ANIMA-LIE: Android-Based Learning Media on Animal Life Cycles Materials for Elementary School

Sri Lestari Handayani[1*], Island Dahlia[2] (ID)

[1,2] Program Studi Pendidikan Guru Sekolah Dasar, Universitas Muhammadiyah Prof. Dr. Hamka, Jakarta, Indonesia

A R T I C L E   I N F O

A B S T R A K

Media pembelajaran yang digunakan untuk guru pada pembelajaran online selama pandemi hanya terbatas pada penggunaan gambar, kata, suara, video, dan powerpoint berupa presentasi sederhana. Sehingga, media tersebut tidak optimal membantu siswa memahami materi dan tidak meningkatkan pengalaman langsung siswa. Dibutuhkan pengembangan media pembelajaran online berbasis aplikasi android untuk menyelesaikan permasalahan tersebut. Penelitian ini bertujuan untuk mengembangkan media pembelajaran "Anima-lie" berbasis android pada materi daur hidup hewan untuk kelas IV sekolah dasar. Model penelitian yang digunakan adalah Research and Development (R&D) dengan menerapkan model pengembangan ADDIE. Aplikasi ini diujicobakan pada 37 siswa kelas IV. Instrumen yang digunakan adalah angket validasi untuk 2 ahli materi, 2 ahli media, dan angket respon pengguna. Hasil penelitian dari produk yang dikembangkan berdasarkan penilaian ahli materi mendapatkan persentase skor rata-rata 85,5% dengan kategori baik dan untuk penilaian ahli media persentase skor rata-rata adalah 89,93% dengan kategori sangat baik. Untuk hasil respon siswa, persentase skor rata-rata adalah 83,64% dengan kategori baik. Berdasarkan hasil data menunjukkan bahwa pengembangan aplikasi mobile learning "Anima-lie" berbasis android materi daur hidup hewan cocok digunakan sebagai media pembelajaran siswa kelas IV SD.

A B S T R A C T

The learning media used for teachers in online learning during the pandemic are only limited to using pictures, words, sounds, videos, and powerpoints in the form of simple presentations. Thus, the media is not optimal in helping students understand the material and does not increase students' direct experience. It takes the development of online learning media based on android applications to solve these problems. This study aims to develop an android-based learning media "Anima-lie" on animal life cycle material for grade IV elementary school. The research model used is Research and Development (R&D) by applying the ADDIE development model. This application was piloted on 37 fourth grade students. The instrument used is a validation questionnaire for 2 material experts, 2 media experts, and a user response questionnaire. The results of the product developed based on the assessment of material experts get an average score percentage of 85.5% in the good category and for the media expert assessment the average score percentage is 89.93% in the very good category. For the results of student responses, the percentage of the average score is 83.64% with a good category. Based on the data results indicate that the development of the Android-based mobile learning application "Anima-lie" with animal life cycle material is suitable for use as a learning medium for fourth grade elementary school students.

1. INTRODUCTION

All aspects of life are always changing and developing, both in social, economic, political and technological life (Risnawati et al., 2019; Tirtayani et al., 2017). Technology itself, is one of the fields that is developing very rapidly and has a lot of influence on people's lifestyles. Technological developments give rise to new trends in life, one form of trend that is influenced by technological advances is the use of smartphones (Siripongdee et al., 2021). The use of this smartphone has moved to become a basic need for everyone. Based on data obtained from gs.statcounter.com from January to December 2020, it is known that Android is the operating system that dominates the circulation of smartphones in Indonesia with a market

Corresponding author
*E-mail addresses: srilestarih@uhamka.ac.id (Sri Lestari Handayani)

share of 52.71%, followed by Windows at 36.09%, iOS at 4. .54%, OS X 3.99%, Unknown 1.98%, Linux 0.58% and 0.1% for other operating systems (Sahfitri, 2019).

Android is an operating system developed for Linux-based mobile devices (Hermawan, 2011). The Android operating system is an open platform (open source) that can be run on various Mobile and Internet Devices (MID) devices, thus providing the opportunity for everyone to develop applications in it according to their needs (Bergvall-Kåreborn & Howcroft, 2013). This is one of the biggest reasons Android-based smartphones are in great demand in Indonesia. The form of utilization of the advantages of the Android operating system in the field of education is to create learning media applications. Learning media applications developed can be in the form of mobile learning applications. Android is an operating system developed for Linux-based mobile devices (Khairunisa et al., 2019). Android-based mobile learning learning media will be able to describe abstract concepts into concrete so that it can make it easier for students to understand learning materials (Dewi & Handayani, 2021; Putri & Handayani, 2021)

In line with the implementation of the 2013 curriculum in Indonesia, all teaching materials in the education unit must be integrated with information and communication technology learning. Learning media for Android-based mobile learning applications is one example of developing learning media by utilizing information and communication technology (Irsyadi & Annas, 2019; Rahmat et al., 2019). Mobile learning has benefits in its application in learning, both for students and educators. For students, mobile learning can increase learning flexibility for students because they can access learning materials at any time. Meanwhile, educators can improve their insight and skills in delivering abstract teaching materials to become more concrete with the help of attractive visualizations in mobile learning applications. Therefore, the development of this learning media needs to be done by educators to be able to achieve the learning objectives in the 2013 curriculum.

Learning media has a very important role in the learning process (Damayanthi, 2020; Lukman et al., 2019). The use of this learning media aims to make it easier for students to understand the learning material being taught. In addition, learning media can provide direct experience to students so that the knowledge gained by students is based on the students' own experiences. But not all learning experiences can be obtained directly because the material is very abstract for students. In this situation, learning media can be used to provide more concrete and precise knowledge and easily understood by students (Sanjaya, 2013). Especially in online learning that has been implemented in Indonesia due to the Covid-19 pandemic in the past year. Online learning is carried out using virtual learning assistance in the learning process so that educators and students can still communicate directly with the help of whatsapp, voice note, zoom, google meet, google form, or through other applications. The role of learning media is becoming increasingly important due to the limited space for communication between students and educators. The use of interactive learning media in online learning is very helpful for educators to explain teaching materials to students so that learning becomes more contextual. But in reality, the learning media used by educators in online learning during this pandemic period are only limited to text, images, audio, video and Microsoft PowerPoint with simple presentations so that they have not optimally helped understand the material and provide direct experience for students. Therefore, it is important to develop learning media for Android-based mobile learning applications to solve this problem.

This research is also supported by several previous studies, the results stated that mobile learning with schoology has been proven to be effective in significantly increasing students' interest and ability in mathematics so that it becomes a fun material (Pramita et al., 2016). Android-based mobile learning media can overcome the problem of abstraction in physics material and is suitable for use in physics learning (Gunawan et al., 2017). Android-based mobile learning media in the basic concepts of Natural Sciences 1 can increase student productivity to the maximum with minimum effort, but it is necessary to develop learning content and its use on operating systems other than Android (Khairunisa et al., 2019). Android-based mobile learning media material for the circulatory system is quite effective in increasing the understanding of students' concepts on the material of the circulatory system (Widiastika et al., 2020). The android-based mobile learning media material for the circulatory system is quite effective in increasing the understanding of students' concepts on the material of the circulatory system (Ramdani et al., 2020).

Mobile learning is a facility or service that provides information and electronic educational content in general to learners to help achieve knowledge regardless of place and time (Allagui, 2014; Darmawan, 2013). Mobile learning is an electronic learning system based on wired and wireless communication channels that allows students to access subject matter anytime and anywhere without having to be in class (Amin & Sundari, 2020; Saleem, 2011). Mobile learning systems take advantage of the mobility of handheld or mobile devices, such as mobile phones and PDAs for their use. The use of mobile learning can be used as a complement in the learning process (Sarrab, et al., 2012). Mobile learning provides new opportunities for educators and students to interact beyond space and time. While Android is a software used on mobile devices that includes an operating system, middleware and key applications released by Google (Maiyana,

2018). The use of android applications in the learning process is a form of realization of innovation from conventional learning. The use of this technology has the aim of increasing the activeness of students in the learning process as well as the fulfillment of the 2013 curriculum which is oriented towards technology and information. One of the reasons for using the Android system for learning innovation is that it is open source, making it easier for developers to develop productivity in making learning applications. The application name "Anima-lie" on the developed product comes from the Latin name of animal, namely animalia. This is in accordance with the material discussed in the product, namely the animal life cycle material for grade IV elementary school.

This study aims to develop an Android-based "Anima-lie" mobile learning application media and test its feasibility by testing the validity of material and media experts, as well as the response of application users. The difference of this research from the research that was developed previously lies in the preparation of the material and the addition of the game menu page in it. The "Anima-lie" mobile learning application consists of five main menus, namely competence, material, video, game and evaluation. The final form of the product in the development of the "Anima-lie" mobile learning application is an android application (.apk format) that can be accessed anywhere and anytime with the material being discussed is an abstract grade IV elementary school animal life cycle material. This "Anima-lie" application can make it easier for students to learn because of its interesting and flexible nature.

2. METHOD

The research method used in this study uses research and development methods. Research Development or Research and Development (R&D) is a research method used to produce certain products and test the effectiveness of these products so that they can be useful for target users (Sugiyono, 2017). Development focused on the process of creating, utilizing and managing media and technology used in learning. Product development research was conducted using the ADDIE development model. The ADDIE model is a learning design model based on a systematic approach and an interactive process in every phase (Januszewski & Molenda, 2013). This ADDIE model will be carried out in stages of development, namely analysis (analyzing), design (designing), development (developing), implementation (applying), evaluation (evaluating) (Prawiradilaga, 2008).

At the design stage, product design will be carried out based on the results of the analysis that have been collected by making flowcharts, storyboards and evaluation tools in the form of evaluation questions. This product design is still a conceptual framework that describes the basis of the product being developed. The development stage is carried out by developing a product design that has been designed using Microsoft PowerPoint and the iSpring Suite then the product is converted with the Website 2 APK builder to turn the product into an application. Furthermore, the products that have been developed will be tested on material experts and media experts. The test results will be used as guidelines for product revision to be better than before. In the implementation phase, the revised product is then applied to users, namely class IV students at SDN Kebon Jeruk 08 Pagi. The use of the product by students is intended to collect data that can be used to determine the practicality and effectiveness of the product being developed. And the evaluation stage, the product is evaluated to improve the product after being tested to fit the desired goal. The data collection procedure in this development research used observation, interviews and questionnaires distributed online to obtain research data. Observations were made in the form of systematic observations with checklist instruments to students via google form to analyze the needs of fourth grade students at SDN 08 Pagi Kebon Jeruk while interviews were conducted with educators regarding online learning in grade IV SDN O8 Pagi Kebon Jeruk. The questionnaire technique used is a validation questionnaire in the form of questions distributed digitally to a team of material experts, media and students. The types of data obtained from this questionnaire are qualitative data in the form of input from experts and students and quantitative data in the form of assessment score data from experts who become validators and students as respondents. The data sources in this study were 4 experts consisting of 2 material experts and 2 media experts. The number of respondents using the "Anima-lie" application used was 37 students. The data obtained from the results of the validation test will be calculated using a Likert scale, which is a scale used to measure a person's attitudes, opinions and perceptions about social phenomena (Sugiyono, 2017), with a weighted score of points 1 (not very good) to 4 (very good). Furthermore, the score obtained from the validity test that has been carried out by the experts is converted into the form of a percentage score (Khairunisa et al., 2019). The result of the percentage score that has been obtained will be measured to determine the serviceability of the product being developed.

3. RESULT AND DISCUSSION

Result

The product of this development research is the Android-based "Anima-lie" mobile learning application on animal life cycle material for fourth grade elementary school students. This learning media contains material content that is arranged in easy-to-understand language and contextual images to make it easier for students to understand the learning material. In addition, there are several types of games and evaluation questions that match the material so that students can find out how much understanding they get after using the "Anima-lie" application. This "Anima-lie" application learning media is in .apk format which can be accessed on Android-based smartphones.

The analysis stage is carried out to find problems and analyze the needs of students, materials and media to be developed. At this stage, the research was initiated by conducting interviews with educators and observing students in grade 4 Kebon Jeruk 08 Pagi State Elementary School, West Jakarta. Based on the results of interviews conducted by educators, it is known that the online learning process uses the blended learning method with a combination of WhatsApp group and zoom meet and the media used are virtual image media and interactive videos such as zoom meet, google meet, google form and quizziz. Meanwhile, based on the results of observations on 40 students, some of them are 52.5% to be exact with 21 students less happy to learn to use cellphones during online learning while 92.5% of them think that online learning requires them to use cellphones more. This can happen because students are already bored with online learning and need something new so that they can foster the enthusiasm of students in online learning. In terms of material, difficulties in understanding Natural Education (IPA) material were experienced by students with a percentage of 65%, namely 26 students out of a total of 40 students and the answer was confirmed by the educator. This obstacle is caused by a lack of understanding and practice regarding science material. For the life cycle material itself, students who have difficulty reached 87.5% with 35 students. Therefore, it is necessary to develop learning media with new variations that can provide easy learning for students, namely information and technology-based learning media that are in accordance with the characteristics of students.

The design stage is carried out by compiling materials and questions for evaluating the life cycle of fourth grade elementary school animals from various sources while still being guided by the applicable syllabus and making flowcharts and storyboards that will facilitate the design of the "Anima-lie" product. In the development stage, the content in the "Anima-lie" application was developed using Microsoft PowerPoint media and the iSpring Suite software. Then the "Anima-lie" product is converted using Website 2 APK Builder as a media support for the "Anima-lie" product into an application format (.apk). The application has 5 main menus, namely, competency menu, material menu, video menu, game menu and application menu. The main menu display in the "Animali" application can be seen in Figure 1.

Figure 1. Home Screen and Main Menu

Furthermore, the product that has been developed will be tested for product validation by material and media experts. Material expert validation was carried out by 2 material experts who are competent in the field of instructional design while media expert validation was carried out by 2 media experts who are competent in the field of learning media and software engineering. The results of the validation by material experts can be seen in Table 1.

Table 1. Material Expert Validation Results

Aspect	Validator (1)	Validator (2)	Average per aspect	Category
Curriculum	100%	75%	87.5%	Very Good
Contents	90%	75%	82.5%	Good
Learning	87.5%	75%	81.25%	Good
Layout	100%	87.5%	93.75%	Very Good
Evaluation	90%	75%	82.5%	Good
Average all	93.5%	77.5%	85.5%	Good

Obtaining the smallest aspect average score on the learning aspect with a score of 87.5% and the largest aspect average score on the display aspect with a score of 93.75%. The validation results from the material experts on the overall average in each aspect of the 2 validators get a percentage score of 85.5% with good criteria indicating that the material presented in the "Anima-lie" application is valid and feasible to use. The results of media expert validation can be seen in Table 2.

Table 2. Media Expert Validation Results

Aspect	Validator (1)	Validator (2)	Average per aspect	Category
Design Layout	87.5%	93.75%	90.63%	Very Good
Content Layout	91.67%	91.67%	91.67%	Very Good
Software engineering	90%	85%	87.5%	Very Good
Average	89.72%	90.14%	89.93%	Very Good

The average score for the smallest aspect is in the software engineering aspect with a score of 87.5% and the average score for the largest aspect is in the content display aspect with a score of 91.67%. The validation results from the material experts on the overall average in each aspect of the 2 validators got a percentage score of 89.93% with very good criteria indicating that the "Anima-lie" application media was arranged systematically and was feasible to use during implementation. The average rating of each aspect of the material and media experts is good. This is because the "Anima-lie" application was developed in accordance with the syllabus and animal life cycle material for grade IV Elementary School which was prepared using easy-to-understand language and contextual images. In addition, the "Anima-lie" application can be easily used and has an attractive appearance for users.

In the implementation phase, products that have been assessed as feasible by material and media experts will be tested by deploying the application to class IV SDN Kebon Jeruk 08 Pagi. The distribution was carried out in two classes, namely class IV A and IV B as many as 37 students. The process of distributing the application was carried out through WhatsApp Groups by providing the application download procedure to users. The results of product trials carried out to see student responses to product use can be seen in Table 3.

Table 3. Test Results of "Anima-lie" Application by Respondents

Aspect	Respondent Trial (37 students)	Category
Usage Response	83.67%	Good
Effectiveness for Students	83.61%	Good
Average	83.64%	Good

The results of the "Anima-lie" application trial for fourth grade students at SDN Kebon Jeruk 08 Pagi got an overall average score of 83.64% with good criteria. This shows that the "Anima-lie" application can be used easily with an attractive appearance so that it can increase student interest in learning. The "Anima-lie" application makes it easy for students to study anywhere and anytime because of its flexible nature according to the needs of learning media in the current online learning period.

Discussion

The use of learning media in the form of virtual images and interactive videos that are used by fourth grade educators at SDN Kebon Jeruk 08 Pagi if used continuously without new variations will certainly become boring media and can reduce students' interest in learning. New variations of both methods, models and learning media are very much needed in learning, especially in online learning during the COVID-19 pandemic because interesting and varied online learning can keep the quality of learning

good so that students will be greatly helped in achieving online learning goals (Prawiyogi et al., 2020; Pujiasih, 2020; Rajhans et al., 2020). The results of the validation of material experts who get an overall average percentage score of 85.5% with good categories indicate that the content of the material in the "Anima-lie" application is delivered clearly and systematically so that the material is easily understood by students. The material is prepared based on learning indicators that have been developed to achieve basic competencies. The development of learning indicators carried out is in line with previous studie which explains that the learning indicators are a description of the basic competencies that are more specific by using operational verbs that can be measured (Dwiyanti & Nahadi, 2011; Radifan & Dewanti, 2020).

The quality of the "Anima-lie" application in terms of media is also said to be very good because based on the validation results of media experts, the overall average percentage is 89.93%. The media content of the "Anima-lie" application uses original images that really help students to learn concretely so that the understanding that students get is very good and precise. Where with picture media invites students to observe the events that are around them. This attracts the focus of students so that it can help students to remember and understand the material so that their learning outcomes can improve. This is in line with the analysis of the use of image media, especially in science learning, that the use of image media can improve student learning outcomes in science learning (Pramita et al., 2019; Utami, 2020). The Android-based "Anima-lie" mobile learning application that was developed also received a good response from students with an overall average acquisition of 83.64% in the good category. This shows the interest of students in learning to use the "Anima-lie" application. This can be in accordance with research that mobile learning applications are quite effective in increasing students' motivation in learning (Ningsih & Adesti, 2019; Ratnasari & Ginanjar, 2020). In addition, the "Anima-lie" application is able to provide opportunities for students to learn whenever and wherever it is not limited by space and time so that students have more frequency of repetition of material (Setyadi, 2017).

The implementation of the "Anima-lie" application in the learning process can help educators develop technology-based learning media, especially in online learning so that they can help students learn. This is a new innovation in the development of learning media with the support of information and communication technology. However, based on research, the "Anima-lie" application developed still has several shortcomings, namely the provision of applications on various operating systems on smartphone types such as iOS, Blackberry and others as well as additional user responses to educators regarding the use of mobile learning applications: Anima -lie" for grade IV Elementary School.

4. CONCLUSION

The research and development carried out resulted in the final product in the form of an Android-based "Anima-lie" monile learning application on animal life cycle material for grade IV Elementary School. Android-based "Anima-lie" mobile learning application which consists of five main menus, namely competence, material, video, game and evaluation. The feasibility test for developing learning media for the Android-based "Anima-lie" mobile learning application are good category for material validation and very good category for media validation. Based on validation from material and media experts, the Android-based "Anima-lie" mobile learning application is declared feasible to use. The response of students to the use of learning media for the "Anima-lie" android-based mobile learning application seen is in a good category.

5. Acknowledgement

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