Android-Based Educational Game Learning Media Containing *Gending Rare* Local Wisdom on Science Subjects for Grade 5 Elementary Schools

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A R T I C L E   I N F O

A B S T R A K

Media game edikasi berbasis android berkearifan lokal gending rare menjadi solusi bagi masalah rendahnya hasil belajar siswa. Penelitian ini bertujuan untuk menciptakan media pembelajaran game edukasi berbasis android bermuatan kearifan lokal gending rare pada mata pelajaran IPA Kelas 5 SD. Penelitian ini merupakan penelitian pengembangan dengan menggunakan model ADDIE. Subjek penelitian ini adalah ahli media, ahli materi, guru sebagai praktisi dan siswa kelas V SD. Data dikumpulkan dengan metode tes dan non-tes. Data dianalisis dengan analsiis deskriptif kualitatif dan analsiis kuantitatif. Hasil penelitian yaitu; media pembelajaran game edukasi berbasis android bermuatan kearifan lokal gending rare pada mata pelajaran IPA Kelas 5 SD memperoleh kualifikasi "Sangat Valid dan Layak digunakan. Uji coba kepraktisan memperoleh kualifikasi "Sangat Praktis dan Menarik". Hasil pretest dan posttest dengan uji-t sampel berkorelasi diketahui bahwa terdapat perbedaan setelah menerapkan media pembelajaran game edukasi berbasis android bermuatan kearifan lokal gending rare. Disimpulkan bahwa media pembelajaran game edukasi berbasis android bermuatan kearifan lokal gending rare pada mata pelajaran IPA kelas 5 SD valid, praktis dan efektif meningkatkan hasil belajar IPA siswa. Penelitian ini berimplikasi pada pendidikan sebagai media solutif dalam menyikapi rendahnya hasil belajar siswa.

A B S T R A C T

Android-based educational game media based on local wisdom, Gending Rare, is a solution to the problem of low student learning outcomes. This research aims to produce Android-based educational game learning media containing local wisdom of gending rare in science subjects for grade 5 elementary school. This research is development research using the ADDIE model. This model is divided into five steps, namely: (1) analysis, (2) design, (3) development, (4) implementation, and (5) evaluation. The research results are; (1) Android-Based Educational Game Learning Media Containing Gending Rare Local Wisdom in Science Subjects for Grade 5 Elementary School in the form of an application that can be installed on a smartphone. (2) The validity test obtained the qualification "Very Valid and Suitable for use. (3) The practicality test obtained the qualification "Very Practical and Interesting". (4) Based on the calculation of the pretest and posttest results with the correlated sample t-test, it is known that the average pretest value is 59.68 and posttest is 81.60 with a sig value. (2-tailed) less than 0.05. So, the Android-based educational game learning media containing local wisdom of gending rare in science subjects for grade 5 elementary school is valid, practical and effective in improving students' science learning outcomes. This research has implications for education as a solution media in responding to low student learning outcomes.

1. INTRODUCTION

Along with the development of Technology and Information Science, digital-based learning has become a challenge that encourages the creation of innovative, effective and efficient use of learning media. This requires digital-based learning media to be utilized in an effort to improve student learning outcomes. Success in learning can be seen by changes in students. The expected changes are in accordance with educational objectives which lead to three aspects, namely cognitive aspects, affective aspects and psychomotor aspects. Educators have a very important role in the progress of students. An educator is not

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only required to provide effective and innovative teaching but is also expected to pay attention to the development of the soul and personality of his students (Lestari et al., 2023; Semara & Agung, 2021). The role of educators is not only to provide information, but also to guide and direct learning (directing and facilitating the learning) so that the learning process is more meaningful. In the digital era, technological developments have had a significant influence on education, so that the structure of education, both physical and non-physical, has changed (Guna et al., 2019). In building an active, creative, effective and enjoyable learning process, it is very necessary to support success, one example of which is learning media (Safitri et al., 2020; Suh & Ahn, 2022). Along with the development of the current digital era, educators are expected to be able to choose technology-based learning media (B. Kurniawan et al., 2021; Rajendra & Sudana, 2018).

Educators have an important role in determining the success of the learning process so that educators are expected to be able to maximize the use of technology in learning. The use of technology is now widely used because people believe that technology can improve the quality of human resources and create new breakthroughs in learning (Ma'aruf et al., 2019; Santoso et al., 2016). From an educator's perspective, the maximum use of technology as a learning medium can support the educational process, especially in the learning process and help make it easier for educators to prepare and deliver learning material. From a student's perspective, the use of technology as an appropriate learning medium is very helpful in making learning easier and can produce good quality learning outcomes (Estuhono et al., 2023; Windawati & Koeswanti, 2021). The increasingly advanced development of science and technology allows for better packaging, presentation and creation of interactive learning media or multimedia. Learning media using smartphones based on Android applications is an innovation in learning. Currently, smartphones with the Android operating system are the choice as a possible learning revolution and a strong foundation. Many learning resources and learning media based on Android applications are starting to be developed (Kusumayanti et al., 2022; Seviana et al., 2023). In recent years, learning media has begun to be developed based on Android applications on smartphones (Afnan et al., 2022; Anindita et al., 2022). Most students today are used to the Android operating system on smartphones and enjoy playing online games, so they want media and learning resources that are easy to install, don't use up a lot of internet quota to access them, and provide interaction like when playing online games. Based on this, it is felt that there is a need for more interactive technology-based learning media that can provide interaction between students and the learning media itself, one of which is educational game learning media based on Android applications. The small and easy-to-carry characteristics of Android smartphones allow users to access them anytime and anywhere (Putra & Nurafni, 2021). With the innovation of Android-based educational game learning media, it is hoped that it will be able to provide changes in the learning atmosphere that are easier and more enjoyable, so that it can improve student learning outcomes.

However, based on the results of observations made, the problem that is often encountered today is that instead of improving student learning outcomes, using digital media such as *games* education, the learning process actually still uses conventional learning models or lectures, this causes students to feel bored and unenthusiastic about the explanations given by teachers, most teachers have not been able to utilize technology to produce digital-based learning. This is because most teachers are still constrained by the method and process of creating electronic learning media, both in terms of mastering programming techniques and visual appearance or design (Mahmud & Cempaka, 2022; Qurrotaini et al., 2020). Students' disinterest in participating in learning and lack of interaction between students and teachers causes the quality of learning to be less than optimal, and has an impact on decreasing learning outcomes (Nugroho et al., 2022). Now students tend to use digital media as the main source of information to obtain the information they need. Apart from the ease and speed of access to information, the internet also has a negative impact. Searching for information on the internet often causes several problems (Ramdani et al., 2020; Windawati & Koeswanti, 2021) (Hakim & Pitoyo, 2022).

Based on the results of interviews with two teachers at SD Negeri 4 Karangasem, Karangasem District, Karangasem Regency, it was found that these teachers had used technology in the field of learning but it was not optimal, only limited to accessing YouTube, Google and other platforms that had been used by teachers so that students become more interested and don't feel bored. However, the use of technology still feels less than optimal. Researchers can also prove this by distributing online questionnaires to grade 5 teachers and students in Gugus 1 Karangasem for the 2022/2023 academic year starting from 20 to 28 2023 regarding the use of learning media, the results show that out of 8 grade 5 teachers, 60 % of them stated that the learning media used in science content only used image media in textbooks. 40% of teachers expressed a desire to develop learning media that is relevant to current conditions, especially science content. 70% of students stated that they were no longer interested in science content material which only used learning media in the form of pictures taken from textbooks or some additional image media taken from the internet, and it was really necessary to develop interactive learning media that could be controlled independently based on Android which had been owned, with educational game learning media content.

Instructional Media games Good Android-based education can not only be used to attract students' interest in learning, it would be even better if it could be integrated or contain local wisdom that exists in the area (Pratiwi et al., 2023). To maintain local wisdom, parents from previous generations will pass it on to their children and so on. Considering that local wisdom is an old idea and is decades old, the local wisdom that exists in an area is very attached and difficult to separate from the people who live in that area (Nugraha et al., 2019; Yasa et al., 2022). Sadly, even though many older people still try to pass on the local wisdom and outlook on life that they got from their ancestors, many young people actually think that the local wisdom and traditional outlook on life that has been passed down from their ancestors are ancient views and thoughts that are no longer relevant to today's modern times. In fact, it is the local wisdom that is maintained that makes a community so unique and different from communities living in other areas (Jumriani et al., 2021; Nengsih, 2020). As educators, teachers are required to be able to apply the principle of "Think Globally, Act Locally" in implementing learning in schools. On the island of Bali there is a phenomenon of learning about educational values through songs known as dolanan songs or in Balinese known as *Sekar Rare or Gending Rare*. Gending Rare has many benefits in the process of character formation, because *Gending Rare* contains many moral values including historical values, harmony values, social values, honesty values, cultural values, nationalism, respect for other people, and many other positive values (Mahayanti & Haryati, 2021). Not just songs (gending), but every lyric of the *Gending Rare* contains many moral values and cultural elements in it. Therefore, *gending rare* activities must be carried out frequently to introduce Balinese culture and instill moral values from an early age. This is done to increase children's interest or interest in *gending rare* so that it can minimize the extinction of *gending rare* so that it is not eroded by the times (Gabriel Matanari et al., 2022). This *gending rare* can also be integrated into learning content, for example as an example of a food chain in science subjects. In this research, the *gendings rare* used are meong-meow and interpreter scatter because the characters in them are in accordance with the science learning material.

Previous research findings stated that learning media can make learning activities more interesting and enjoyable so that it will foster motivation and interest in learning in students, make it easier to convey material so that it will be easy for students to understand, make learning methods more varied, make students active so that not easily bored (Windawati & Koeswanti, 2021). Learning media is also useful for stimulating children's interest in learning, so that students' memory becomes stronger. One example of media is games. Games that have educational content are better known as educational games. This educational type game aims to stimulate interest in learning about the subject matter while playing, so that with a feeling of enjoyment it is hoped that it will be easier to understand the subject matter presented (Balkaya & Akkucuk, 2021; Santika et al., 2020). Games have the potential to revive children's declining learning motivation. The use of games is very useful in materials related to mathematics, physics and language skills such as social studies, biology and logic (Laswadi et al., 2023; Wulansari & Dwiyanti, 2021). In general, teachers in science learning only guide students to memorize the material without giving students the opportunity to explore their own thoughts and explore. The use of Android-based educational game learning media in science subjects in grade 5 elementary school is expected to be effective in improving student learning outcomes. Based on the description above, it is deemed necessary to design and develop learning media in the form of Android-based educational games for science learning in Grade 5 Elementary School.

Android-based educational game learning media containing local wisdom, Gending Rare, is one of the uses of technology in learning that can provide students with the experience of using interactive learning media. By packaging Android-based educational game learning media containing *gending rare* local wisdom into an Android application, the use of smartphones for learning will be maximized which will also attract students' interest in learning because they can be used with smartphones. Apart from that, by integrating the local wisdom content of *gending rare* into learning materials by utilizing educational game learning media, it is hoped that it can make students more critical and feel proud of the local wisdom of *gending rare* in Bali. The aim of this research is to create Android-based educational game learning media containing *gending rare* local wisdom in science learning in Grade 5 Elementary School.

2. METHOD

The type of research used in this research is development research. Development research can be interpreted as a scientific way to research, design, produce and test the validity of products that have been produced (Sugiyono, 2019). The aim of this research is to develop and produce an Android-based educational game containing local wisdom about *gending rare* in science subjects for grade 5 elementary school. This research uses the ADDIE development research model. This model is divided into five steps, namely analysis (analyze) which is the stage of analyzing needs, environment and materials, design (design)

which is the initial design stage of the product to be developed, development (development) which is the stage of making the product according to a predetermined design , implementation, which is the stage of testing the product in the field, and evaluation, which is the final stage of perfecting the product. The selection of this model was based on the consideration that this model was developed systematically and based on the theoretical foundations of learning design (Nugraha et al., 2019). The ADDIE development model has advantages because at all stages it always goes through an evaluation stage first, so that it can reduce errors or shortcomings, no matter how small, from the start (Dwiqi et al., 2020). The subjects of this research were media experts, material experts, teachers as practitioners and fifth grade students at SD Negeri 4 Karangasem. In this development research, the data collected is quantitative data obtained based on validation instruments and practicality instruments in the form of assessment scores, and data on pre-test and post-test results carried out on product effectiveness tests through field tests. In testing the effectiveness of the product, its effectiveness is tested on student learning outcomes using the grid in Table 1.

Table 1. The Learning Outcome Instrument Grid

No.	Basic competencies	Indicator	Cognitive Process Dimensions	No. Item	Number of Items
1	3.5 Analyze the relationship between ecosystem components and food webs in the surrounding environment	3.5.1 Explain the relationships between living things in the food web in an ecosystem	C2	1,2,3,4, 5,6,7,8 9,10	10
		3.5.2 Analyze the causes and effects of changes on the survival of ecosystem components in a food web	C4	11,12, 13,14, 15,16, 17,18, 19,20	10
		Total			**20**

Data comes from the results of validity and practicality tests by experts, teachers and students. The experts who assess are lecturers who are experts in their field. Meanwhile, teachers and students come from Cluster 1, Karangasem District. Data was collected using test and non-test methods. The test method is used to obtain learning outcome data to test the effectiveness of the media. Meanwhile, non-tests are used to obtain assessments from experts and practitioners as a media suitability test. The data was analyzed using qualitative descriptive analysis, namely in the form of suggestions from assessors and quantitative analysis, namely processing data from validity, practicality and effectiveness tests. Analysis of validity and practicality test data was analyzed using percentages. Meanwhile, the analysis of the effectiveness test data was analyzed using a correlated sample t-test to determine the difference between the pretest and posttest results.

3. RESULT AND DISCUSSION

Result

The results of the research include design, validity, practicality and effectiveness of Android-based educational game learning media containing *gending rare* local wisdom in grade 5 elementary school science subjects. First, the analysis stage produces data that becomes the basis for product creation, such as analysis of needs, environment and materials. Android application-based learning media for students that can provide experiences such as playing online games. From the environmental analysis, it was found that the school has facilities that can be used to support the learning process, such as laptops and LCD projectors. From the material aspect, science learning will be integrated with the local wisdom content of *gending rare*, namely Mameong-meongan and Juru Pencar. Second, the design stage which produces the product design. This educational game learning media was created so that it can be installed on an Android smartphone. How to install this application is very easy, namely open the file in apk format then click install. After the application is installed on the Android smartphone, a notification display will appear that the Gending Rare game application has been installed and can be used. Next, click "Open" to start using the *gending rare* game application. The design of the Android-based educational game learning media containing local wisdom of *gending rare* in science subjects for grade 5 elementary school was made based on a storyboard/storyline and the material that has been prepared can be seen in Table 2.

Table 2. The Learning Media Design Storyline

Pages/Features	Content Description
Login Page	This feature is used to enter educational game media
Menu Options	The Menu option is used to access several Android Application Based Educational Game Learning Media contents, namely Basic Competencies and Indicators, Learning Materials, Evaluation, Educational Games, Developer Profile, Instructions and Exit
The science learning material contains local wisdom about gending rare	Contains learning material in the form of text and images, learning material on ecosystems, food chains and videos of rare meow-meow and scatter interpreter
Basic competencies	Contains Basic Competencies and learning objectives
Evaluation	Evaluation to determine the user's pass rate in completing learning
*Games*Education	Contains simple games
Developer Profile	Contains profiles of educational game learning media developers
Instruction	Contains instructions for operating educational games
Go out	Feature to exit the program

A diagram of Android-Based Educational Game Learning Media Containing *Gending Rare* Local Wisdom in Science Subjects for Grade 5 Elementary School can be seen in Figure 1.
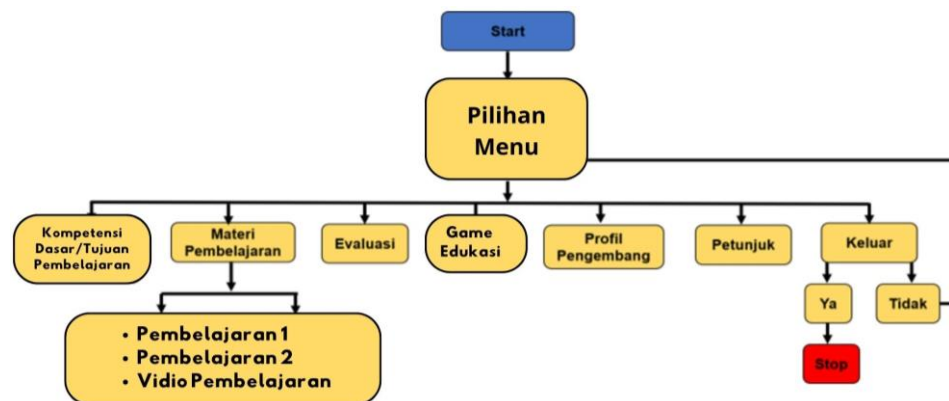

Figure 1. Flowchart of Learning Media for Android-Based Educational Games Containing Local Wisdom of *Gending Rare* in Science Subjects for Grade 5 Elementary School

Third, the development stage is carried out by making the product. Creating learning media products begins with collecting assets such as images, videos, materials, and creating navigation icons. The next step is to combine all these assets into a power point. The multimedia development process uses PowerPoint, Ispring Suite 11, Smart App Creator, and APK Builder. The process of developing the Gending Rare educational game starts from creating a PowerPoint, then converting the Gending Rare Game PowerPoint file into an HTML file using Ispring Suite 11. The PowerPoint file which has become HTML, is then converted into an APK file so that it can be used on Android phones. Below are several pictures of the results of the development of Android-based educational game learning media containing the local wisdom of *Gending Rare.*

The start page is the opening page of the Android-based educational game learning media containing the local wisdom of the *gending rare* that was developed. This page consists of written game titles and accompanied by interesting images. After the start page, a menu option appears consisting of basic competencies, developer profile, learning materials, educational games, evaluation and instructions. There is a home button which functions to direct the user to return to the main menu page and a close button (X) to close the main menu page. The instructions section contains instructions for using the application which consists of the main menu, back to return to the previous page, next to go to the next page, material menu and start to get started. The developer profile menu displays the personal data of the developer of Android-based educational game learning media containing *gending rare* local wisdom, consisting of name, student identification number, study program and supervisor. In the competency menu there is a sub-menu of basic competencies, and learning objectives which are adapted to the implementation of the 2013 curriculum. Basic competencies are derived from the syllabus, then formulated into indicators of competency

achievement and learning objectives. The material page displays teaching materials in the form of material text, pictures and learning videos containing local wisdom about gending rare. The learning material consists of ecosystem and food chain material, while the learning videos presented are in the form of the rare meong-meow song and scatter interpreter. The evaluation menu contains ten multiple choice questions equipped with attractive images to measure students' understanding of the material presented. On the educational games page there are three types of word-composing games which aim to test students' understanding of the material they have studied. The development results are presented in Figure 2.

Figure 2. Media Development Results

The educational game learning media design that has been completed is then published as an HTML5 media file. This HTML5 media file can be run on a computer or laptop. Because the educational game learning media being developed will be Android-based which can be installed on smartphones, the HTML5 media files must be packaged into Android application files with Website 2 APK Builder software. Several things to prepare before converting an HTML5 file into an application file include the application cover and splash screen. The application cover and splashscreen were created using Adobe Photoshop. Once the cover and splashscreen are ready, proceed with packaging the HTML5 file into an Android application with Website 2 APK Builder software. The educational game learning media design that has been packaged into an Android application file is saved with the file name "Gending Rare Educational Game _2_1.0.apk" which can be installed on an Android smartphone. Based on the explanation regarding the design of educational game learning media containing local wisdom of gending rare in 5th grade elementary school science learning above, it can be concluded that the educational game learning media design developed contains elements in the form of navigation buttons, text, audio, animation and video, which allows users to interact with educational game learning media programs. The final result of the educational game learning media design is an application (APK) that can be installed on an Android smartphone. After the product has been designed, its validity will be tested through media and material validity tests as well as practicality tests.

The validity test was carried out on two lecturers who were experts in learning media and two lecturers who were experts in elementary science learning materials. Based on trials and filling out questionnaires/questionnaires by two learning media expert lecturers, the results obtained were that the percentage level of achievement of educational game learning media designs from the results of learning media expert trials was 91.00% with the qualification "Very Valid" and suitable for use with a percentage level The achievement of the educational game learning media design from the results of expert trials on elementary school science learning materials was 94.16% with the qualification "Very Valid" and suitable for use. Based on the results of the validity test by learning media experts and elementary school science learning material experts, it can be concluded that the validity of the Android-based educational game learning media containing *gending rare* local wisdom in grade 5 elementary school science learning has met the validity criteria that have been determined and is in the "Very Valid and Qualified" qualification. Worth using." The practicality test was carried out on 3 grade 5 teachers in Gugus 1 Karangasem District as practitioners and 6 grade 5 students at SD Negeri 4 Karangasem. Based on trials and filling out questionnaires by three practitioners, it was found that the percentage of practical achievement level for educational game learning media designs from the results of individual trials was 97.62% with the qualification "Very Practical and Interesting". Meanwhile, based on the results of trials and filling out questionnaires by 6 students, it was found that the percentage of practical achievement level for designing educational game learning media from small group trials was 96.67% with the qualification "Very Practical and Interesting". At this testing stage there are no suggestions or input, so that the Android-based educational game learning media containing local wisdom of *gending rare* in 5th grade elementary school science learning does not need to be revised again and is suitable for use. Based on the results of practicality tests by practitioners (teachers) and student responses, it can be concluded that the practicality of the Android-based educational game learning media containing *gending rare* local wisdom in grade 5 elementary school science learning has met the predetermined practicality criteria and is in the "Very Practical and Interesting" qualification.

At the implementation stage, the product will be tested for effectiveness. Based on the results of testing the validity and practicality of Android-based educational game learning media containing *gending rare* local wisdom in 5th grade elementary school science learning, it is known that the educational game learning media is valid, practical and suitable for use. Furthermore, educational game learning media was implemented to test its effectiveness on the science learning outcomes of grade 5 elementary school students. The effectiveness test was carried out using a multiple-choice question test method on 25 class V students of SD Negeri 4 Karangasem through pretest and posttest. The students' pretest and posttest results are attached in attachment 15 on page 215. The pretest and posttest results were then analyzed using a correlated sample t-test to determine the differences between before and after the use of educational game learning media. Before carrying out the t-test for correlated samples, the analysis prerequisite tests are first carried out, namely normality and homogeneity tests.

The normality test in this study used the Shaviro - Wilk test which was calculated with the help of the IBM SPSS Statistics 25 program at a significance level of 0.05. Based on the results of the normality test that has been carried out, the results obtained show that the group of student learning outcomes data before and after the use of educational game learning media has a significance value of more than 0.05, namely 0.228 and 0.071. This means that the student learning outcomes data group is normally distributed. The homogeneity test in this study used computer assistance with the IBM SPSS Statistics 25 program at a significance level of 0.05. Based on the results of the homogeneity test that was carried out, the results obtained were that the Levene Statistics significance value of student learning outcome data before and after the use of educational game learning media had a significance value of more than 0.05, namely 0.644. These results indicate that student learning outcome data has a homogeneous variance. Next, an effectiveness test analysis will be carried out through hypothesis testing with t-test analysis. Hypothesis testing uses a correlated sample t-test assisted by the IBM SPSS Statistics 25 program at a significance level of 0.05. Based on the data analysis that has been carried out, the results obtained are presented in Table 3.

Table 3. The Results of Data Analysis of Student Learning Outcomes before and after using Learning Media using Correlated Sample t-test

Learning outcomes	Average	t	df	Significance
Post-Test	81.60	20.998	24	0.00
Pre-Test	59.68			

Based on Table 3, it is known that the average pre-test score is 59.68 and post-test is 81.60 with a significance value of less than 0.05, namely 0.00. With these results, H1 is accepted, where there is a significant difference in student learning outcomes before and after using the product. So, it can be concluded that the Android-based educational game learning media containing *gending rare* local wisdom in Grade 5 elementary school science learning is effective in improving students' science learning outcomes. The final stage is the evaluation stage. At this stage, finishing is carried out on the product being developed. At each stage in the development of Android-based educational game learning media, there are evaluations and revisions carried out for the sake of feedback for developers and improvements to the resulting Android-based educational game learning media. After this stage, the product is declared complete so that the Android-based educational game containing local wisdom of *gending rare* in Grade 5 elementary school science learning can become a viable learning medium.

Discussion

This development research resulted in Android-based educational game learning media containing local wisdom of *gendings rare* in grade 5 elementary school science learning. Based on the results of product validity tests that have been carried out, the Android-based educational game learning media containing the local wisdom of *gending rare* that was developed was declared valid, practical, and effective in improving the science learning outcomes of 5th grade elementary school students. This Android-based educational game learning media containing the local wisdom of *gending rare* was developed using a smart app creator with the final result being an application (APK) that can be installed on a smartphone. Packaging educational game learning media in the form of applications (APK) aims to ensure that students have a better learning experience when using technology-based learning media using smartphones. Learning media that utilizes smartphones can increase students' interest in learning (Abdul Karim et al., 2020). The characteristics of Android smartphones, which are small and easy to carry, allow students to access them anytime and anywhere. Using Android smartphones as a learning medium has advantages compared to using computer media, namely that it is easier to use, many people use it and can be used anywhere (Handayani & Rahayu, 2020; Negara et al., 2019). Based on this, it is hoped that it will make it easier for

students to use and utilize learning media in their learning process, and can provide a more meaningful and enjoyable learning experience.

The contents and content of the material in this educational game learning media were developed based on basic competencies and indicators that have been determined based on analysis of food chain material which is integrated with the content of the local wisdom of gending rare, namely Mememong-meongan and Juru Pemar. The integration of learning materials with the local wisdom content of gending rare in the educational game learning media aims to introduce students to local wisdom in the region, especially gending rare. By integrating the local wisdom content of gending rare in the educational game learning media, the existence of *gending rare* will be maintained in the current era current globalization. *Gending rare* in this educational game learning media are presented in videos and included in learning materials. However, the values of gending rare can still be conveyed to students and can help students understand the learning material more easily. The benefit of using video media in learning is that it makes the message conveyed more interesting, where with attention there will be stimulation and motivation for student learning (Mahayanti & Haryati, 2021; Nugraha et al., 2019). Based on this, by presenting the *gending rare* in video form on educational game learning media, it will give students a strong impression and memory regarding the values contained in the *gending rare.*

Android-based educational game learning media containing *gending rare* local wisdom in grade 5 elementary school science learning that has been developed, has very valid qualifications and is suitable for use based on the results of trials that have been carried out on learning media experts and elementary school science learning content/content experts. Qualifications that are very valid and suitable for use can be achieved due to the appropriate use of educational game learning media elements such as text, images, audio, animation in conveying learning messages, as well as interactivity and packaging that is done well. The use of elements in learning media, namely in the form of clear writing, layout, illustrations, learning videos that are easy to understand, and good display design, makes it easier for students to understand the material being taught (Asri & Yermiandhoko, 2018; Firmansyah et al., 2021; Khairini & Yogica, 2021). In terms of interactiveness, educational game learning media must have good interactivity or accessibility so that it allows users to interact actively with the program. Educational games are something that is educational, has educational elements (Febriansyah et al., 2021). Educational games are designed for education by inserting certain learning materials into the game so that users or players are not stressed by studying too seriously (Mujiyanto, 2022; Windawati & Koeswanti, 2021; Zulfah, 2023). Educational games are games that are packaged to stimulate thinking power, including increasing concentration and solving problems (YI Kurniawan et al., 2021).

Obtaining qualifications that are very valid and suitable for use can also be achieved because the media developed already includes basic competencies and clear learning indicators, the content and integration of material with concise local wisdom content so that it attracts more students' attention and interest in learning, the use of language and sentences is developmentally appropriate. students, and the suitability of evaluation questions with clear material and work instructions. Apart from that, the use of good language in educational game learning media will be able to help students understand the content of the media easily, so that misconceptions do not occur (Nugraha et al., 2019; Ramdani et al., 2020). Integrating the local wisdom of gending rare with learning materials makes educational game learning media more interesting and helps students understand the learning material. Android-based educational game learning media containing *gending rare* local wisdom in science learning for grade 5 elementary school also achieves very practical and interesting qualifications. These results were achieved due to the attractive appearance of educational game learning media and the easy use of educational game learning media both in installation and operation on smartphones. This is in line with the results of research conducted by (Khairini & Yogica, 2021) namely, the presentation of interesting learning media is in accordance with the learning objectives, has a systematic sequence, can provide motivation, and has complete information. Educational games are games that are designed according to certain curriculum objectives for learning and often these educational games are created to help with practical learning (Ayuningrum & Afif, 2016). Besides that, (Sulistyan et al., 2022) also stated that the practicality of media lies in its ease of use and navigation so that users do not need to learn the entire media to operate it. Based on this, the practicality and attractiveness of educational game learning media is very important because it can increase students' enthusiasm and interest in studying the material well.

Android-based educational game learning media containing local wisdom of *gending rare* in 5th grade elementary school science learning is also effective for 5th grade elementary school students' science learning outcomes. Based on the results of effectiveness tests carried out by providing pretests and posttests, it is known that there is a significant difference between student learning outcomes before and after using educational game learning media. This shows that the use of Android-based educational game learning media containing *gending rare* local wisdom in grade 5 elementary school science learning is

effective in improving students' science learning outcomes. The use of educational game learning media can improve student learning outcomes, because educational game learning media makes it easier for students to understand learning material, compared to just using textbooks (Rofiq et al., 2019). The use of local wisdom-oriented learning media is effective in improving student learning outcomes (Citra & Rosy, 2020; Nugraha et al., 2019). Several reasons strengthen the use of educational game learning media which is very necessary in the learning process, namely that the messages conveyed in the material feel more real because they are presented to the naked eye, stimulate various senses so that interaction between the senses occurs, visualization in the form of text, images, audio, Videos and animations will be better remembered and captured by students, and the learning process will become practical and controlled.

The advantage of the Android-based educational game learning media containing local wisdom of *gending rare* for grade 5 elementary school science subjects that was developed is that installation and use on digital smartphones is easy and practical without having to take up a lot of storage space (Arisandy et al., 2021; Risnani & Adita, 2018; Widyastuti & Puspita, 2020; Zulfah, 2023). Educational game learning media is packaged attractively by paying attention to the composition of various media such as text, images, audio, video, animation and interactivity so that students are interested and happy when running the application. The local wisdom content of gending rare is integrated with learning materials, adding to the attractiveness of this educational game learning media, so that students become more familiar with the values contained in it. This is intended to instill a sense of pride and critical thinking in students so that they grow a sense of ownership and maintain existing local wisdom and can apply the values contained in life. The use of media in the form of educational games in the learning process can be used as a tool that can change the learning process which usually tends to be carried out conventionally in a room to be carried out anytime and anywhere according to students' learning needs.

This finding is reinforced by previous research findings stating that creating learning media in the form of educational game media will also be effective in increasing students' learning motivation (Atmaja & Widodo, 2022; Delvytra & Hidayati, 2023). This research has produced a product in the form of an Android-based educational game learning media containing local wisdom of *gending rare* in grade 5 elementary school science subjects that is valid, practical and effective based on trials that have been carried out. The implications of this research are; Firstly, the product is packaged in the form of an Android application that can be installed on a smartphone so that the use of the smartphone as a technology-based learning medium can be utilized optimally. Apart from that, students also get a more meaningful learning experience and better interaction when using technology-based learning media; secondly, with the existence of this product in the 5th grade elementary school science subjects, it adds to the types of learning media with local local wisdom content based on technology that is more interactive, and can be utilized by teachers and students in the learning process, so that learning will be more interesting and have an impact on learning outcomes better students; third, the use of products in grade 5 elementary school science subjects in the learning process indirectly trains teachers and students in using technology which is a demand in future life. And fourth, the results of this research can be used as a reference for other researchers who want to develop similar products. This research has the advantage of integrating local culture in digital media so as to produce products that are modern and uphold cultural sustainability. This is what differentiates this research from previous research. However, this research certainly has limitations because it only focuses on solving problems with learning outcomes and learning strategies. If other problems are found, the results of this research cannot yet be used as the most appropriate solution. So, it is recommended for other researchers to develop this product better according to the needs that have been analyzed.

4. CONCLUSION

Android-based educational game learning media containing *gending rare* local wisdom in Grade 5 elementary school science subjects is valid, practical and effective for improving students' science learning outcomes. Thus, the product resulting from this research can be a solution to the problems found in this research. The advice that can be given is that teachers can use this product and always improve their competence in using technology in learning, so that they can innovate in making educational game learning media with material discussion and other local wisdom content. School principals are advised to provide support and motivation to students to be able to create and develop educational game learning media with material and other local wisdom content. Other researchers are advised to test experimentally, and can develop educational game learning media with material discussion and other local wisdom content.

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