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Development of android-based learning media assisted by Thunkable Applications in literary history courses

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ABSTRACT

The purpose of this study was to develop learning media for Android-based Literary History using thunkable applications in the independent learning-free campus era. This study applied the Research and Development method whose products were tested on students. Therefore media validation and material validation are needed before it is finally validated by the user. Research data collection uses a questionnaire so that it is known about the feasibility of the product in the form of thunkable application-assisted learning media. This study concluded that the total score of the combined validation questionnaire was 129 or 4.03 as the average. In other words, these results state the feasibility of android-based modern Indonesian literature learning media assisted by the thunkable application for use in teaching and learning activities in Literary History courses.

Introduction

The implementation of learning in the era after the outbreak of the corona virus indirectly influences how the government, especially the Ministry of Education and Culture, establishes the Independent Learning policy at universities in Indonesia. As said by Purwanto, et al. (2020) that the impact of the pandemic is not only felt in the economic and social world but also in the world of education. In Indonesia itself, national exams at primary to secondary school levels were canceled due to the pandemic (Rahmawati & Putri, 2020). This is in line with data from UNESCO which estimates that during the pandemic era the closure of educational institutions caused 900 million students to be sent home (Nicola, et al., 2020; Hermanto et al., 2022; Tang et al., 2021; Treve, 2021)). Finally, the solution to the pandemic polemic is to continue carrying out learning activities but no longer in conventional spaces or the term from

(Herliandry, et al., 2020) which says learning methods in the pandemic era force everyone to keep their distance so that the learning process must be carried out from home or learning from home. The demands of learning from home are the same as in the classroom, students can discuss with each other, do assignments, and even carry out evaluations using online media (Safitri, et al., 2020). Learning in the pandemic era no longer requires face to face in class (Fitriyani, et al., 2020). Therefore, media is needed that can support the learning process so that it continues. For example, by using Android on the user's smartphone. Menrisal & Utami (2019) said Android is a Linux-based mobile platform consisting of an operating system, middleware and applications.

Long before the pandemic, smartphones were only used for social media, they were rarely used to help with the learning process (Muyaroah & Fajartia, 2017). For example, utilizing interactive features on smartphones, using interactive media will attract users, as stated by Kamlaskar (2007) who stated that almost 80% of respondents agreed with the use of interactive media because it was fun when starting learning. An important factor in improving learning outcomes is the use of learning media so that learning material can be delivered clearly and clearly to achieve learning objectives (Puspitaningrum et al, 2019).

Gunawan, et al. (2017) said that interactive learning media that can be used include animated audio, video text and graphics to help the learning process. Apart from supporting the creation of a learning process in the digital era, the presence of this learning media can also increase students' interest, this is supported by Cole & Todd (2003) who stated that the use of interactive learning media is correlated with increased learning outcomes. Another important thing related to online learning is good internet network support (Chen, et al., 2020). Through good internet, the use of video, audio, images, software as media will make the transfer of knowledge successful in online learning activities (Basilaia & Kvavadze, 2020). The conclusion is that online learning requires integration between technology and various innovative learning models so that learning objectives in online situations can be achieved (Banggur, 2020).

In higher education, the concept of independent learning aims to enable students to experience the learning process anywhere and at any time, including studying in non-campus settings. The freedom mandated for students to explore science must be supported by the presence of integrated technology in learning activities. Through technology, learning activities will become effective and efficient. The key to 21st century learning is how knowledge can be accessed efficiently by students. The alternative that researchers offer is to present learning media based on Android technology that students are familiar with every day.

This situation presents a problem formulation that questions how to take advantage of students' closeness to technology in the world of learning, especially online learning. With digital technology, it can increase students' motivation to deepen the learning process as well as increase collaboration and develop students' multimodal skills. So the solution to this situation is to provide digital technology-based learning media that is close to students. A thunkable application is an application that makes it easier for users to create Android-based applications because of its open source nature.

This application uses a block programming system where users do not need to enter the program code manually. The thunkable application has a smooth and modern appearance in terms of features so that it is relevant to the target user, namely students who tend to be close to technology. Apart from that, this application makes it easier for novice developers in the media creation process. This is because the concept of arranging media is familiar to most people, namely simply dragging or dropping the desired material, photos, videos or images. Android-based learning media using thunkable applications helps the learning process become meaningful and more interesting for students. Apart from that, the flexibility of its use means that the application can be used in space and time effectively.

The aim of studying Literary History is that students are expected to be able to understand the history of the development of Indonesian Literature from old Malay literature to modern literature. Literary history is one of the courses in the field of literature which is one of the foundations of courses in the field of literature. This course is important because it forms the basis of students' knowledge in analyzing literary works. Apart from that, facing 21st century learning where the use of technology is an important point and the presence of the concept of independent learning and independent campuses, the presence of technology-based learning media in literary history courses will help the learning process become more effective.

There is relevant research, namely research by Haslinda (2017) which shows that the initial test for students obtained a percentage of 22% and the final test increased to 76%. Apart from that, with the help of Android-based learning media, students learn the values of local wisdom while being able to make them relevant to the realities of everyday life. The difference between this research and this research is that the learning media developed is Literary History assisted by a thunkable application which has more modern features and a smoother appearance compared to Inventor. The development of Android-based learning media with the help of thunkable applications makes it possible to achieve learning goals in the era of independent learning policies - independent campuses and enables the creation of effective Literary History learning in the 21st century learning era. Sugiyono (2010) said that the

purpose of development research is to produce a product. Therefore, this research will produce a product in the form of literary history learning media assisted by a thunkable application.

Method

Research & Development (R&D) is the method used in this research. Putra (2011) said that the aim of the R&D method begins with formulating and then developing the product so that it is effective so that its use is meaningful. Apart from that, there is also a concept from Borg & Gall (1983) which states that in development research, the procedures carried out lead to the main objectives, namely (1) developing the product and (2) testing the effectiveness of the product on its implementation for users. The reference for this research refers to the research and development model which according to Thiagarajan (1974) consists of defining, designing, developing and disseminating. However, in this study, the researchers carried out the distribution only in small groups.

This research instrument consists of a material expert questionnaire, a media expert validation questionnaire, and a user response questionnaire. The data analysis technique is guided by five assessment scales, where there is a range of 1-5 as the highest score and the lowest score. A value of 5 indicates strongly agree and a value of one indicates strongly disagree. The formula used to calculate the score on the questionnaire is $X = \Sigma X/N$, where the final score will be converted using the table 1.

Table 1. Conversion score on a scale of five. (source: Suartama, 2010)

Value interval	Category
X > Xi + 1,8 Sbi	Very worth it
Xi + 0,6SBi < **X** ≤ Xi + 1,8Sbi	Worthy
Xi - 0,6SBi < **X** ≤ Xi + 0,6Sbi	Decent enough
Xi – 1,8SBi < **X** ≤ Xi - 0,6Sbi	less worthy
X ≤ Xi – 1,8Sbi	Not feasible

In addition, there will be a trial for students, the value obtained will be entered into the assessment category table so that a percentage of the number of students with a certain assessment category will be generated. The following is the formula that will be used in data processing.

$$X = \frac{€X}{€Xmaks} \text{ x } 100\%$$

Notes :
X = the value sought in percent
€X = Total student grades
€Xmaks = Total score

Table 2. Scoring System (Nurgiyantoro, 1988:363)

Percentage	Category
80% - 100%	Very good
70% - 79%	Good
60% - 69%	Fair
45% - 59%	Bad
0% - 44%	Very bad

Results and Discussion

Android-based learning media developed by researchers for the Indonesian Literary History course with a focus on material on Modern Indonesian Literature created with the help of the thunkable application have been tested on users, namely 34 students. At the development stage, 3 questionnaires were distributed to determine the feasibility of the media being made. The results show that the android-based Modern Indonesian Literature learning media assisted by the thunkable application is considered appropriate for use in learning activities in Literary History courses. In addition, the learning outcomes obtained by 34 students showed that the average score obtained by students when using Android-based Modern Indonesian Literature learning media was in the good category. Below is an explanation of the stages of developing Android-based Modern Indonesian Literature learning media products with the help of the thunkable application that researchers did.

1. Define

This stage is related to the analysis of needs related to users, namely lecturers and students. The purpose of this needs analysis is to find out the tendency of learning media used by both lecturers and students in literature courses. Researchers distributed needs analysis questionnaires which were distributed via Google form to lecturers and students. The instrument in the form of a questionnaire has previously calculated its content validity after being validated by two validators. The instrument can be said to be feasible if the CV results are > 0.7. The results of the questionnaire for lecturers and students obtained CV results of 0.78 and 0.82, which means that the two instruments are feasible to use.

The questionnaire for lecturers in the field of literature consists of 8 questions related to constraints, methods used, media used, student response tendencies, and how interested in Android-based learning media. The data analyzed from the answers to the questionnaire for lecturers showed a scale result of 3.6 from an average interval of at least 3. This means that the needs analysis questionnaire for lecturers shows that android-based learning media for Literary History courses is feasible. Furthermore, data analysis was also carried out from the answers to the questionnaire for students which consisted of 10 questions related to the development of android-based learning media for the History of Literature course. The results

show a value of 3.8 from an average interval of at least 3 so in other words students are interested in Android-based learning media. Therefore, based on the needs analysis carried out, it can be concluded that the development of Android-based learning media that researchers are doing is in line with the needs of users, namely lecturers and students.

2. Design

At this stage there are several activities that researchers carry out, namely selecting material, compiling evaluation items, making story boards, and designing display layouts. First, the researcher chose Modern Indonesian Literature material because Literary History courses tend to be courses that are generally considered boring subjects because students will understand more about theories about the history of Indonesian literature. Therefore, as an initial stimulus, the researcher chose material that students felt was well known, namely related to modern Indonesian literature. Writing this material will follow the guidelines for writing good and correct paragraphs. In addition, the language used in the material must be communicative so that users can understand what is conveyed in the learning media. This material will be combined with technology-based learning media, namely android which is considered quite familiar with the generation of students in the digital era.

Second, the preparation of items as part of the evaluation to determine the level of student understanding of the material being taught. These designed questions will be inputted into Android-based learning media. In learning media there will be a special button that students can access to evaluate. Students directly answer the questions and the answers will be sent automatically to the researcher's email for assessment. The next steps, namely the third and fourth steps, are related to making story boards and also the layout design that will be used in learning media. Making this story board aims as a guideline that will facilitate researchers in making android-based learning media. In addition, researchers also carry out layout design activities whose purpose is to beautify the appearance of learning media.

3. Development

The application, entitled Android-Based Modern Indonesian Literature Learning Media, contains material that focuses on Indonesian literature in the modern era, starting in the 1920s or also known as the Balai Pustaka era until now. Knowledge of modern Indonesian literary material is the basis for presenting perspectives in the process of appreciating literary works in the modern era. This material can be accessed through the Android-Based Modern Indonesian Literature Learning Media application. Where the making of learning media in the

form of applications that can be run on the Android system is made with the help of thunkable applications.

3.1. Material Expert Validation

Lecturers in the History of Literature course are validators at the material expert validation stage who are present in the learning media that researchers have developed. The research instrument in this study was a questionnaire that had previously calculated its CV, namely obtaining a score of 0.86, which means that this instrument is feasible to use. This questionnaire consists of 14 questions related to the material presented on Android-based learning media. In addition, the question items are divided into three aspects, namely material and evaluation aspects, language aspects, and implementation aspects. Data analysis in the questionnaire was guided by the Likert scale with 1 as the lowest point and 5 as the highest point. Where 1 stated that he strongly disagreed with what was written in the questionnaire and 5 stated that he strongly agreed with the statements in the questionnaire. Tabel 3 is the average result of the material expert validation.

Table 3. Results of Material Expert Validation

No	Aspects of Assessment	Total Score	Average Score	Category
1	Materials and evaluation	25	4,1	Worthy
2	Language	21	4,2	Worthy
3	Execution	13	4,3	Very Worthy
	Total	**56**	**4**	Worthy

Based on the table above for material and evaluation aspects, there are six questions with an average score of 4.1, which means that these aspects are in the proper category. Next is the language aspect contained in the learning media. This aspect which consists of 5 questions gets an average score of 4.2, which means that the aspect is categorized as feasible. Lastly is the implementation aspect which consists of 3 statements with a score of 4.3 which means it is in the very feasible category. These results indicate that this learning media is categorized as feasible with an average score of 4.

3.2. Media Expert Validation

The development of Android-based learning media has the goal of producing a product. Therefore, the product produced in this development apart from being validated for its material by material experts also needs to validate the feasibility of Android-based media by media experts. This media validation stage is carried out by information engineering lecturers whose knowledge is relevant to the Android-based learning media that researchers are

developing. This feasibility assessment was carried out by media experts by filling out a questionnaire that the researcher had prepared. Where the questionnaire has a content validity of 0.73 or is suitable for use as a research instrument. The score calculation from the media expert validation questionnaire also uses 5 rating scales. The questionnaire which consists of 1 aspect consists of 7 statement indicators. Tabel 4 is the average result of the validation conducted by media experts.

Table 4. Media expert validation results

Aspects of Assessment	Total Score	Average Score	Category
Display and use of learning media	28	4	Worthy
Total	**28**	**4**	**Worthy**

Based on the table above, the average score for the layout and usability of learning media gets a score of 4 or is feasible to use. The indicators contained in this aspect are 1) the initial screen display is attractive, 2) the menu display is informative and appropriate, 3) the font size is easy to read, 4) it can be easily installed on Android, 5) learning media can be accessed by various types android, 6) the ease of operating the media, and 7) the ease of typing answers. The Fig 1 is a screenshot of the media that the researchers developed.

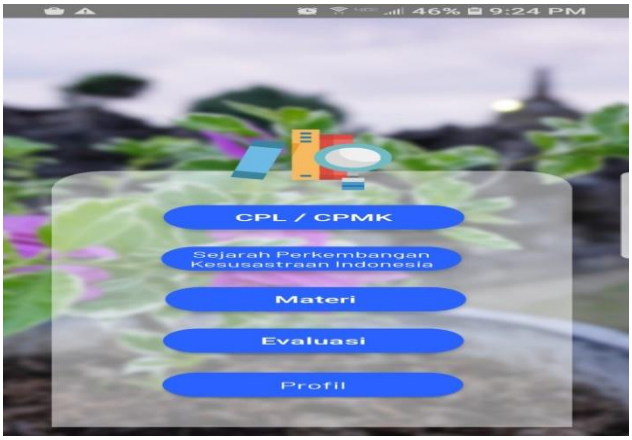

Fig 1. Initial display of Android-based media

3.3 Trial of Learning Media

The trial of Android-based Modern Indonesian Literature learning media assisted by the thunkable application was conducted on 34 students. This trial is carried out in the second half of the semester or after the midterm exam is carried out. Before the link is shared and students download this application, the lecturer explains the procedure for using the media and also how the evaluation will be carried out using the Android-based media. This trial was carried out four times with trials on materials for the library class, new poet batch, batch 45, and batch 60's. The Tabel 5 are the results of the user evaluation trial.

Table 5. Test results of android-based learning media

No	Material Type	Average score
1	balai pustaka	83
2	pujangga baru	81
3	angkatan 45	79
4	angkatan 60-an	81
	total	**81**

The table above is a summary of the results of the evaluation trial found in Android-based learning media in the course of literary history. 34 students conducted evaluation tests 4 times in four meetings to find out students' understanding of the material contained in the learning media. In evaluation 1 with the library material, students obtained a score of 83. Furthermore, in evaluation 2 students obtained an average score of 81, while in evaluations 3 and 4 students obtained an average score of 79 and 81. Overall trials that carried out starting from evaluation to evaluation 4 shows students obtaining an average score of 81. This score indicates that modern Indonesian literature-based learning media with the help of the thunkable application provide a good understanding of students so that learning outcomes become good.

3.4 User Validation

After the trial was carried out, the researcher asked for user responses, namely students for the feasibility of Android-based learning media which had been tested for use as learning media in Literary History courses. The data collection was carried out by distributing user response questionnaires to students. The distributed questionnaire has a CV of 0.84 so it is suitable for use as a research tool. This questionnaire consists of learning aspects which consist of display aspects of learning media. The table 6 are the results of a questionnaire on student responses to Android-based learning media.

Table 6. User rating results

Assessment Aspect	Total score	Average Score	Category
Learning	23	3,8	worthy
Learning media display	22	4,2	worthy
Total	**45**	**4,09**	**worthy**

The results of user responses to Android-based modern Indonesian literature learning media assisted by the thunkable application are as follows; for the learning aspect which

consists of six with a score of 3.8 which means that for users of learning media it is feasible. Furthermore, the display aspect of the learning media which consists of 5 indicators obtains an average score of 4.2 or is categorized as feasible. Overall validation of user responses obtained an average score of 4.09 so that it can be said that this learning media for users, namely students, is feasible to use. Based on the results of material, media and user validation, the total score obtained was 129 or the average was 4.03 in other words, the learning media that the researchers developed were categorized as feasible. The table 7 showing the feasibility of Android-based learning media.

Table 7. Media eligibility results

Aspects of Assessment	Total Score	Average Score	Category
Material expert assessment	56	4	**worthy**
Media expert assessment	28	4	layak
User ratings	45	4,09	**worthy**
Total	**129**	**4,03**	**worthy**

This Android-based learning media is presented in a simple, practical, and functional manner. This is in line with what was conveyed by Arsyad (1997) who argued that the criteria for developing learning media include 1) suitability of learning objectives, 2) integrated with the content of the material 3) practical, flexible, and functioning 4) teacher ability, 5) media objectives, and 6) technical quality of the media. For quality, the researcher adjusted the content of the material to the learning outcomes, but the trials carried out were still limited, therefore it was still necessary to implement learning media to find out how effective the learning media the researchers had developed was. Researchers try to present learning media that is close to users who are generation Z where this generation is synonymous with technology. as stated by Susilana and Cepi (2009) that the key consideration in media development lies in the correlation of the media and the appropriate students. This packaged learning media can be used by anyone, both lecturers and students.

The advantages possessed by Android-based modern Indonesian literature learning media assisted by the thunkable application are as follows; 1) the use of thunkable applications as learning media, both developers and users will feel welcomed friendly because this application is very easy to use. 2) the simple appearance that is presented in this modern Indonesian literature learning media makes it easy for users to operate, 3) this learning media

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has flexible access to space and time, 4) apart from using Android, this media can also be used on personal computers and can be displayed on the LCD screen.

In addition to the advantages, this learning media also has some disadvantages, namely; 1) the material in the learning media only consists of modern Indonesian literary material, 2) this learning media can only be accessed if the internet is connected, even though it doesn't eat up a lot of internet quota, but if there is no internet signal it means that this learning media cannot be accessed by user.

Conclusion

Overall, the results obtained in this research show the feasibility of the Android-based learning media that the researchers developed. However, there are still limitations in implementing the development of this learning media. First, the experiment that the researchers carried out was only on one class, namely class 1A, which consisted of 34 people, of course the measurement of the test results could be said to be still insufficient. The advantages of Android-based modern Indonesian literature learning media assisted by thunkable applications are as follows; 1) Using the thunkable application as a learning medium, both developers and users will feel welcomed because this application is very easy to use. 2) the simple display presented in this modern Indonesian literature learning media makes it easy for users to operate, 3) this learning media has flexible access to space and time, 4) apart from using Android, this media can also be used on personal computers and can be displayed on the LCD screen.

Apart from the advantages, this learning media also has several disadvantages, namely; 1) the material in the learning media only consists of modern Indonesian literary material, 2) this learning media can only be accessed if the internet is connected, although it doesn't use up much internet quota, but if there is no internet signal it means this learning media cannot be accessed by user. Therefore, in the future, researchers hope that the distribution of modern Indonesian literary media based on Android with the help of thunkable applications will get a good response from users compared to during the trial phase. The average score for validation by material and media experts received a score of 4 which is in the appropriate category, while for user responses it received a score of 4.09 which is also in the appropriate category. Literary History learning media based on thunkable applications is suitable for use in learning activities.

Declarations

Author contribution	:	Fina Hiasa was responsible for the entire research project. She also led the writing of the manuscript and the collaboration with all authors. Supadi, Emi, Lazfihma, and Meli participated in the data collection, transcription, and analysis. They also revised the manuscript. All authors approved the final manuscript.
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