1 + 0{,}6 \times sb_i < X \leq X_1 + 1{,}8 \times sb_i$	>3,4-4,2
Good Enough	$X_1 - 0{,}6 \times sb_i < X \leq X_1 + 0{,}6 \times sb_i$	>2,6-3,4
Poor	$X_1 - 0{,}6 \times sb_i < X \leq X_1\ X_1 - 0{,}6 \times sb_i$	>1,8-2,6
Very Poor	$X < X_1 + 1{,}8 \times sb_i$	≤1,8

RESEARCH FINDINGS AND DISCUSSION

Research Findings

Identification of problems

The results of the identification and problem stages are the initial stages in this research and development. The development of an application to introduce gamelan music to class II of elementary schools at SDN Bangetayu Wetan 01 is based on an analysis of the potential and problems at the school. The preliminary study carried out is the first step in this development research. The preliminary studies carried out are literature studies and field studies. The literature study was carried out by reviewing various literature through research reports and journal articles related to learning Javanese vocabulary for elementary school students. The purpose of this literature study is to get an overview of research regarding the implementation of vocabulary learning in elementary schools. The literature study also pays attention to the current Javanese language learning curriculum.

The field study was carried out by observation and interviews. The observations carried out at the beginning are for finding out the condition of Javanese language learning at SDN Bangetayu Wetan 01. The result of observations in the Javanese language learning process, especially learning about the vocabulary of object names from gamelan musical instruments, is there are limitations to the available learning media at the school. The students have not been directly introduced to how and what gamelan musical instruments look like. During the teaching and learning process, students received book loans from the school in the

form of Javanese language worksheet books. Each Javanese language worksheet book is used by two students. This situation causes the focus of students not to last long.

The next field study carried out was an interview. The interview was conducted with the teacher of class II at SDN Bangetayu Wetan 01. The teacher said that the student's enthusiasm and interest in learning is a problem in learning Javanese. When learning takes place, some of the students do not focus on paying attention to the learning. It was also conveyed that students lack interest and easily feel bored with learning. It occurs due to the limitations of the media used in learning Javanese noun vocabulary. The teacher has made efforts to provide media such as using videos to introduce the vocabulary of Javanese object names. The video used is a video of a gamelan musical instrument so that students know the object names. However, the teacher said that video can't fully interpret each tool. In the video shown, students are introduced to the sound of gamelan music in a song version. Therefore, students do not know the exact name of each tool used. Additionally, students are not directly introduced to gamelan musical instruments because there are no gamelan musical instruments in the school. It occurs because gamelan musical instruments require quite a lot of money.

Data collection

The data collection stage is the stage carried out to collect materials and ingredients that will be used in the product. Before data was collected, material must be determined that was appropriate to the problem being faced. Product development planning was carried out by determining the material contained in the mobile learning being developed. The developed design for the product was adapted to Javanese language material for class II in elementary schools. The learning achievement in phase A for the Javanese Language subject is a vocabulary of object names.

This application product contains material developed for the introduction of gamelan musical instruments. The material used is material that is adapted to learning outcomes and the purpose of the media developed, namely through the introduction of the names of the objects from 7 gamelan musical instruments to elementary school students in phase A. Developing material for recognizing the names of gamelan musical instruments included in the application are the names of gamelan musical instruments, pictures of gamelan musical instruments, descriptions of gamelan musical instruments, and the sounds of the gamelan musical instruments.

Making materials for the application product was developed by collecting pictures of gamelan musical instruments. Images of 7 are gamelan musical instruments that are made into animated images. This animation aims to attract students' attention. Descriptions of musical instruments used in the application come from books of teaching materials used at the school. The description of the musical instrument was then adjusted and the language was simplified. Adjusting and simplifying language is to make it easier for students to understand and as an enrichment to add Javanese vocabulary. The sounds of the 7 gamelan musical instruments used in the application come from personal recordings. Each musical instrument used sequential notation. The use of sequential notation aims to introduce and clarify the sound of each gamelan musical instrument. There are sounds from gamelan musical instruments as additional knowledge for students to know gamelan music.

Product Design

The product design stage begins with the development of a conceptual design, intended to provide a clear and straightforward visual representation of the product. This simple design serves as an essential foundation, offering an easy-to-understand overview before proceeding with the actual creation of the application. The product design includes several key components: splash screens (1 and 2), the main page, a settings menu, a user manual menu, a start menu, a gamelan plan, an informational menu about the application, and

a references section. Once the product design and materials are finalized, the next stage involves transforming these elements into a functional application, ensuring that the design and materials are seamlessly integrated into the final product. This stage emphasizes the translation of the initial design into a working application while maintaining alignment with the original concept and purpose.

Design Validation

The design validation stage is a stage carried out to obtain an assessment from experts. The development of an application for introducing gamelan musical instruments was validated by experts in their fields, namely one material expert from a lecturer in the Music Arts Education Study Program and a media expert from a lecturer in the Informatics Engineering Education Study Program. Validation aims to obtain an assessment from experts regarding the suitability of the product to be developed. Product assessment related to the material contained in the application product consists of assessing the suitability of the language, writing, and content of the application. The obtained data from the results of material expert validation is a product made suitable for development into learning media by providing product revisions. Material experts provided suggestions for improving the products being developed.

Product assessment related to the media used in application products relates to illustration, design, artisticness, text, and simplicity. The data obtained after validation by media experts shows that the media is worthy to be developed with revisions. Media validators provided suggestions regarding revisions that need to be made to improve the media. The design revision stage is a stage that aims to improve the design based on suggestions from experts. Product assessments obtained from media and material experts also contain revisions that need to be done. The revision from the material expert is to clear the sound of the gong musical instrument. In addition, several words are corrected. The revision from media experts is that it is necessary to add more detailed usage methods and to improve the text. Then, the feasibility of the application product is obtained from the results of an assessment questionnaire from material and media experts. The scores that have been obtained were then processed and converted to determine the level of eligibility. The following are the results of the assessment from material experts:

Table 5
The Assessment Results Table from Material Experts

Indicator	**Score**	**Category**
Language and Writing	28	Good
Material Content	24	Good
Total	**52**	
Average	**4**	
Category	**Good**	

The validation data outlined in Table 5 provides a clear indication of the evaluation process carried out by material experts, who assigned a score of 52 to the Sigamel application. This score was then converted into a feasibility rating of "Good," signifying that the application meets the necessary criteria for development as an educational tool. The "Good" rating reflects a thorough alignment between the application's content and structure with the educational goals set forth for teaching gamelan musical instruments. This alignment ensures that the material is not only accurate but also appropriately structured to support learning in an effective and engaging manner. The feasibility rating further highlights that the Sigamel application holds substantial potential as a learning medium, particularly in enhancing the teaching and understanding of gamelan musical instruments. It indicates that the application

has the foundational qualities required for continued development and eventual implementation in educational settings. This validation is essential because it affirms that the design and content are pedagogically sound, making it a suitable tool for educators aiming to introduce or deepen students' knowledge of gamelan. Overall, the validation process underscores the application's potential to improve the learning experience by offering structured, well-validated content that meets the needs of both educators and learners. Through this endorsement, the application is positioned as a valuable resource that can enrich the cultural and musical education of students, contributing to the preservation and dissemination of gamelan music.

Table 6
The Validation Results Table from Media Experts

Indicator	**Score**	**Category**
Illustration	10	Very Good
Design	9	Very Good
Artisticness	10	Very Good
Text	8	Good
Simplicity	10	Very Good
Total	**47**	
Average	**4,7**	
Category	**Very Good**	

The validation data in Table 6 reveals that the material experts assigned a score of 47, which was translated into a feasibility rating of "Very Good." This high rating signifies that the Sigamel application demonstrates exceptional quality and is well-suited for further development as a learning medium. The "Very Good" score indicates that the application not only meets but exceeds the required standards for educational tools, particularly in the context of teaching gamelan musical instruments. This positive evaluation highlights the application's strong potential to provide an effective and engaging learning experience, confirming its suitability for use in educational settings.

Table 7
The Assessment Results Table of Application Product from Experts

Assessment	**Score**	**Category**
Material Aspect Assessment	4	Good
Material Aspect Assessment	4,7	Very Good

The feasibility data gathered on the material aspects of the Sigamel application reflects evaluations from both material and media experts. The material experts assigned a score of 4, categorizing the material aspect as "Good," while the media experts provided a slightly higher score of 4.7, rating it as "Very Good." These evaluations indicate that the developed media is considered appropriate and effective as a learning tool for introducing gamelan musical instruments. The high scores from both experts underscore that the content and design of the application align well with educational standards, confirming its suitability as a medium for teaching and promoting gamelan music. These assessments highlight the application's potential to engage learners by presenting the material in a clear, organized, and pedagogically sound manner.

Following these evaluations, the process entered the revision stage, which is critical for refining and enhancing the application based on expert feedback. Although the media had already been rated highly, with a "Very Good" overall assessment, the validation process

revealed some areas for improvement. Material experts suggested enhancing the sound quality of the gong instrument, recognizing that accurate audio representation is essential for learners to fully grasp the nuances of gamelan music. Similarly, the media experts recommended adjusting the spacing in the written descriptions of the musical instruments. This revision would improve readability and the overall user experience, ensuring that the visual layout complements the educational content. These revisions play an integral role in fine-tuning the application to meet the highest standards of both content delivery and user interaction. Addressing these suggestions ensures that the application not only provides accurate and engaging material but also offers a polished, user-friendly experience for students. The commitment to refining both the audio and visual aspects of the application reflects a holistic approach to learning, where every component—from sound quality to written descriptions—works together to create an immersive and effective educational tool for gamelan music.

Discussion

The development of sigamel mobile learning in learning the vocabulary of object names in Javanese subjects can be stated as a useful development. It is proven by research results which state that the use of mobile for learning Javanese is very feasible. Sigamel mobile learning is an application intended as a tool and enrichment media for learning the vocabulary of object names from gamelan musical instruments in Javanese subjects of phase A. This research and development highlights the importance of considering the background of the problem in contributing to Javanese language learning and teaching. The problem faced is regarding the limitations of media that can attract students' interest in learning. The creation of this application is also based on the need for learning media that can be seen and heard by students in elementary schools (Stevi & Haryanto, 2020).

In this research, the result shows that the Sigamel application gets the criteria for being very suitable to be developed as a learning media after the validation by material experts and media experts. The Sigamel application is developed to assist teachers in carrying out the learning process, to increase students' learning motivation, and to make learning more effective ((Agusti & Aslam, 2022); (Incedayi, 2018)). The advantage of the Sigamel application is not only introducing the object name vocabularies, but also containing the sounds of each gamelan musical instrument with sequence notation, pictures, and sounds of gamelan music. The sigamel application is equipped with background sounds intended to familiarize students with gamelan music.

The application of the Sigamel application in the learning process makes the learning process more effective because the Sigamel application contains features that can attract students' interest. The Sigamel application is the use of technology that helps the learning process be more flexible and easy to use anywhere and anytime because its operation uses the Android system (Bostan & Şener, 2021; Pambayun et al., 2019). The use of applications allows students to study independently outside school hours (Subrata et al., 2024). The use of color and image combinations applied in the application can attract children's interest in learning.

The operation of the Sigamel application is easy to run because it is made simple, but still contains main materials and supporting materials. In operating the Sigamel application, the teacher directs students to choose the musical instrument they want to learn. When students choose a musical instrument they want to know, the name of the musical instrument, the description of the musical instrument, the picture of the musical instrument, and the sound of the musical instrument being played with the sequential notation. The operation of this application is effective because students' hearing and vision will be focused on the application (Salsabila et al., 2020).

This research regarding the sigamel application is in line with previous research which states that the use of technology used in learning in elementary schools makes a positive contribution to student achievement (Akçay et al., 2021). Based on research results supported by previous research, the development of sigamel mobile learning is categorized as worthy of being developed as a Javanese language learning medium for elementary schools. Even though it is stated as a suitable medium to be developed in Javanese language learning, mobile learning sigamel in this research is still at the design revision stage, the fifth stage of research and development developed by Sugiyono. To optimize sigamel mobile learning so that it is more comprehensive and can be widely produced, it must go through the next research stage.

CONCLUSION

Based on the results of research using questionnaires from media experts and material experts regarding the design of the sigamel mobile learning application for learning the vocabulary of object names from gamelan musical instruments, the sigamel application is worthy to be developed. Product validation from material experts received a score of 4 which stated that it was suitable for development and a score of 4.7 from media experts which means very suitable for development. The results of this research state explicitly that sigamel mobile learning can be developed into a tool in learning Javanese which focuses on the noun vocabulary material. This research can be used as material for teachers to consider regarding media ideas that can be used in studying object name vocabulary because the application developed can increase students' learning interest and achievement. However, this research is still limited to the design revision stage. It is recommended that further research develop similar media with completed stages.

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