

Harnessing local arts through android technology to boost critical reading among students

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Abstract: The research aimed to develop android-based reading learning media and local culture for students. The method used Research and Development (R&D) with the ADDIE model. The study showed the less-than-optimal use of devices in learning to read. Product design involves designing the interface and teaching materials. Product development includes implementation of the initial design, validation by material and media experts, and evaluation of students' responses. The feasibility test showed a result of good and very good categories from material and media experts, as well as a positive of students' responses. The product effectiveness test showed an increase in student learning outcomes in the reading course. The evaluation was conducted to reflect on the development results and develop other products that are relevant to learning.

Keywords: Android; Local Cultural Arts; Reading

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INTRODUCTION

The development of science and technology brings challenges for lecturers to create learning media and improve the quality of education. Lecturers should create an Android-based learning media to support learning in class (Riyan, 2021). Students must be trained well using technology such as Android-based aiming to build students' critical and creative thinking skills, packaged through Android-based learning media (Salampessy & Suparman, 2019). Android-based learning media is a Linux-based mobile operating system developed by Android Inc., which was then acquired by Google (Martha et al., 2022; Wiharto & Budihartanti, 2017). The development of Android-based learning media is one of the alternatives to learning that currently needs to be developed (Hendrawati et al., 2021).

Initial observations in several study programs of the education science group in the Special Region of Yogyakarta found a problem that students had communication tools, such as Android devices, but the use of these devices is often misused by students. They use devices during the learning process. They use devices not to support the learning process. However, they used to open TikTok, Instagram, WA, YouTube, and other applications that are not related to learning material. Supported by Ridha and Riwanda (2020) stated that gadgets for students are not used optimally.

In this case, lecturers – played as learning facilitators in the classroom - must have a way to use these devices as learning media so that they are not misused, especially during the learning

process. An alternative way is to use the device as a tool to access learning media (Lailiyah & Sukartiningsih, 2018; Wibowo et al., 2022).

The word media is the plural form of medium from the Latin *medius*, which means "middle." In Indonesian, the word "medium" can be interpreted as between or intermediary. The definition of media refers to a thing that conveys information (message) between the source (message sender) and the message recipient (Sidik & Susilowati, 2013). The term media is an intermediary that delivers information between the source and recipient (Arsyad, 2015). Media is a tool used by teachers to convey messages so that it delivered well and easily understood by students (Lailiyah & Sukartiningsih, 2018). One software that can be used to support the learning process is Flash (Arisanti & Adnan, 2021; Himawan et al., 2020; Khairani, 2016).

According to Ichwan (2016), Adobe Flash CS6 is a software designed by Macromedia but is now developed and distributed by Adobe Systems. This application is widely used to create animation, entertainment, and various web components, which can be combined with videos on web pages so that it enriches the multimedia application. One of the improvements of Adobe Flash CS6 is that it can support Android and iOS applications (Kurniawati et al., 2019).

Android is an operating system for mobile devices that operates on Linux and is open source with a GNU license owned by Google. Android phones will always be improved. In contrast to other closed systems that depend on manufacturers to create innovation, this means that Google and its partners can continue to function as the operating system (Indah & Kasman, 2021). Android is a device that connects various applications so that users can run applications to help with work or daily needs (Nurbani & Puspitasari, 2022). The Android-based application can also be used in learning activities. The content created in this Android-based learning application contains learning materials (Riyan, 2021).

Learning media for students is used to help students understand the material. This material can be reading materials, texts, linguistics, and literacy activities. Based on initial observations, students, especially students in the Indonesian Language and Literature Education Study Program, need this learning media in reading courses.

Reading courses aimed at improving intensive reading skills (W. Rahayu et al., 2012). The material taught includes types of intensive reading, intensive reading techniques, and their implementation in learning at school. Material in courses kuliah (Baharuddin et al., 2021; Hidayah & Hermansyah, 2016). Reading is a very voluminous activity because it consists of readings that will be analyzed intensively. It makes students less interested and feel bored, especially since lecturers have only provided material using PPTs and books from Tarigan. Therefore, lecturers must look for alternative solutions to attract students. Reading learning must be supported by various aspects (Himawan et al., 2023, 2024; Sutriyati et al., 2019).

Reading learning is a way for students to understand other learning so it must be supported by several aspects to achieve learning goals. Reading learning implements critical and creative thinking processes, and these skills are processed in critical and creative reading courses.

Critical reading is a reading activity involving an analysis and evaluation process that requires readers to consider the content and stylistic qualities of the texts they read (Priyatni, 2014). The critical reading stage consists of activities to recognize, analyze-synthesize, and assess the text. Meanwhile, creative reading is a reading activity that does not stop until the book is closed, which means there are still other activities after the reading (Himawan et al., 2023; Pratama, 2016; D. H. Rahayu & Nurbaya, 2022). The creative reading stage consists of activities to appreciate and apply the content of the text (Ardiasri et al., 2017).

Reading skills courses are intended to equip students to have the competence to understand the nature of intensive reading and the types of intensive reading (reading comprehension,

thorough, critical, ideas, language, and literary reading), applying intensive reading techniques (SQ3R, ECOLA, and PreP), can measure the level of readability, and be able to implement reading in Indonesian language learning (D. H. Rahayu & Nurbaya, 2022). Reading learning for students, requires students to think critically and creatively and must teach students to build their character. One alternative way is to collaborate arts and culture in reading learning (Lailiyah & Sukartiningsih, 2018; Setyaningrum, 2018).

Art was originally a human process, therefore, art is a synonym for science. Art can be seen as the essence of the expression of human creativity. Also, it can be interpreted as something created by humans that contains elements of beauty (Putri et al., 2020). According to the media used, art is divided into three, namely (1) Art that can be enjoyed through hearing media or (audio art), for example, music art, sound art, and literary art such as poetry and rhymes; (2) Art that is enjoyed through the medium of sight (visual art), for example, paintings, posters, building art, martial arts, and so on; (3) Art that is enjoyed through the media of sight and hearing (audio-visual art), for example, music performances, wayang performances, and films (Karthago, 2014).

Culture is a social value or practice that applies and is exchanged in relationships among humans, both as individuals and as members of society (Nasrullah, 2014). Local culture as a cultural resource represents superior cultural values based on local wisdom at the community level living in villages, districts, or provinces, which originate from local communities (indigenous people) and are local (regional) (Triwardani & Rochayanti, 2014). Local culture has a very close relationship with the people in an environment and all the natural conditions in an environment. It is displayed in various traditional ceremonies of a village, village cleansing, for example, carried out to honor the spirits of ancestors as guardians of the village (Setyaningrum, 2018).

Based on the background, this research discusses the development of Android-based learning media based on local wisdom for reading courses in the Indonesian Language and Literature Education Study Program. Moreover, relevant and earlier research was conducted by (Daryanti et al., 2022; G. Hidayat et al., 2022; Himawan et al., 2020; Kusni et al., 2021; Nabila et al., 2021; Rohendi, 2014; Suryana & Hijriani, 2021). Overall, this research on the development of Android learning media based on local arts and culture: Reading skills media for students is a continuation of several of these studies. The particular research tried to complete the things that have not been conveyed in relevant research.

The previous relevant research provides contributions related to theory, and expert opinion in the form of references on learning media, reading, and local arts and culture. Moreover, the research provides contributions in the form of data analysis on the development of learning media. This research discusses the development of learning media and tests its effectiveness. It is hoped that the findings provide a basis for development research, especially the development of teaching materials in the form of reading learning media for students, to add alternative reading learning media solutions for students.

METHODS

The research was developmental research. The model used the ADDIE model which consisted of; (1) analysis; (2) design; (3) development; (4) implementation and; (5) evaluation (Cahyadi, 2019). The research step was carried out through the following stages; (a) work analysis consisting of the emergence of basic problems that become the background for the development of reading learning media in tertiary institutions; (b) student analysis was carried out to determine the distribution of the presented learning media by lecturers as learning faci-

litators and used by students in reading courses, especially critical reading; (c) analysis of facts and learning objectives carried out through RPS created by lecturers and applied to students. In this analysis activity, interviews were also conducted with lecturers who taught reading courses and students who were taking reading courses. The aim, several things were found related to the actual situation, as well as needs related to learning media in reading courses.

The next step is design. The design stages include; (a) the collection of material and evaluation questions that are described in the developed learning media; (b) designing the learning media interface, which includes the cover, material aspects, and components used to apply the developed learning media. The next stage is development, which consists of (a) presenting and modifying the developed learning media and (b) producing learning media by collecting all aspects that have been prepared in the design stage. The next stage is implementation. This stage consists of (c) conducting due diligence on material experts, namely experts of learning media and material in the field of critical and creative reading.

The next stage is implementation, which consists of carrying out due diligence on material and media experts. Material experts assess the suitability of the developed learning media to several aspects of the material, especially critical and creative reading. Meanwhile, media experts assess the graphic aspects of products of learning media.

Assessments on media expert feasibility are used to assess the suitability of the developed learning media with several aspects of media expert assessment, such as media readability, and several applications or media that supports components; (c) feasibility test and trial on 20 students; (d) conducting experimental tests as a determinant of the effectiveness of the learning media, to 2 writing classes, each class consisting of 40 students with control and experimental classes. After that, it carries out several feasibility and effectiveness tests. The next step is to calculate the results of several tests using the Aiken V formula (Fajaruddin et al., 2021; Retnawati, 2015) and pretest and posttest control group design (Zubaidah et al., 2018). The final stage is to evaluate a reflection activity on the development of critical and creative reading learning media for students.

The instruments used to obtain research data were observation guide questionnaires, interviews, and expert assessment questionnaires on the products being developed. The data analysis technique used descriptive and quantitative. (1) Descriptive is used to describe the results of product development needs analysis in the form of observations, document analysis, and interviews; (2) descriptive quantitative is used to describe the results of product feasibility tests, students' response tests, and product effectiveness tests. Overall, the research does not only stop at data analysis but also concludes the research results.

RESULTS AND DISCUSSION

Result

Analysis

The analysis stages were carried out through several stages, namely; (a) document analysis; (b) interviews with lecturers who teach writing courses; (c) interviews with students who are taking writing courses, and; (d) observation of writing courses in several Indonesian Language and Literature Education Study Programs, in the Special Region of Yogyakarta. The needs analysis results of the product development are described in Table 1.

Design

The design stages were carried out through several stages. The first stage is designing the interface of the learning media. Designing the interface or display of the learning media is

carried out by; (a) determining the cover; (b) media colors, including colors for material, reading practice, and evaluation questions; and (c) applications of supporting learning media have been adapted to the needs analysis. Next, design material is adopted from various sources. The main sources are books, critical and creative reading written by lecturers, and several published journal articles, especially those that discuss learning critical and creative reading. After designing the material, it continues to design evaluation questions items that will be presented in the developed product. The evaluation is adapted to TPACK, which involves students' critical and creative thinking abilities. The Figure 1 and Figure 2 are an image of the developed product media.

Table 1. The Needs Analysis Results of Research Product Development

Aspect	Findings
Situation and conditions of critical and creative reading learning in higher education	<ol style="list-style-type: none"> 1. Students are asked to analyze reading material; 2. Students are asked to complete assignments in groups; 3. Students are invited to process reading material into a literary work; 4. Students learn various kinds of texts, such as narrative texts, expositions, and arguments
Use of learning media to support reading learning in the classroom	<ol style="list-style-type: none"> 1. The media used the video from the internet; 2. There is no media as a source of basic lecture information; 3. Media has not been found to trigger students' critical and creative thinking processes; 4. Media has not been found that can help students learn reading material; 5. No media collaborates with local wisdom, so apart from improving critical and creative thinking, there has been no implementation of improving culture-based character education for students.
Specifications for learning media products that need to be developed in writing courses at higher education	<ol style="list-style-type: none"> 1. Following the current developments; 2. Attract students' interest in writing; 3. Able to bring out students' critical and creative thinking processes; 4. Easy to carry anywhere and use anytime. 5. Collaborate with other aspects to make it interesting



Figure 1. The Example of Media



Figure 2. The Example of Media

Development

The development stage aims to develop products in the form of learning media for critical reading courses with local wisdom-based. At this stage, the developed product is prepared to refer to previously determined criteria. Critical reading learning media consists of learning achievements and indicators, material related to critical and creative reading containing various kinds of texts such as argumentative, expositions, and narratives, quiz 1, quiz 2, quiz 3, quiz 4, final evaluation questions, and profiles of the learning media maker. The determination of this material has been adjusted to the RPS. The Figure 1 and Figure 2 are an example of product development results.

Implementation

The implementation stage of the products aims to find out (a) practicality test by experts consisting of material experts, namely experts in critical and creative reading, followed by tests by media experts, namely experts in learning media for students, (b) student eligibility test conducted on 20 students of the Indonesian Language and Literature Education Study Program, and (c) product effectiveness test carried out on 40 students in 2 classes, namely the control and the experimental class in the reading class. Table 2, Table 3, and Table 4 shows the results of the implementation stage.

Table 2. Material Expert Assessment Results

No.	Aspect	Indicators	Validation
1.	Material and Learning	Conformity with CPL	4
2.		Material conformity with critical and creative reading and outcomes	3
3.		Depth of the presented material	3
4.		The actuality of the reading material described	3
5.		Clarity of the reading material described	3
6.		Material is easy to understand	4
7.		Sequence of learning materials	4
8.		Evaluation questions Sharpness	4
Total			28
Mean			3.50
Category			Baik

Table 3. Media Expert Assessment Results

No.	Aspect	Indicators	Items No.
1.	Display/Layout	Layout suitability	3
2.		Suitability of the text used in reading learning media	3
3.		Suitability of font type and font size on media	4
4.		Suitability of illustration	4
5.		Suitability of text layout and learning media images	3
6.		Suitability of color of reading learning media	3
7.		Suitability of animation	3
8.		Appropriate display of reading material	5
9.		Cover suitability	4
Total			38
Mean			4.20
Category			Good

Table 4. Student Test Assessment

Items No.	R1	R2	R3	R4	R5	S1	S2	S3	S4	S5	Σs	V
1.	5	5	5	5	4	4	4	4	4	3	19	0.95
2.	5	5	5	5	4	4	4	4	4	3	19	0.95
3.	5	5	5	5	4	4	4	4	4	3	19	0.95
4.	5	5	5	5	5	4	4	4	4	4	20	1
5.	5	5	5	5	5	4	4	4	4	4	20	1
6.	5	5	5	5	5	4	4	4	4	4	20	1
7.	5	5	5	5	5	4	4	4	4	4	20	1
8.	5	5	5	5	5	4	4	4	4	4	20	1
9.	5	5	5	5	5	4	4	4	4	4	20	1
10.	4	5	5	5	5	3	4	4	4	4	19	0.95

Test of Product Effectiveness

The effectiveness test was carried out on 40 students, divided into two reading classes. The class is a control and experiment. The control class consisted of 20 students, while the experimental class consisted of 20 students. Analysis of the product effectiveness test was performed by (a) carrying out a data requirements test using a normality test with a score of more than 0.05 so that the data distribution is normal. And, the homogeneity test, for which each score is obtained in the output table, the calculated significance value is $0.074 > 0.05$. It means the collected and tested material is **homogeneous**. From these two data, the prerequisite test states that the data can be continued. The next step is to carry out a different test and the results are presented in Table 5.

Table 5. Difference Test Results

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Product Test Results	Equal variances assumed	3.295	.074	2.291	68	.025	4.88571	2.13283	.62972	9.14171
	Equal variances not assumed			2.291	65.266	.025	4.88571	2.13283	.62649	9.14494

Based on the test, the results were Sig. (2-tailed) $0.025 < 0.05$, then H_0 is rejected and H_a is accepted. The purpose of this situation is that there is a significant increase in the learning outcomes of classes that receive treatment with the control class. Thus, the Android-based reading learning media and local culture are effectively used to improve students' reading learning outcomes.

Evaluation

The evaluation in this research was carried out to reflect, relating to the development process, starting from needs analysis studies, design, development, and implementation to product effectiveness tests. The research chart-flow is the main reflection in this evaluation activity, suggestions and comments from all components become notes for product development at the next stage.

Discussion

The development of Android-based reading learning media and local culture for students begins with conducting a needs analysis at Indonesian Language and Literature Education Study Programs in several universities. The results show that there have not been many reading learning media that are based on Android and collaborate with local culture to build the student's character. This implementation and collaboration must be carried out in every lesson, especially reading (Pratiwiningtyas et al., 2017; W. Rahayu et al., 2012). In reading learning, students are not only invited to think critically, but also build their character through learning media (Menrisal & Utami, 2019).

After the needs analysis stage, it continued to the design stage. The design stage was carried out with an initial design related to the learning media development process. The first stage is designing the interface design of the learning media. Designing the interface or display of the developed learning media is carried out by (a) determining the cover; (b) media colors, including colors for material, reading practice, and evaluation questions; and (c) applications of supporting learning media have been adapted to the needs analysis. Next, design material is adopted from various sources. The main sources are books, critical and creative reading written by lecturers, and several published journal articles, especially those that discuss learning critical and creative reading. The design stage in developmental research is one of the determining factors for the feasibility of the product because it contains matters that are closely related to the substance of the product (Harahap et al., 2022; F. Hidayat & Nizar, 2021). After carrying out the design stage, the next step is the product development stage.

Product development was carried out by compiling the prepared substances in the previous stage into learning media. Critical reading learning media consists of learning achievements and indicators, material related to critical and creative reading containing various kinds of texts such as argumentative, expositions, and narratives, quiz 1, quiz 2, quiz 3, quiz 4, final evaluation questions, and profiles of the learning media maker. The determination of this material has been adjusted to the RPS. Product development is the core of the developmental research (Kusni et al., 2021).

After product development, the next step is implementation testing, which includes stages of product feasibility and effectiveness testing. A feasibility test was carried out to assess the suitability of the developed learning media (Himawan & Suyata, 2021; Mardiana & Suyata, 2017). Feasibility was carried out by experts consisting of material experts assessing the material conformity, while the media experts assess the media conformity. Next, a student feasibility test was carried out to test the suitability of media for use in learning and continued with trials in large classes to test the product's effectiveness. Based on the results of tests, it was obtained for the suitability of material experts of 3.50 in the good category, and media experts of 4.20 in the excellent category. The students' response test calculated using the AIKEN V formula obtained a score of 0.95-1 in the good category, as well as the product normality test in the effectiveness test obtained a score of more than 0.05 in the normal category. The homogeneity test obtained a score of $0.074 > 0.05$, which means the data distribution was homogeneous. And, the different tests carried out in the control and experimental classes obtained Sig results. (2-tailed) $0.025 < 0.05$, then H_0 is rejected and H_a is accepted. So, the product is effective in improving student's learning outcomes in reading courses. Next, (5) evaluation is carried out by reflecting the results of development and carrying out further analysis to develop other products that are relevant to learning.

CONCLUSION

Android-based critical reading learning media and local culture can be implemented by students so that lecturers and students can use it in the learning process to improve the student's learning outcomes in reading learning. This media is designed to be attractive, concise, and arranged systematically to meet students' needs in reading learning. The development of reading learning media for students has proven effective. The results show that (1) the current situation in reading learning is still found to be less than optimal in the use of devices in learning. (2) Product design is carried out to design product interfaces and teaching materials. (3) Product development is done by developing the design into a product. (4) Implementation is carried out by conducting a feasibility test which includes a feasibility test with a scale of 5, AIKEN V, followed by a product effectiveness test which is calculated through the SPSS program. Based on the tests, the feasibility from the material expert was 3.50 in the good category and the media expert was 4.20 in the excellent category. The students' response test was calculated using the AIKEN V formula. It obtained a score of 0.95-1 in the good category. The product normality test in the effectiveness test obtained a score of more than 0.05 in the normal category, meanwhile, the homogeneity test obtained a score of $0.074 > 0.05$, which means the distribution of Homogeneous data. And, the different tests carried out in the control and experimental classes obtained Sig. (2-tailed) $0.025 < 0.05$, then H_0 is rejected and H_a is accepted. In short, the product is effective in improving students' learning outcomes in reading courses. Next, (5) evaluation is carried out by reflecting the results of development and carrying out further analysis to develop other products that are relevant to learning.

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