Development of Android-Based Interactive Multimedia Non-Fiction Text Materials Containing Kediri Raya Local Wisdom and 4C Skills

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Abstract: The study aims to create interactive multimedia non-fiction text material based on Android with the content of Kediri Raya local wisdom and 4C skills and assess the validity of the developed interactive multimedia. This study used is development research methods with ADDIE model. The research subjects were fourth-grade elementary school students. The research instrument used a questionnaire. Qualitative descriptive data analysis in this study was used to process data sourced from comments and suggestions from validators contained in the validation questionnaire. Quantitative descriptive data analysis was used to analyze the data obtained from expert and user validation. The results showed that (1) First, performance and needs analysis. Second, the determination of interactive multimedia designs that are attractive, easy to use, and in accordance with learning. Third, the development of non-fiction text material containing Kediri Raya local wisdom, the development of questions containing 4C skills, and the development of Android-based interactive multimedia. Fourth, implementation, which is implemented in SD. Before being implemented in SD, it must go through the validation of material and media experts. Fifth, evaluation, which contains values and inputs given by material and media experts, is the basis for improving interactive multimedia and (2) the results of material expert validation get a score of 85.7% and media expert validation gets 97%. The product can be used in learning Indonesian in 4th-grade elementary school as a solution for online learning.

Introduction

Learning media is a tool used to facilitate the delivery of material so that learning objectives can be achieved. According to Sukiman (in Priandana and Asto, 2015) the use of media facilitates the process and achievement of learning outcomes. Therefore, choosing the right learning media allows students to absorb the expected material and abilities more quickly. The media provides clarity of the object or material being studied so that it attracts the students attention. One of the media that observers of learning ogle is interactive multimedia. Interactive multimedia can be in the form of software to create learning applications, one of the developments in learning application technology is on mobile devices. M-learning is a portable electronic device used as a trend in higher education to access and share information (Miller, 2012). Android is an operating system that supports learning application programs on mobile devices such as gadgets.

Almost all students can operate android-based devices, including elementary students. Through android, teachers are expected to insert their subject matter so that students not only play but also learn. Damariswara and Saidah (2021) explained that learning using android applications makes it easier for students to learn anytime, anywhere, and is more proficient in

mastering learning materials. One of the Indonesian language materials that can be inserted on Android is non-fiction text.

Non-fiction texts are texts based on things that happen in everyday life or can also be called facts (Amelia and Makmuriyanti, 2019). The language used is usually denotative language or actual language so that readers can immediately understand the meaning of the text. Non-fiction texts are often used as a source of information by readers. The results of interviews with fourth grade teachers at SD Lab UN PGRI Kediri, SDN 1 Bendo, Tulungagung Regency and MI Assalafiyah Pule, Kediri Regency regarding learning Indonesian non-fiction text material can be described as follows. First, teachers cannot monitor children's abilities directly when learning online. Second, the delivery of non-fiction text material needs to be properly because of the lack of material and less contextual with students' lives. Third, communication only goes in one direction, namely students only read the text in the worksheets and power points without any direct feedback from students. Fourth, the assessment process is not optimal because students and teachers are not in the same place and time. Fifth, students need more motivation to learn non-fiction material so that the parents of the students do the questions. According to the observations of Rokhayati, et al (2022) teachers have not paid attention to the condition of students in the learning process so that changes or actions need to be made to improve learning.

Based on the results of these interviews, it is necessary to find a solution to overcome that is to develop appropriate learning media for fourth grade elementary school students that are contextual and interesting. The learning media developed is interactive multimedia based on Android non-fiction text material containing Kediri Raya local wisdom and 4C skills. Research by Nurtanto, et al (2022) shows that multimedia containing games positively impacts on student behavior and learning outcomes. Local wisdom is a view of life and knowledge as well as various life strategies in the form of activities carried out by local people to answer various problems in meeting their needs. Sibarani (2012) explains that local wisdom is the original wisdom and knowledge of a society that comes from the noble values of cultural traditions to regulate the life of the community. Sibarani added that there are five cultural dimensions in local wisdom: local knowledge, skills, resources, culture, and social processes. The local wisdom chosen to contain non-fiction text includes, Kediri, Nganjuk, Tulungagung, Blitar and Trenggalek. Saidah and Damariswara (2021) have research on Indonesian language learning containing local wisdom on fairy tales for grade III elementary school.

There have been many studies that have raised local wisdom. Saidah and Damariswara (2019) have raised local wisdom in East Java which is included in teaching materials. Local wisdom raised in the form of fairy tales. In addition, local wisdom is still too broad and does not focus on one particular area. So, research that raises local wisdom in Kediri Raya has never been done. In addition to containing local wisdom, the developed multimedia includes 4C skills. 4C skills include critical thinking (critical thinking), creative (creative), collaboration (collaboration), and communication (communication). According to Zubaidah (2018), critical thinking is a person's ability to observe and find solutions to all the problems faced in his life. Creativity is a person's ability to create something. Munandar in Sumarno (2013) describes the characteristics of creative thinking, namely: sparking many ideas, solving many problems, giving many ways or suggestions, changing thoughts, giving birth to something new, thinking about unusual ways, and detailing an idea to be more interesting. Communication is the sending and receiving messages between two or more people so that messages can be understood. Zubaidah (2018) adds that communication is a process of transmitting information, ideas, emotions, and skills by using symbols, words,

pictures, graphics, or numbers. Collaboration is someone working together with other people. Johnson (2012) suggests that collaboration has basic elements, namely: 1) interdependence, interaction between members, 3) the responsibility of each member, 4) there is communication, decision making, and trust, 5) both processes for creative thinking.

Much research on the theme of 4C skills has been carried out, especially in elementary schools. Septikasari and Fransandi's research (2018) explains the importance of applying 4C skills for elementary students because it is the foundation for learning and prepares students to face challenges in the 21st century. Lestari Research (2020) in its literature study revealed various effective learning models to improve 4C skills. Widodo and Wardani (2020) describe learning based on 4C skills in elementary schools. The research of Monica, Ricky, and Estuhono (2021) improves the 4C skills of elementary school students in the science module. Research that raises 4C skills in learning Indonesian has not been found.

Based on the problems and solutions developed, this research has two objectives. First, to develop interactive multimedia non-fiction text material based on Android containing local wisdom and 4C skills for fourth grade elementary school students. Second, to analyze the validity of the developed interactive multimedia. The novelty lies in two things. First, the media developed is interactive multimedia based on Android. Second, non-fiction text that contains Kediri Raya local wisdom and 4C skills. The hope is that fourth grade elementary school students can easily study independently anywhere, anytime, and with anyone. Students remember the region's potential so they can raise the region's name one day.

Research Method

This study used development research methods. The development model that will be used is the ADDIE (Analysis, Design, Development, Implementation and Evaluation) model. ADDIE describes applying learning design to produce a deliberate learning implementation (Branch, 2009). This study only arrived at the expert validation test. Sources of research data were fourth grade students of SD Laboratory UNP Kediri City, SDN 1 Bendo Tulunagung, and MI As Salafiyah Pule Kediri. The data collection instrument used a questionnaire. The following is a questionnaire for the assessment of Indonesian language and media material experts.

Table 1. Grid of Indonesian Language Expert Assessment Questionnaires

Assessment Aspect	Indicator	Value Scale
Relevance	The suitability of the material with KI and KD	1-5
	The suitability of the material with the learning indicators	1-5
	The suitability of the material with the learning objectives	1-5
	Explanation of the examples provided	1-5
	Clarity in language use	1-5
Accuracy	The material presented is in accordance with the character of class IV students	1-5
	Presenting competencies that must be mastered by students	1-5
	Learning steps include 4C skills	1-5
	The level of difficulty of the questions according to the material	1-5
Learning	The material presented encourages students' curiosity	1-5
	The material presented encourages student activity	1-5
	Students can build their own knowledge	1-5
	Students can study independently	1-5

Table 2. Grid of Media Expert Assessment Questionnaires

Assessment Aspect	Indicator	Value Scale
Multimedia Display	Attractive image design	1-5
	Pictures according to the character of the age of elementary school children	1-5
	The colors used are attractive	1-5
	Have a simple look	1-5
	Accurate font selection / font size for easy reading	1-5
	Clarity of image symbols on the main menu	1-5
Multimedia content	Simple usage flow	1-5
	Can motivate students in learning	1-5
	Provide feedback on student learning outcomes	1-5
	Can be used for independent study	1-5
	There are variations of practice questions in interactive multimedia media	1-5
	Practice questions can be done repeatedly	1-5

The data analysis used in this research is qualitative and quantitative descriptive data analysis. Qualitative descriptive data analysis in this study was used to process data sourced from comments and suggestions from validators contained in the validation questionnaire. Quantitative descriptive data analysis was used to analyze the data obtained from expert and user validation. The quantitative descriptive analysis in this study is as follows. The level of instrument validity is taken from the results of instrument validation through expert validation, with the following formula.

$$Vah = \frac{Tse}{Tsh} \times 100\%$$

Information :
Vah = Expert validation
TSe = Total empirical score
TSh = Maximum total score (Akbar, 2013).
The results of validation by experts are then combined and averaged into the final value using the following formula.

$$final\ score = \frac{\Sigma Vah}{2}$$

The criteria for validity and usability of the instrument can be seen in Table 1.

Table 3. Criteria for Validity and Use of Instruments

| Final Score	Criteria
0% - 20%	Invalid, unusable
21% - 40%	Invalid, can't be used
41% - 60%	Quite valid, usable after major revision
61% - 80%	Valid, can be used after minor revision
81% - 100%	Very valid, very good to use

Results and Discussion
Interactive Multimedia Development

The development of interactive multimedia is in accordance with the ADDIE stages. First, analysis of performance and needs. Second, interactive multimedia design is attractive,

easy to use, and appropriate for learning. Third, there are three developments carried out, namely the development of non-fiction text material containing Kediri Raya local wisdom, the development of questions that refer to 4C skills, and the development of Android-based interactive multimedia. Researchers are looking for local wisdom found in Kediri Raya. Kediri Raya covers the City and Regency of Kediri, City and Regency of Blitar, Nganjuk Regency, Tulungagung Regency, and Trenggalek Regency. Based on the results of the FGD, Indonesian linguists only selected two local wisdoms for each region. The city and district of Kediri are in the form of Tofu Takwa and Surowono Temple, the City and District of Blitar are Penataran Temple and Tutur Batik, Nganjuk Regency is the Ngeos Temple and the Siraman Sedudo ceremony. Trenggalek Regency is the Larung Sembonyo ceremony and Alen-Alen food, and Tulungagung Regency is the Jamasan Spear Kyai Upas ceremony and Lodho Chicken food. The ten local pearls of wisdom are processed into non-fiction texts appropriate for learning. The development of questions refers to language games in the form of multiple choice, crossword puzzles, gap text, scramble, and matchmaking. After students work on the questions, emoticons and grades appear. This is also done by Savitri, et al (2020) that media is interesting if it is equipped with questions so that students can easily understand and know the results of their work. Finally, development on android with a flowchart as follows.
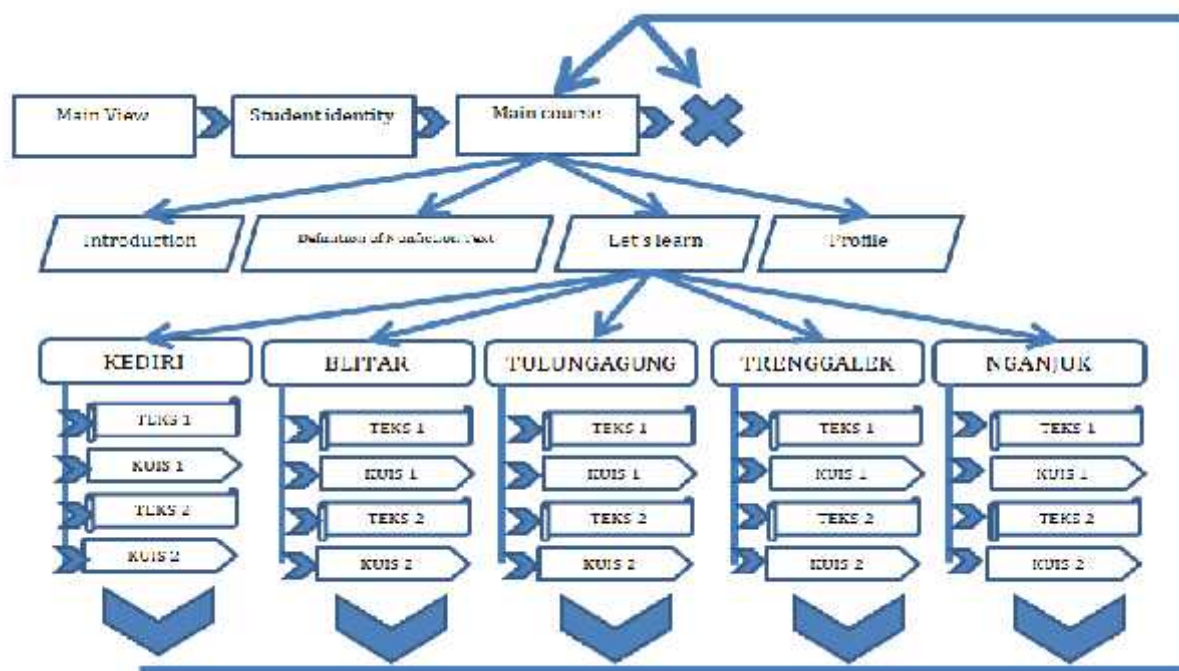
Figure 1. Product Development Flowchart

Fourth, implementation, which is implemented in SD. Before being implemented in SD, it must go through the validation of material and media experts. This article only discusses the results of material and media experts. Fifth, evaluation, which contains values and input from material and media experts, becomes the basis for improving interactive multimedia.

Interactive Multimedia Validation

The results of interactive multimedia validation are two experts. First, experts in the validation of Indonesian language learning materials. As a result, interactive multimedia scored 85.7% from material expert validation consisting of 14 indicators. Second, expert

validation of learning media experts. As a result, interactive multimedia scored 97%, consisting of 12 indicators.

Table 4. The Results of the Validation of Indonesian Language Learning Experts

Assessment Aspect	Indicator	Value Scale (1-5)
Relevance	The suitability of the material with KI and KD	5
	The suitability of the material with the learning indicators	4
	The suitability of the material with the learning objectives	4
	Explanation of the examples provided	4
	Clarity in language use	5
Accuracy	The material presented is in accordance with the character of class IV students	4
	Presenting competencies that must be mastered by students	4
	Learning steps include 4C skills	4
	The level of difficulty of the questions according to the material	4
Learning	The material presented encourages students' curiosity	5
	The material presented encourages student activity	5
	Students can build their own knowledge	4
	Students can study independently	4
	total score obtained	**60**
	max quantity	**70**
	score percentage	**85,7%**

Table 5. The Results of the Validation of Learning Media Experts

Assessment Aspect	Indicator	Value Scale (1-5)
Multimedia Display	Attractive image design	5
	Pictures according to the character of the age of elementary school children	5
		5
	The colors used are attractive	5
	Have a simple look	5
	Accurate font selection / font size for easy reading	4
	Clarity of image symbols on the main menu	5
Multimedia content	Simple usage flow	5
	Can motivate students in learning	5
	Provide feedback on student learning outcomes	5
	Can be used for independent study	5
	There are variations of practice questions in interactive multimedia media	4
	Practice questions can be done repeatedly	5
	total score obtained	58
	max quantity	60
	score percentage	97

Discussion
Interactive Multimedia Development

Products that have been developed are in accordance with the ADDIE stages. First, the analysis phase includes an analysis of media development needs, including performance analysis and needs analysis. The stage of analysis of performance and needs is in accordance with the stages carried out by Safitri and Aziz (2022), Juannita and Adhi (2017), Rahayu (2016). Performance analysis was carried out by observing fourth grade students at SD Laboratorium UNP Kediri, SDN 1 Bendo Tulungagung, and MI As Salafiyah Pule, Kediri Regency. There are teacher obstacles in delivering non-fiction text material; namely students have not been able to identify non-fiction texts even though they have been given examples of stories. Of the 55 students in three elementary schools, 50.9% did not understand the contents of the non-fiction reading texts explained by the teacher, while 49.1% could understand the contents. The teacher uses LKS, textbooks, and interactive videos to deliver the material. Needs analysis, namely fourth grade students in three elementary schools need interesting learning media, accessible from home, as well as contextual material. Interesting and contextual can be realized in non-fiction text material containing Kediri Raya local wisdom and 4C skills. The local wisdom of the Kediri people is very interesting to study considering that Kediri in the past was the forerunner of its birth great kingdoms as well as being an umbrella for the regions and small kingdoms in East Java (Kurnia, 2018). 4C skills are skills that students need to be able to adapt to situations and conditions in the 21st century. (Septikasari and Frasandy, 2018), (Trisnawati and Sari, 2019). The hope is that 4C skills can improve students' abilities according to the research of Meliani, Dantes, and Tika (2020)

Second, the design stage the stage of designing a product focused on learning media in the form of display and presentation in interactive multimedia. Interactive multimedia is made interesting by containing font types that can be read clearly by fourth-grade students; some pictures stimulate imagination, and the use of bright colors and accompanying music when students study. The music can be turned off if students feel disturbed. The research of Worang, Mintjelungan, and Takaredase (2021) that interesting interactive multimedia can improve student learning outcomes.

Third, the development stage is developing non-fiction reading texts that contain the local wisdom of Kediri Raya and evaluation questions that contain 4C skills. In addition, media development must be adapted to the cognitive theory (Gunawan, Harjono, and Imran, 2016). After students install the "Kediri Raya Nonfiction Text" application on Android via the Playstore for 3 MB, students can open the application. The first display appears on the initial screen as shown in Figure 1. In this view, students are asked to click the play image to start using the application. Next, students will be directed to the identity screen as shown in Figure 2. In this screen, students are required to type their full name and school in the provided column. Click the column then a letter button will appear that must be pressed. If the identity is correct, then click "save". The next display is the main menu display as shown in Figure 3.

Figure 2
Initial View

Figure 3
Identity Display

Figure 4
Main Menu Display

There are four buttons on the main menu display, and the student's identity has been typed. The first button says "INTRODUCTION" which contains the identity of the material such as class, theme, sub-theme, material, KD, and indicators as shown in Figure 4. The second button reads "DEFINITION OF NON-FICTION TEXT" contains the meaning and characteristics of non-fiction text as shown in Figure 5.

Figure 5
Display of the Introductory Menu

Figure 6
Display of the Non-Fiction Text Definition Menu

Figure 6 shows the third button, "AYO BELAJAR," containing five areas in Kediri Raya. Students choose an area from five regions then two reading text titles and quizzes will appear as shown in Figure 7. Clicking on one of the reading titles will display a display as shown in Figure 7. Figure 8. After students read the non-fiction text, students click on the multiple-choice quiz with a display as shown in Figure 9.

Figure 7
Display from the Let's Learn Menu

Figure 8
Display of the Kediri Menu

Figure 9
Display of the Kediri Reading Text Menu

Figure 10
Display of the Quiz Menu from Kediri Reading Text

Each question answered by students will appear true and false emoticons as shown in Figure 10. After completing 10 questions, scores will appear. In the score display, there is an arrow button to the left which means to return to the text and the next button to go to questions in the form of language games like Figure 11. The language game of each reading has a difference. The goal is that students stay energized and constantly learn as shown in Figure 12.

Figure 11
Display When Answering Wrong and Right

Figure 12
Multiple Choice Workout Value Display

Figure 13
Display of questions in the form of language games

When students succeed in working on questions in the form of language games, students can find out the results as shown in Figure 13. Then click "Next" and the accumulated value from the results of working on questions in the form of multiple choice and language games as shown in Figure 14.

Figure 14
Display of the Result of Working on Problems in the Form of Language Games

Figure 15
Final Value Display

The fourth button labeled "PROFILE" contains the identity of the interactive multimedia composer as shown in Figure 15. In addition to the four menu buttons, at the top left corner there is an x button which means students exit the application and a button with a song image which means students can turn on and mute the song. The following displays when students select the exit button from the application as shown in Figure 16.

Figure 16
Profile Menu Display

Figure 17
Display of the Application Exit Menu

At the implementation stage the researcher begins to apply or test the media that has been developed can be used and effective in learning. Prior to testing, multimedia must be validated by Indonesian language learning experts and learning media. The validation results will be used as input to prepare for testing to SD. In this article, we only reach the implementation stage with material and media experts. The evaluation stage, at this stage only describes the test results from Indonesian language material experts and learning media. The value and input given by the expert will be used as the basis for determining the next test. Researchers will make revisions according to input from material and media experts.

Based on the results of the research that has been done, the following findings were obtained. 1) No non-fiction text material containing local wisdom has been developed. 2) no research raises the local wisdom of Kediri Raya (Kediri, Blitar, Nganjuk, Tulungagung, and Trenggalek) in learning. 3) There is no Indonesian language learning that contains 4C skills. 4) There is no use of Android-based interactive multimedia in non-fiction text material for fourth-grade elementary school students. 5) Android-based interactive multimedia contains text, questions, and language games.

Interactive Multimedia Validation

After interactive multimedia was developed, the reading text was tested for readability. Mahendri, Mujiwati, and Aka (2022) have carried out the readability test. The results showed that the readability level of ten nonfiction texts containing Kediri Raya local wisdom in Android-based interactive multimedia had the feasibility and suitability of readability level for 4th-grade elementary school students because the readability levels of these ten nonfiction texts were in areas 2, and 3, 4, and 6 of elementary school. Then the media would validated to Indonesian language material experts and learning media experts. Indonesian language material experts validate the learning tools developed as the basis for preparing interactive multimedia and learning activities. In addition, material expert validation aims to test the completeness of the material on the product, the material's truth, and the material's systematics on the media. (Hidayah, Wahyuni, Hasnanto, 2020).

The aspects assessed by Indonesian language experts are relevance, accuracy, and student-centered learning. These three aspects are divided into 14 indicators. Each indicator has a score range of 1 to 5. The relevance aspect is divided into five indicators. First, the indicator of the suitability of the material with KI and KD was given a score of 5. The material developed was in accordance with KI and KD. The material developed is non-fiction text. Second, the indicator of the suitability of the material with the learning indicators is given a score of 4. Third, the suitability of the material with the learning objectives is given a score of 4. Fourth, the clarity of the examples given is given a score of 4. Fifth, clarity in the use of language is given a score of 5. The scoring by the validator is separate from giving suggestions.

The next aspect, accuracy. Aspects of accuracy are divided into five indicators. First, the indicators of the material presented in accordance with the character of the fourth grade students are given a score of 4. Second, the indicators that present the competencies that must be mastered by students are given a score of 4. Third, the indicators of learning steps containing 4C skills are given a score of 4. Fourth, the indicators of questions presented are in accordance with the indicators and load 4C skills. Fifth, the indicator of the difficulty level of the questions according to the material is given a score of 4. Similar to the relevance aspect, although it is given a score of 4, the material expert validators do not provide suggestions or input.

The last aspect of student-centered learning is divided into four indicators. First, the indicator of the material presented to encourage students' curiosity was given a score of 5. Second, the indicator of the material presented encouraging student activity was given a score of 5. Third, the indicator of students' ability to build their knowledge was a score of 4. Finally, the fourth indicator, the indicator of students being able to learn independently was given a score of 4. score 4. After the Indonesian language learning expert validator checks the score, it continues to provide notes about the learning tools that have been developed. The validator said that the overall material was good and suitable for learning.

The next step, the researcher calculates the results of obtaining the validity of the learning device. In accordance with the calculation formula described earlier, the material expert validation score is 85.7%. The score, it is read that the learning tool is very valid, very suitable for use. The second validation is the learning media expert. Learning media experts validate interactive multimedia products that have been developed. In validating, learning media experts fill out a questionnaire of two aspects. Aspects of multimedia display and multimedia content are divided into 12 indicators.

The multimedia display aspect is divided into six indicators. First, a score of 5 is assigned to the indicator of appealing image design. Second, the image indicator based on the age of elementary school children is given a score of 5. Third, the indicator of color used is attractive given a score of 5. Fourth, the indicator having a simple appearance is given a score of 5. Fifth, the indicator of accuracy The selection of font/ font size for easy reading is given a score of 4. Sixth, the indicator for the clarity of image symbols on the main menu is given a score of 5.

The aspect of multimedia content is divided into six indicators. First, the indicator of a simple flow of use is given a score of 5. Second, the indicator that can motivate students in learning is given a score of 5. Third, the indicator that provides feedback on student learning outcomes is given a score of 5. Fourth, the indicator that can be used for independent learning is given a score of 5. Fifth , the indicator that there are variations in practice questions in interactive multimedia is given a score of 4. Sixth, the indicator of practice questions that can be done repeatedly is given a score of 5.

At the end of the field, the media expert validator provides notes. First, the menu in the introduction was changed to "Let's Learn!". Second, the systematics of the examples in the "Let's Find Out" menu must be consistent in their arrangement. Third, the type of font used needs to be replaced with an upright font that is easy for fourth graders to read. These notes are the basis for giving a score of 4 on the font indicator and the variety of questions. Validation by material and media experts aims to obtain information, criticism, and suggestions for improvement so that the developed media becomes a quality product and is suitable for use as a medium for learning Indonesian in elementary schools. (Triskawati and Silalahi, 2022). As the results of previous studies reported that the developed media should have gone through a validation process before being used in the learning process (Susanto, et al., 2013; Panjaitan, et al., 2016; Nurbaiti, et al., 2017; Panjaitan, et al., 2019a; Panjaitan, et al., 2019b; Panjaitan, et al., 2019c). In accordance with the calculation formula described earlier, the media expert validation score is 97%. The score shows that interactive multimedia is very valid and suitable for use.

Conclusion

The conclusions of the research are; 1) interactive multimedia developed following the steps of the ADDIE model. First, analysis of performance and needs. Second, the determination of interactive multimedia designs that are attractive, easy to use, and in accordance with

learning. Third, the development of non-fiction text material containing Kediri Raya local wisdom, the development of questions containing 4C skills, and the development of Android-based interactive multimedia. Fourth, implementation in SD. Before being implemented in SD, it must go through the validation of material and media experts. Fifth, evaluation, which contains values and inputs given by material and media experts, is the basis for improving interactive multimedia. 2) The results of the validation of material experts got a score of 85.7% and 97% based on the results of validation by learning media experts. These results indicate that the media developed is very valid and can be used in online learning.

Recommendation

Recommendations for teachers that the media can be used as an alternative to student learning at home as part of the follow-up learning at school. Students can learn independently, get to know the local wisdom of Kediri Raya, and hone 4C skills.

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