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Utilizing iSpring Suite to Develop MEDIFORA Android-Based Application as a Science Learning Media for Fourth Grade Elementary School Students

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Abstract

The existence of the use of media in learning has been proven to be able to provide positive results on learning outcomes. The lack of learning media in accordance with the characteristics of the subject matter makes learning media rarely used in the learning process. The purpose of this study is to develop android-based learning media as an alternative to science learning media in elementary schools. The research method used in this study is Research and Development (R&D) which refers to the model developed by Sugiyono with 10 steps. Data collection instruments in the form of observations, validation sheets and student response questionnaires. The subjects of the study were students in grade 4 totaling 30 students at SDN 01 Kalibening Raya. The results of this study 0020 application named MEDIFORA with a feasibility rate by experts of 76.32% were declared feasible because they exceeded 61%. The effectiveness of the MEDIFORA Application seen from student learning results is obtained that MEDIFORA is effective which is shown by the level of completeness of student learning of 80%. Based on these results, it can be concluded that the MEDIFORA application can be used as an alternative science learning media for life cycle materials in grade 4 elementary schools.

Keywords: medifora application, learning media, science learning, android, elementary school, ispring suite

Introduction

The use of technology in education focuses more on improving the quality of learning so that learning becomes efficient and effective. Education that utilizes technology can promote a better quality of learning. Forms of utilization in learning include the use of teaching

materials, learning media or learning instruments that help carry out learning well. The existence of the use of media in learning can increase the interest and motivation of students and create a pleasant learning atmosphere (Rahmi et al., 2019). This opinion is in line with theory *joyfull learning* Fun learning is learning that has a strong relationship between educators and students, without any element of coercion or pressure and educators are positioned as facilitators in learning (Shi et al., 2022).

Science learning is abstract learning, which means it requires visualization or the right picture in explaining objects in nature (Rohmani, 2019). Therefore, science learning requires media that can explain the original motorcycle taxi in class so that students can understand learning well. Based on the cognitive theory of Piaget that the age of 7-11 years already has concrete and organized thinking and understanding (Shi et al., 2022). Grade 4 students are in the age range of 9-10 years, students have logical and real thinking, the average student in the age range of 9-10 years is very fond of things that are fun and easy to find in the surrounding environment. For this reason, educators must create good visualizations, especially in science learning that requires concrete understanding.

The rapid development of digital technology makes the emergence of various innovations that will play an important role in improving the quality of education (Destiniar et al., 2021). The role of technology in education plays an important role, the use of android among students has become a common thing that is known to have been used at various age levels. Most people in Indonesia already have mobile phones, almost every student since 2019 has used mobile phones to support learning the effects of the Covid-19 pandemic. Based on data from GSMA Intelligence, the number of smartphone connections in Indonesia has reached 370.1 million by early 2022, exceeding the country's total population. In addition, the internet penetration rate had reached 73.7 percent of the total population by early 2022. (Kominfo, 2022). Smart phones as devices in accessing the internet are often used appropriately. One of the most frequent uses of smart phones is used to access social media. As many as 80% in 2017 smartphone users, especially in Indonesia, are used to access social media (Kominfo, 2017). Furthermore, the use of smart phones has reached the age of elementary to junior high school children, namely the age of 9-16 years, as many as 40.87% of smartphone users among elementary school children and 59.89% among junior high school children (Kominfo, 2017). This data will continue to increase as technology advances. Students at the elementary level already have smart phones personally, but students tend to use smart phones as a place to play games to access social media whose use is not right for children their age (Rohmani et al., 2021)

The use of interactive applications in learning media development can encourage active participation of students in the learning process (Rohmani et al., 2021). Interactive learning media includes visual, audio, and video elements, which play an important role in improving the quality of learning in the classroom(Afifah et al., 2022). The development of interactive learning media is crucial in improving education standards and creating quality human resources. For example, iSpring Suite 10 is one application that is often used to create interactive learning media, especially because of its integration with Microsoft PowerPoint (Wahyuningtyas &; Yahya, 2021). The utilization of interactive learning media through

applications such as iSpring on mobile devices is expected to increase students' learning motivation.

Literature Review

Interesting learning media provide many benefits for increasing student interest in learning such as preying on high student curiosity, saving time and energy and being more efficient in learning (Rahmi et al., 2019). Based on its benefits and uses, it is necessary to develop learning media that will be used by students to improve learning outcomes, and reduce the tendency to use monotonous teaching media. Learning media developed using applications *iSpring Suite 10* can be easily converted to format *Flash* without first using the device *Adobe Flash Player* which facilitates the development of interesting learning media. Ispring suit has many features that can be integrated with various other applications (Vikulova et al., 2018). The focus on the use of interactive learning media can foster proficiency, and make it easier for students to remember the material and self-confidence will increase. Many researches related to the development of learning applications using the ispring suit such as: (Fadilah &; Sulaikho, 2022; Fikrotin &; Sulaikho, 2021; Umam &; Sulaikho, 2021) However, the scope of application development differs from one another.

Based on research that has been conducted, the development of learning media among elementary school students is still not widely done and its development is slow, and it has not been fully integrated in efforts to improve student learning outcomes (Shi et al., 2022). Previous studies have shown that the use of interactive learning media can positively contribute to student learning outcomes and improve the quality of education in Indonesia (Rahmi et al., 2019). Therefore, given the good potential in learning media development, researchers are interested in investigating and developing Android-based applications using iSpring Suite 10 devices at the elementary school level, especially in science subjects. The main problem formulation in this study is to evaluate the feasibility and effectiveness of learning media developed using iSpring Suite 10 software.

Research Method

This research is a type of research and development known as research and development. The focus of the research is the development of android-based learning media as an alternative solution with the help of I Spring Suite. This research follows the development research steps proposed by Sugiyono (2016) which consist of 9 stages, namely: 1) identification of potential and problems; 2) information gathering; 3) product design; 4) design validation; 5) design improvement; 6) design trial; 7) design revision; 8) usage trial; and 9) final product revision; 10) mass production. Validation of the developed product was carried out by 2 media experts and 2 practitioners to ensure the product was suitable for use. The population in this study were 30 grade 4 students at SDN 01 Kalibening Raya.

Result and Discussion

This research produces an innovative learning media application called 'MEDIFORA', which is specifically designed to help grade 4 elementary school students understand the concept of the life cycle of living things in science subjects. This application is a development product that uses iSpring Suite 9 as its platform, with the main focus on ease of access and interactivity through Android devices. With the adoption of appropriate technology, the MEDIFORA application provides a more interesting and enjoyable learning experience for students, which is expected to improve their understanding of complex science learning materials.

With the capabilities of iSpring Suite 9 as a development platform, the MEDIFORA app provides an effective solution in integrating interactive and accessible learning media for grade 4 elementary school students. By using this technology, the MEDIFORA app is able to provide a more interesting and fun learning experience, as well as allowing students to learn independently through their Android devices. It is hoped that this application can be an effective alternative learning support in facilitating the understanding of important science concepts, such as the life cycle of living things, among grade 4 elementary school students.

Results of the stage of finding potential and problems

Potential findings and problems in the research conducted in the form of grade 4 students at UPTD SD Islam Ibnu Rushd. Researchers found that students tend to be passive in receiving learning and lacking in understanding the recycled material taught. After being observed, this is due to the learning methods and media used by educators are less interesting and effective to increase the pleasure of students in learning. Based on this, researchers innovate to develop learning media products, namely *android* applications that can be accessed by students.

In order to determine the results of the research of the development to be carried out, the instrument used in the study is in the form of a validation assessment sheet carried out by experts using questionnaires with five indicators through a Likert skal assessment. Test questions related to ecosystem materials contained in theme 5 thematic learning in elementary schools.

To assess the validity of Android-based learning media development innovations to improve students' understanding of theme 5 ecosystem material in grade 5 elementary schools, it is necessary to conduct a validity test. The validity test is used to evaluate the extent to which the product meets the validity criteria, with the expected percentage of validity reaching at least 61% based on the guidelines suggested by Sugiyono (2016). The calculation of the percentage of product validity is carried out to determine the extent to which the product can be considered valid.

$$P(\%) = \frac{\sum score\ from\ data\ collection}{criteria\ score}\ X\ 100\%$$

In addition to the media made must be valid, the media must also be easy to use as a tool in the learning process for students. To assess the level of ease of use of the developed product, a continuation test is carried out which is called the product practicality test. The practicality test of the product in the form of learning media developed was carried out by giving questionnaires to students who tried the product. Learning media is said to be practical if the percentage of respondents who answered 'Yes' exceeds 61% of the total respondents (Sugiyono, 2016). The formula used to calculate the practicality test of product development is as follows.

$$P = \frac{Number\ of\ Answers\ yes}{Number\ of\ Answers}\ X\ 100\%$$

In addition to being valid and practical, the learning media developed must also be effective in the context of learning. The effectiveness of learning media development can be measured by the level of classical completeness (KK) of students that exceeds 80% (Sugiyono, 2016). The level of user involvement in using learning media applications can be evaluated using a paired t test with a 95% confidence level and a normality test that can be calculated using the SPP application. To measure the level of classical completeness of students' learning outcomes using the developed learning application, it can be done by using the mathematical equations provided.

$$KK = \frac{\sum Complete}{\sum Incomplete}\ X\ 100\%$$

Results of the information collection stage

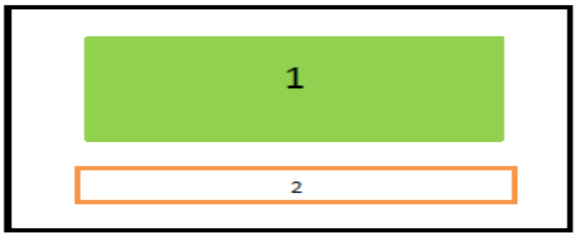
Based on the potential findings and problems identified by the researcher, additional information was gathered regarding innovations in learning using smartphones. This was triggered by the popularity of smart phone use among learners, as well as the need to improve their understanding of learning materials. As a solution, an app-based interactive learning media that can be accessed through smart phones was developed.

Results of the product design stage

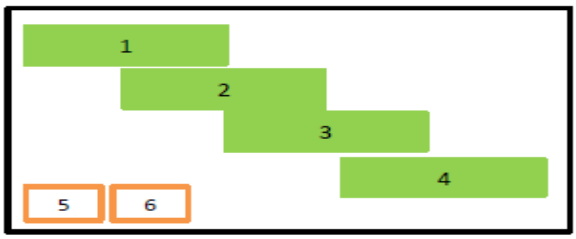
Based on the collection of information that has been obtained, the information that is required is used as a benchmark at the stage of designing media products to be developed. The development of learning media that is made into a MEDIFORA learning application that will be designed in an initial design called *a story board,* when it has finished making the initial design, the next step is to explain all the functions used in determining the buttons or navigation used in the developed learning media. The initial design in the design of media products to be developed is done through the *Microsoft Word* application, while for a more real design display using the *text editor application,* in the explanation of the initial appearance in the design of the medifora application development product design as follows.

a. Planning the layout design of learning media applications

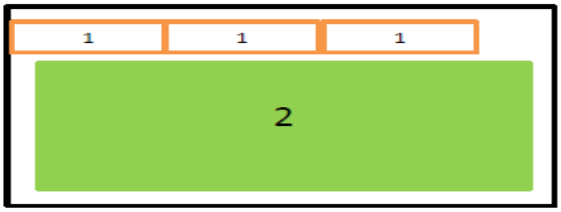
The planning stage for the *layout design* of making learning applications is the initial design design in the form of images of learning media development applications described in the *story board*. The following is the layout form of developing Android-based learning media applications that are assisted by making it with *iSpring Suite*.



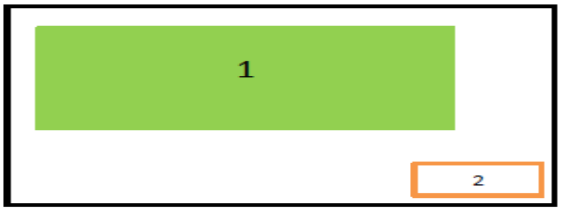
1. MEDIFORA application name
2. Tombol PLAY memulai permainan



1. Learning Objectives Button
2. Learning Materials Button
3. Quiz Button
4. Learning Video Button
5. Settings Button
6. Developer Profile Button



1. Material sub-discussion button
2. Material View



1. Multiple Choice Questions Display
2. Next QUESTION Button

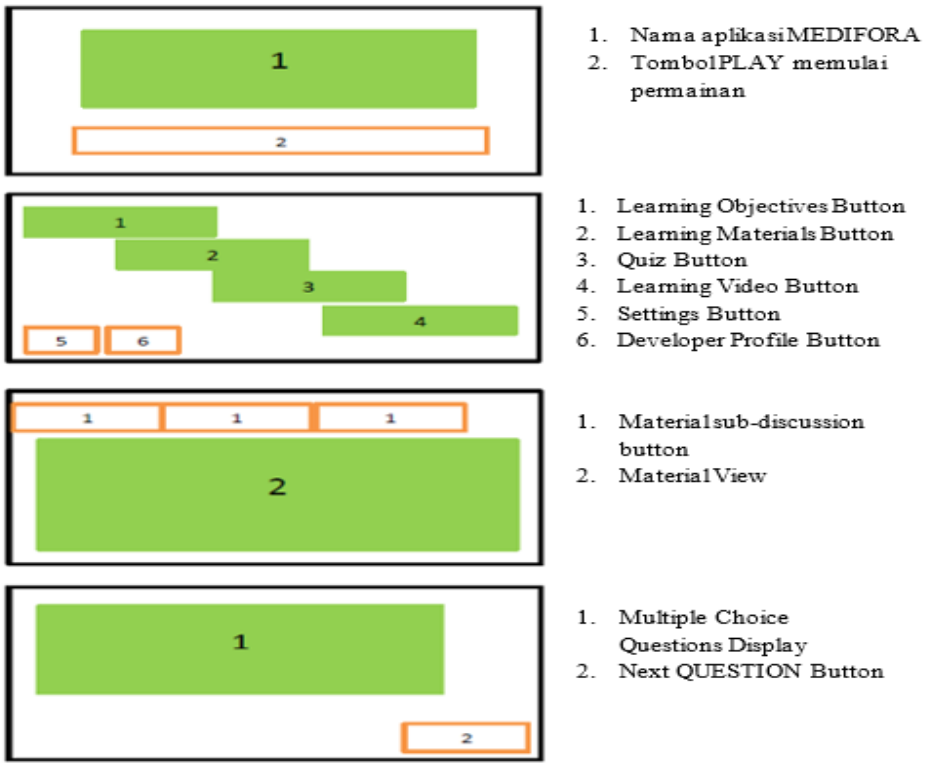


Figure 1. *Display* Layout of MEDIFORA Learning Application

b. Development results

The results of the development that will be carried out are based on the design design that has been designed before, the design design that has been made is then implemented in the form of a learning application in the form of html5 which is arranged attractively and interactively with adjusted colors, images, letter sizes, aviation and so on. The following is the form of display of results that have been developed learning media.

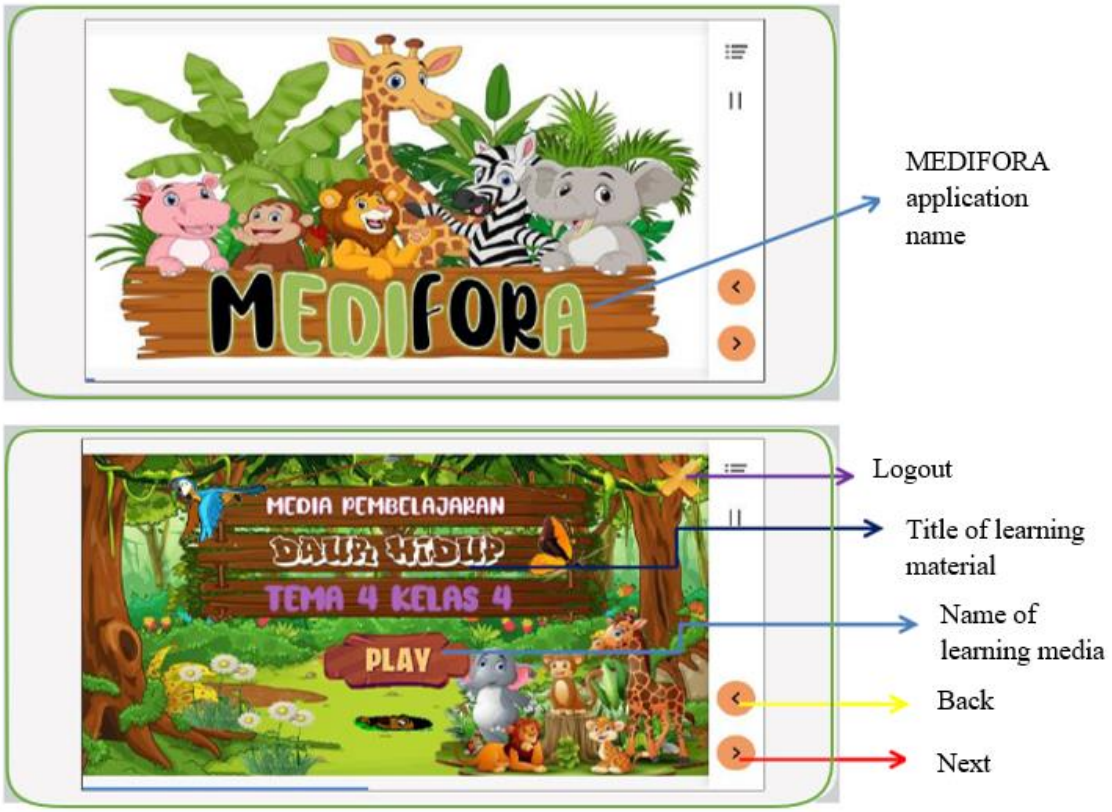


Figure 2. Start page view of MEDIFORA Application

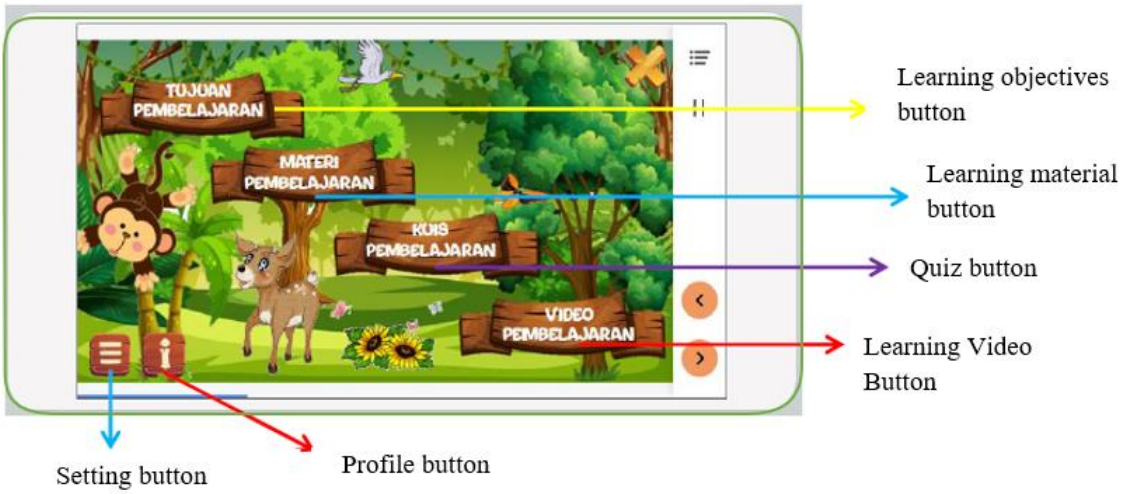


Figure 3. Display of the MEDIFORA Application Menu Page

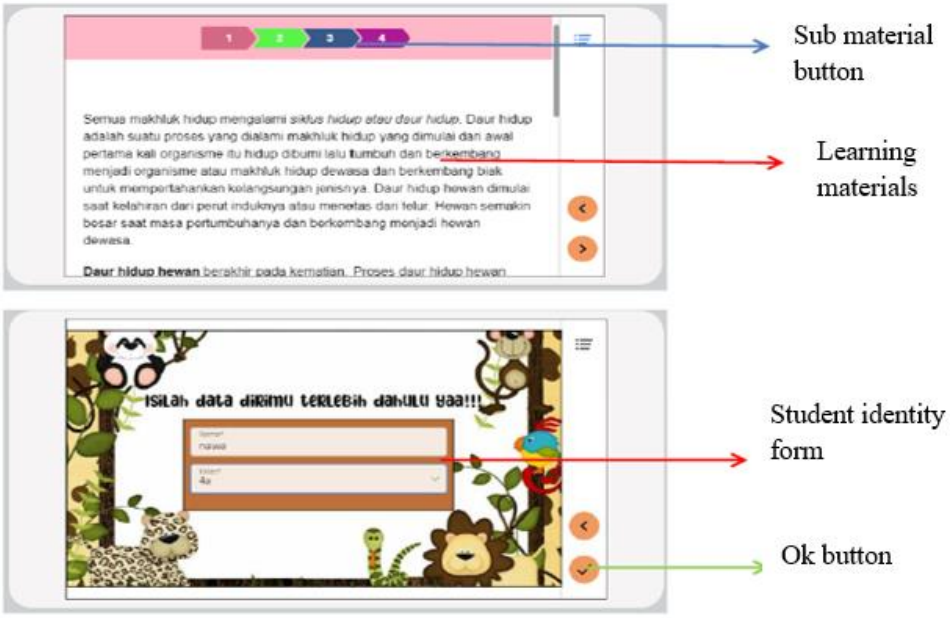


Figure 4. Display of MEDIFORA Application Material Page

Figure 5. MEDIFORA App Quiz Page View

Results of the product design validation stage

The results of the development of learning media in accordance with the design that has been made will be carried out design validation tests by several validators to test the feasibility of the learning media created, along with the results of the valdation of the learning media developed.

Table 1. Media expert validation results

Assessment Aspect	Score	Percentage	Information
Display	32	78,12	Good
Content	12	75	Good
Activity	12	83,33	Excellent
navigation	16	81,25	Excellent
Interactivity	12	83,33	Excellent

The average validation results provided by media experts in the assessment of MEDIFORA learning applications for science subjects life cycle material is 78.42%. Based on the review, the development of learning media in the form of the MEDIFORA learning application used on Android was declared valid because it received a value of more than 61%.

Table 2. Material expert validation results

Assessment Aspect	Score	Percentage	Information
Material	9	83	Excellent
Quiz	8	76,3	Good
Learning objectives	8	75	Good
Language	7	75	Good
Conformity	9	75	Good
The level of litigation of the question	8	78,2	Good

The average validation results provided by media experts in the assessment of MEDIFORA learning applications for science subjects for life cycle materials are 76.32%. Based on the review, the development of learning media in the form of the MEDIFORA learning application used on Android was declared valid because it received a value of more than 61%.

Results of the design improvement stage

The next stage is the design improvement stage based on the results of the assessment of material experts and media experts. Based on the assessment of material experts and media experts, several inputs were obtained in the form of quiz displays that must be improved, improvements to the sound that must be more varied and interactive on each display. According to material experts, android-based media development must multiply material content in accordance with KI and KD, the language in the quiz is made less understood by students and add time for quizzes.

Based on the assessment and input provided by material experts and media experts in the development of MEDIFORA learning media, adjustments will be made by referring to the input provided by media experts and material experts. Things that are adjusted to media development are carried out in the form of adding sounds to the media to be more interactive with students, the duration of each question is given 30 seconds. Another adjustment is in the form of additional material on the media in accordance with the input of media experts to better suit the scope of material in KI and KD life cycle material.

Results of the design improvement stage

The development of learning media in Android was tested on students in grade 4 of SDN 1 Kalibening Raya with the object of trial as many as 30 students. After conducting trials to students, an experiment in the development of learning media for life cycle material was carried out in the form of observation in the use of students in MEDIFORA learning media.

Based on the results of observations on students who use the developed learning media, information is obtained in the form of input and suggestions from students, the following is a summary of suggestions and input as follows.

Table 3. Suggestions and feedback

Aspects	**Feedback and Suggestions**
Display	The display color is too many colors and there are buttons that cannot be used.
Quiz	The quiz display is too monotonous and less interesting.
Material	The material is incomplete.
Language	The language used is further refined to make it easy to understand for learners in elementary school.
Navigation	Some less useful buttons and icons are best removed.
Voice	The sound used sometimes interferes with the focus of learning while being smoothed.
Size	The font size is already good.

Results of the design revision stage

The results of the trial of developing learning media on Android using *iSpring Suite* with a form of media called MEDIFORA which has been tested to students in grade 4 get input and suggestions. The data and suggestions obtained are used to revise and improve the learning media developed and remain guided by the results of the validation of material experts and media experts. Improvements made in the development of learning media are made on the initial menu page which is less large reading and the duration of time is short, it is necessary to adjust the letters, font size so that it is easy to read.

Results of the trial phase

If the learning media developed has been improved in accordance with input and suggestions based on the initial trial stage, the next stage of the developed learning media is carried out usage trials. The subjects used to test products from the development of learning media that have been integrated on Android in the form of an application called MEDIFORA are students in grade 4 as many as 30 students at SDN 01 Kalibening Raya. Product usage trials are carried out to determine the feasibility of developing learning media in the form of the use and display of learning media. The following are the results of trial use of the development of android learning media under the name MEDIFORA.

a. Student learning outcomes data

Based on the results of usage trials carried out on 30 students in the form of initial trials and final trials in grade 4 at the beginning of learning material and the end of learning material that can see the effectiveness of the learning media development products developed can be seen as follows.

Table 4. Student learning outcomes data

Criterion	Beginning	End
Top marks	56	100
Lowest score	32	65
Average	62,5	82.5
KKM	65	65
Student completeness	0	24
Incompleteness of learners	30	6

The average comparison based on the initial and final grades of students increased by 30.5% and the completeness of students during learning using learning media using learning media that has been installed on each student's android by 93.46%. Based on these data, it shows that the development of MEDIFORA learning media in android assisted by *iSpring Suite* in science subjects theme 4 grade 4 life cycle material has increased the learning outcomes and learning motivation of students so that effective learning is planned data shows 80% of students tested have graduated and scores above KKM.

b. Data on the results of product assessment of learning media development

Based on observations and assessments that have been made to students in the form of effectiveness in the use of android-based learning media called MEDIFORA in the life cycle material of hisup creatures, science material in grade 4 obtained the results of observation and assessment by test subjects as follows with the results of the questionnaire distributed.

Table 5. Product assessment results

Assessment aspect	Percentage	Category
Interest	92,4	Excellent
Level of understanding of the material	87,5	Excellent
The degree of distress of the evaluation question	76,7	Good
Benefit	84,3	Excellent
Accessibility	86,2	Excellent

Based on the results of assessments and observations in the form of data calculated from questionnaires distributed to students, it was determined that the development of learning media included in the students' android in science subjects more than 62% was declared feasible and met graduation to be able to continue using learning media.

c. Suggestions and input on learning media development products

The development of learning media that has been given the name MEDIFORA in science subjects, life cycle materials that have been tried on students, received suggestions and entered as follows.

Table 6. Product suggestions and feedback

Aspects	Category
Display	Learning media applications look very interesting and look colorful with sounds that add interest in learning. The suggestion is that the value is directly connected directly to the teacher so that it is easier.
Material Display	The existing material is very easy to understand, especially in displaying images that are not in the book, the video displayed is in accordance with the material. The advice is better at the time of delivering the material, don't give music a voice.
Display of evaluation questions	The questions are already very good and in accordance with the material learned
Font size	The font size is just right
navigation	Sometimes buttons can't be pressed and it takes a long time

Results of the product revision stage

The input and suggestions given at the product trial stage are used by researchers as a way to be able to improve and perfect the learning media developed by MEDIFORA learning media which will be the final product in the form of learning applications in Android. The MEDIFORA learning application for living things life cycle material can be accessed on the android of each student by sending applications through *social media* or *chat* to each student.

Based on the results of product trials conducted on students, the development of learning media in the form of applications installed on android students can improve student learning outcomes and motivation. The development of learning media has a positive impact in increasing good learning for students.

Conclusion

The application of MEDIFORA learning media in science subjects in grade 4 elementary school life cycle materials installed on each android student using the development stage of Sugiyono. The feasibility level of the MEDIFORA application has been tested by calculating validation from media experts and material experts. The MEDIFORA application which contains material on the life cycle of living things with an effectiveness of 93.46% which is declared suitable for use in learning because it can increase learning outcomes and motivation in students, which is as much as 80%. The use of the MEDIFORA application in learning in elementary schools in grade 4 for science learning has a positive impact on students because it improves good learning outcomes means the use of the MEDIFORA application which is the development of learning media in each android student with the help of the *iSpring Suite* applicationIn the material life cycle of living things, science subjects can reduce the negative impact of using Android on students and can utilize and have a positive impact on the use of smart phones on students.

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