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Development of an Android Application with Self Directed Learning to Improve the Quality and Effectiveness of Arts Learning for Performing Arts Education Students in A Wetland Environment: Lesson from Indonesia

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Abstract

Learning through technology-assisted media is a solution when the practical learning process requires a long time and there is insufficient time for face-to-face learning. This research intends to develop an Android application containing Self Directed Learning to improve the quality of effectiveness of arts learning for Performing Arts Education students so that students can effectively and independently learn and master practical material techniques in the learning process. This research aims to test the validity, practicality, and effectiveness of teaching materials in the form of an Android application that has self-directed learning content in arts learning. The research method used is Research and Development (R&D) with the ASSURE development model. Validators consist of Anthropology lecturers, Dance Arts lecturers, Music Arts and Performing Arts Education lecturers, FKIP ULM, dance arts teachers, and music arts teachers in the Banjarmasin City area. The practicality of the Android application being developed is reviewed based on aspects of benefits, usability, and time efficiency as measured through student response questionnaires. The effectiveness of the Android application developed is seen from the aspect of achieving students' problem-solving skills through learning outcomes tests

Keywords: *Technology-assisted learning; self-directed learning; performing arts education; android application; effectiveness of teaching materials.*

Introduction

Utilizing technology-assisted learning media is a practical solution when face-to-face learning is not possible due to the long learning process. The usefulness of self-directed learning ability in education has been demonstrated in previous studies. However, there has been much less understanding of the importance of digital information literacy, as well as how to manage these abilities and knowledge, and their effects on learning processes, especially in the current situation of digital education dominance and the necessity of interest creation in students (Mohammadi, 2024). This research aims to design an Android application with Self Directed Learning to improve the quality and effectiveness of arts learning for Performing Arts Education students. The aim of this research is to assess the validity, practicality and effectiveness of teaching materials in the form of Android applications that contain self-directed learning content in arts education.

The research methodology used is Research and Development (R&D) with the ASSURE development model. The validators are anthropology, dance, music and performing arts education lecturers. Designing learning resources by utilizing local wisdom is an effort to systematically develop learning resources that suit student needs and the learning environment.

Damarhati (2012) describes the local environment as a diversity of potential, characteristics and regional needs that grow and develop in a particular community. Developing local excellence should be the goal of arts education. Several previous researchers have developed learning resources based on local potential in wetland environments. Tutung Nurdiyana and Putri Dyah Indriyani (2023) created an Android application-based learning resource as material for enriching collaborative techniques for Javanese Banjar ethnic dance and music in Dandajaya Village, Rantau Badauh District, Barito Kuala Regency.

Other researchers have also developed learning resources based on vegetation diversity in treeless swamp areas in Bati-bati Village, Tanah Laut Regency as enrichment material for the Wetland Ecology course

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(Hardiansyah, et al. 2018). The rapid development of information technology in the education sector demands continuous innovation in teaching materials (Asyhari, 2016).

Information technology provides opportunities for creativity in preparing teaching materials, thereby facilitating the transfer of knowledge and technology to students. So far, learning in art anthropology courses, advanced dance education and Banjar culture has used ICT-based media such as Power Point, video and music. Several online media are also commonly used in this learning. However, it has not been integrated into one unit so it is complicated and takes a long time to access files. Developing Android applications that simplify the learning process and provide creative and innovative experiences for students is a suitable breakthrough for educators. With increasingly advanced technological developments, educators are required to come up with creative and new ideas in learning both inside and outside the classroom to meet the demands of education in Indonesia so that it is on par with education in other countries.

Students' experiences in independent learning using applications designed by educators in such a way that they are in accordance with learning outcomes and do not ignore the existence of learning itself is valid for application in formal education, especially in tertiary institutions, this requires learning skills, one of which is the ability to take the initiative to be responsible for learning materials, often called self-directed learning (Rini et al., 2022). The learning model must be balanced with the media used for effective learning. Good learning occurs when there is active interaction between educators and students through media and learning models. Self-directed learning is a model that can be applied and is suitable for learning that uses Android applications as a learning medium. The use of those technologies can encourage language learners to practice selfdirected learning beyond the classroom settings, which is essential for motivated and autonomous learning. Mobile phone applications have great potential as effective pedagogical tools with features such as accessibility, manageable interface, and multifunctional components (Jeong, 2022). According to Setyawati (2015), independent learning (SDL) is a student's ability to take the initiative to be responsible for their learning with or without other people, including aspects such as awareness, learning strategies, learning activities, evaluation, and interpersonal skills.

Students' experiences in independent learning using applications designed by educators in such a way that they are in accordance with learning outcomes and do not ignore the existence of learning itself is valid for application in formal education, especially in tertiary institutions, this requires learning skills, one of which is the ability to take the initiative to be responsible for learning materials, often called self-directed learning (Rini et al., 2022).. The learning model must be balanced with the media used for effective learning. Good learning occurs when there is active interaction between educators and students through media and learning models. Self-directed learning is a model that can be applied and is suitable for learning that uses Android applications as a learning medium. The learning aspects carried out by the learning model will have an impact on the quality and improvement of the quality of the learning outcomes themselves. In studying fine arts, continuous creativity and innovation are needed in order to produce an interesting final work, mobile phone applications have great potential as effective pedagogical tools with features such as accessibility, manageable interface, and multifunctional components. According to Liliasari (2012), to face global competition, improving the quality of human resources is characterized by the rapid development of each individual's mindset to defend themselves and win the competition in the form of creative, critical thinking, problem solving and decision making. -It is necessary to develop skills so that they have high competitiveness. So the ability to think creatively is a form of high-level thinking ability that is very important for every individual to have, especially in the era of globalization where everything relies on science and technology.

The learning aspects carried out by the learning model will have an impact on the quality and improvement of the quality of the learning outcomes themselves. In studying fine arts, continuous creativity and innovation are needed in order to produce an interesting final work. According to Liliasari (2012), to face global competition, improving the quality of human resources is characterized by the rapid development of each individual's mindset to defend themselves and win the competition in the form of creative, critical thinking, problem solving and decision making. -It is necessary to develop skills so that they have high competitiveness. So the ability to think creatively is a form of high-level thinking ability that is very important for every individual to have, especially in the era of globalization where everything relies on science and technology.

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Based on the explanation above, learning using technological media to overcome various obstacles in the learning process, especially for performing arts students, is very necessary. Lambung Mangkurat University, Faculty of Teacher Training and Education, Performing Arts Education Study Program is one of the study programs where almost 70% of the courses are dance and music training. The demands in learning are that students master various dance and music techniques and their creations to develop more creative and innovative Indonesian arts. The length of the learning process certainly requires a long time, while face-to-face learning time alone is not enough to achieve the ability to master practical material, both dance and music , not to mention anthropological theories . The solution to this problem is independent study outside of lecture hours by using technological media, namely the Android application.

Previous research was carried out at the Transi Youth Arts Group in Dandajaya Village by creating modern traditional dance and music between Enis Banjar and Ethnic Javanese, then the techniques were translated into an Android application so that students could learn independently and effectively outside of lecture hours. Therefore, it is necessary to conduct research regarding the development of Android applications based on self-directed learning as an effort to improve the quality and effectiveness of fine arts learning for performing arts education students in wetland environments. Through this teaching media, it is hoped that students will be helped in the learning process according to the learning model applied and can keep up with increasingly advanced developments. Art students, especially dancers, can master technique and appropriate movements quickly and precisely.

Students are also expected to spend a long time studying to be able to master dance and music creation techniques easily. This research also aims to test the validity, practicality and effectiveness of the Android application that has been created to find out the extent to which this media helps learning to use technology effectively, the advantages and disadvantages of this media for learning for Performing Arts students. Study Program, Faculty of Teacher Training and Performance Education, Lambung Mangkurat University.

The research team has conducted previous research that supports this research. These studies provide a strong basis for the research team to develop a self-directed learning-based Android application that can provide understanding and effective learning about the basic principles of dance for performing arts education students.

The main focus of this research is the development of an Android application produced using a self-directed learning model as a solution to the problem of improving the quality and effectiveness of fine arts learning for performing arts education students in a wetland environment. This is considered important because advances in science and technology which are increasingly advanced and developing recently will have an impact on education in general so that educators need to make breakthroughs to keep up with increasingly sophisticated developments. The feasibility of an Android application is determined by the results of validity, practicality and effectiveness tests.

Method

This research uses research and development methods. The development model used is the Plomp model which consists of a preliminary investigation stage, a design stage, a realization/construction stage, and a testing, evaluation and revision stage (test, evaluation and revision) (Rochmad, 2012).

This research uses development research methods to develop an Android-based self-directed learning application. The development research model used in this development is development research which refers to the Plomp development model. This model consists of five development stages. However, in this research, development was only carried out at the testing, evaluation and revision stages because the implementation stage required a fairly long process and the socialization was carried out in a broad context.

The data obtained from developing Android application learning media is in the form of quantitative and qualitative data. Quantitative data comes from scores on the validation sheet while qualitative data comes from suggestions and input on the validation sheet and interviews.

Android application media was analyzed using quantitative descriptive methods. Data was taken using a Likert scale. Endang (2011:29) suggests that the Likert scale is a bipolar scale method that measures positive responses and negative responses to a statement. The expert validation instrument used contains answers with varying answer scores, namely 1, 2, 3, and 4 with the following details:

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Table 1. Likert Scale for Data Analysis of Validation Results

Point	Interpretation
1	Very bad
2	Pretty good
3	Good
4	Very good

To calculate validity, the following formula is used:

$$SR = \frac{Total\ score\ from\ validation\ results\ by\ validators}{Total\ maximum\ score} x100\%$$

Information:

SR = Percentage of Average Score

TVS = Total validation score from validators

MTS = Maximum total score

According to Endang (2011:36-37), data originating from questionnaires that have answers on a Likert scale can be categorized as interval scale data. The validity results whose values are known are matched with the validity categories as presented in Table 2.

Table 2 . Learning Media Validity Category.

No	Score	Category
1	$Sr > 80\%$	Very Valid
2	$66\% \leq Sr \leq 80\%$	Legitimate
3	$56\% \leq Sr \leq 65\%$	Less Valid
4	$Sr < 56\%$	Invalid

Source: (Endang Mulyatiningsih, 2011)

To analyze the level of student active learning, the data obtained from the questionnaire was then categorized. The purpose of this categorization is to place research subjects into groups whose positions are ranked according to a continuum based on the attributes being measured.

Student learning activity data is quantitative data that shows the assessment of student learning activities based on the emergence of learning activity indicators. Meanwhile, qualitative data in this research uses analysis of data produced in the form of sentences and activities of students and educators. Teacher activity observation scores, student activity observation, and student learning activity questionnaires can be determined using the following formula (Hamzah in Sri et al., 2022).

$$Value = \frac{Total\ score\ obtained}{Maximum\ Score} \times 100$$

Based on the results of these calculations, categories are given as in table 3 as follows.

Table 3 . Student Learning Activity Category

Number	Point	Mark	Category
1	5	80 – 100	Very high
2	4	66 – 79	Tall
3	3	56 – 65	Currently
4	2	40 – 55	Low
5	1	30 – 39	Very low

Information:

x = total student learning activity questionnaire score

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Results And Discussion

At this stage, the result of the development carried out by researchers is to produce an Android-based learning media application that has self-directed learning content in order to improve the quality and effectiveness of learning for students of the Performing Arts Education Study Program in Wetland Environments.

Results

This application contains new learning material, namely about collaborative dance. This dance is the result of research in 2022 which included collaborative learning between ethnic Javanese and ethnic Banjarese so that local wisdom emerged from both which required multicultural values. This is what can be included in the Anthropology of Arts , Dance Further Education and Archipelago Dance courses . The values contained in collaborative dance are included in the graduate learning achievement unit (CPL) so that they have an impact on student learning success.

This learning media is structured based on the Plomp model which consists of four stages, namely the preliminary investigation stage, the design stage, the realization/construction stage, and the testing, evaluation and revision stages.). The following is a description of each stage of developing Android-based mobile learning media in arts and culture learning.

Preliminary Investigation Stage

The first stage in developing this learning media is the initial investigation stage, where the researcher analyzes several aspects that will be used in the next stage. The analyzes carried out are curriculum analysis, student analysis, and material analysis. Researchers conducted observations in the form of interviews with lecturers in the Arts Education Study Program. The following is the explanation.

1) Curriculum Analysis: Curriculum analysis is used to determine the curriculum used by the Performing Arts Education Study Program. After conducting interviews with lecturers, it was discovered that the curriculum used in the Arts Education Study Program uses the Independent Learning Campus (MBKM) curriculum.
2) Student Analysis: Student analysis is used to determine the characteristics and extent to which students can improve the quality and effectiveness of Advanced Education Dance learning. Through interviews with lecturers who are interested and directly involved in Teaching and Learning Activities (KBM), researchers can draw conclusions regarding the characteristics of students from the field of science in the Advanced Dance Education course on material related to lectures.
3) Material Analysis: Material analysis is used to determine the coverage of material regarding further education rates. Material analysis was carried out by conducting interviews with lecturers in the Performing Arts Education Study Program and asking about the Semester Implementation Plan (RPS) used by the lecturer in question. After conducting interviews, analyze the Semester Implementation Plan (RPS), in this case related to the learning indicators to be achieved in the educational unit. Identification of learning indicators is carried out to find out problems and appropriate solutions in determining student competency in Advanced Education dance material, such as students being able to analyze traditional dance material according to the child's age, and students being able to teach traditional dance used for learning. According to age category. Children and students can develop traditional dances that are appropriate to the child's age characteristics.

Design Phase

1) Initial Design

In the initial design of the Android application learning media, researchers divided several displays, including the initial display, instructions display, menu display, material display, and learning video display. This page aims to make users aware of the facilities that will be presented in the Android application learning media in the Advanced Education Dance course.

2) Format Selection

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The material contained in the learning media for this Android application contains material about the Baksa Batopeng Cakrawati dance, which is one of the new dance creations which contains the aspects needed in Advanced Education dance learning including collaboration aspects, choreography aspects, composition aspects and dance learning aspects. The Android application learning media framework developed is as follows:

1. Introduction
   a. Front cover
   b. Instruction page
   c. Learning objectives
   d. menu page
2. Contents section
   a. Learning materials
   b. Video tutorials
3. Conclusion
   a. Teacher biography

3) Instrument Preparation

The data collection instrument in this research was a validation sheet. Learning media validation is carried out to determine the results of the validity of learning media that will be tested in real classes and used to revise learning media by paying attention to suggestions from experts listed on the validation sheet.

The validation sheet consists of questions asked to experts (validators). The validation sheet prepared includes aspects of suitability of appearance and presentation, aspects of suitability of content, aspects of language suitability according to BSNP and cultural aspects.

The assessment of learning media on the validation sheet uses a 1-4 assessment scale, which was stated by Sugiyono (2018) that this assessment scale is more flexible, not only measuring attitudes but also measuring respondents' perceptions of other phenomena, such as scales for measuring socio-economic status, institutions, knowledge, abilities, activity processes and others.

Realization/Construction Stage

At this stage, design I of learning media will be created, namely the main design based on the initial design. The design of the Android application learning media refers to the learning objectives in Advanced Education dance material. This Learning Media is prepared based on the MBKM Curriculum which applies according to the level of higher education. The Android application learning media is designed to make it easier for students to learn with more varied media sources, guide students in using technology in a positive way, increase students' interest in learning without having to stick to textbooks and provide students with opportunities to learn. anywhere and anytime.

After producing draft I, a discussion was held with the research team to obtain the results of the discussion regarding the Android application learning media being developed. Revise draft 1 regarding material substance and placement of icons on learning media so that it is easy and in accordance with the application of learning media in general.

After draft I has received several revisions from the research team, draft II will be produced. Furthermore, draft II is an Android application learning media that will be submitted to the validator for validation.

Test, Evaluation and Revision Phase

At this stage there is one main activity carried out, namely validating the Android application learning media to validators. Validation is carried out to determine the validity of the learning media that will be tested in real classes. Validation of draft I learning media which had been revised by the research team resulted in draft II which was submitted to the validator to obtain data about the results of Android-based mobile learning media products. After receiving suggestions and input from expert validators, this draft received revisions resulting in draft III. The results of improvements to the Android application learning media from suggestions or input from validators can be seen in the results of the draft III feasibility test which was

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continued at the class activity testing stage to determine student responses to the Android application learning media.

Validity Test

The validity test results were obtained from the Android-based learning media validation sheet in the form of an assessment by one of the Performing Arts Education lecturers. From the validation results, revisions were made to the learning media developed according to suggestions from the validator.

The validation results according to the appearance and presentation aspects show an average validation score of 91.67% in the "very valid" category, so the assessment of the validity test results according to the appearance and presentation aspects is good.

The validation results according to the content feasibility aspect show an average validation score of 94.05% in the "very valid" category, so the assessment according to the content feasibility aspect is good.

The validation results according to the language suitability aspect according to BNSP show an average validation score of 96.30% in the "very valid" category, so the assessment according to the language suitability aspect according to BNSP is good.

The validation results according to cultural aspects show an average validation score of 93.75. So, the assessment results are included in the "very valid" category. So the assessment from the cultural aspect is good.

The results of the validation sheet analysis showed that the average score for all aspects (Sr) of Android-based application learning media was 94.44%, including in the "very valid" category. Based on the validity criteria that have been determined, the initial design of Android-based learning media has met the valid criteria.

There are suggestions for improvements to Android-based learning media from validators which are used as input for revising the product at an early stage. The results of the design revision can be described as follows: improving the text in the media title to make it clearer. Improvements to this section, the validator explained that the choice of font type in the title on the first page looked too blended with the image so that the sentence could not be read clearly. The validator suggests changing the font type in the title sentence or choosing a brighter font color. Validators also suggest that sentences be placed higher than images. Of all the suggestions given by the validator, the researcher chose to adjust the position of the title sentence higher than the image.

Meanwhile, for the Android-based mobile learning learning media developed on dance material for Advanced Education, Performing Arts Education Study Program with a total of 32 students as respondents, the results of the overall activity analysis from the aspect of student responses were 84.67 in the "very high" category. So the results of students' active response to Android-based development are said to be active.

Discussion

This discussion covers matters related to learning media, which will be produced through the validity of learning media and class activity tests.

1) Validity of Learning Media: The learning media used is an Android application based on self-directed learning, designed to increase student engagement and facilitate learning anywhere and anytime. The assessment of the learning media includes aspects of appearance and presentation, content suitability, language suitability according to BNSP, and cultural aspects evaluated by three validators. The overall average score was 94.44%, categorized as very valid with some revisions. The detailed validity results are as follows:
   a. Appearance and presentation: 91.67% (very valid)
   b. Content suitability: 94.05% (very valid)
   c. Language suitability according to BNSP: 96.30% (very valid)
   d. Cultural aspects: 93.75% (very valid)

Based on these results, the Android-based mobile learning media is considered valid and suitable for use in Advanced Dance Education courses, particularly those involving Banjarese and Javanese cultural dances.

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2) Class Activity Test: The learning media trial was conducted with a limited sample of 32 students from the Dance Performing Arts Education Study Program. During this active trial, students were instructed to pay attention to the researcher's explanation while using the developed learning media. The students were also encouraged to explore all the features of the learning media. Upon completion, they filled out a questionnaire to provide feedback on their experience with the self-directed learning Android application. The overall result from all respondents was 84.67, categorized as "very high." This indicates that the students found the Android application to be a good and engaging learning tool for their educational activities.

This study, however, has several limitations. The scope of the research was restricted to Collaborative Dance, specifically Banjarese and Javanese cultural dances, which limits the generalizability of the findings to other dance forms or cultural expressions. Additionally, the sample size was relatively small and homogenous, consisting of only 32 students from a single study program, which may not be representative of the broader student population. Moreover, the study did not account for variations in students' access to technology, such as differences in smartphone capabilities or internet connectivity, which could affect the usability and effectiveness of the learning media.

Future research should address these limitations by expanding the application of Android-based learning media to a wider range of dance forms and other performing arts, including music, theater, and visual arts. Conducting studies with larger and more diverse samples across different educational institutions would enhance the generalizability of the findings. Longitudinal studies could provide insights into the long-term impact of such learning media on students' performance and engagement in arts education. Furthermore, integrating advanced technological features like augmented reality (AR), virtual reality (VR), and artificial intelligence (AI) could further enhance the learning experience. Cross-cultural studies would also be beneficial to understand how different cultural contexts influence the effectiveness of Android-based learning media. Finally, improving accessibility features in the application to accommodate students with disabilities and those with limited access to high-end technology would ensure a more inclusive learning environment.

By addressing these limitations and pursuing the recommended avenues for future research, the potential of Android applications in enhancing practical arts learning can be further realized, leading to more effective and inclusive arts education experiences.

Conclusion

Based on the results of development and limited trials, it was concluded that the development of Android application learning media for the Advanced Dance Education course for Performing Arts Education Study Program students was declared very valid and able to increase student activity in the learning process. This is supported by the following findings:

1. The Android application learning media for the Advanced Dance Education course that was developed is very valid according to the validators (one lecturer in anthropology, one lecturer in music education, and one lecturer in dance education) as seen from the average score. The average score obtained falls into the valid category.
2. The Android application learning media for the Advanced Dance Education course that was developed has an activity value with an average score of 84.67 in the very high category. Based on student responses, the Android application learning media is able to increase student learning activities and create a more varied learning atmosphere.

Therefore, the researcher hopes that in the future, there will be more studies on the use of Android applications for various practical arts learning, so that arts education can be carried out effectively even outside the classroom.

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