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The Development of Quiz Game Learning Media for Javanese Script Reading Skills for Fifth-Grade Elementary School Students

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Abstract

This study aims to describe the quiz game learning media development for the Javanese script reading skill for fifth-grade students at SD Mangkubumen Kidul, Laweyan Sub-district, Surakarta. This research was included in R & D (research and development) and reached the development stage. The subjects of this study were the fifth-grade students of SD Mangkubumen Kidul, totaling eight students. Sources of data came from students and teachers. Data collection techniques employed interviews and document analysis. The validation technique was carried out by material experts, media experts, and expert practitioners. The results of this product were in a good category, with the percentage of material experts of 88.54%, media experts of 98.75, and expert practitioners of 85.22%. The process of making learning media utilized Construct2 to build programs and Adobe Photoshop CS6 and CorelDRAW X5 to create graphic designs. The final result of this research is a quiz game learning media for Javanese script reading skills that can be accessed via a device or smartphone.

Keywords: Media learning, reading skills, elementary school, Javanese script

Introduction

Javanese is one of the regional languages in Indonesia and is a language with many users. Here, the existence of Javanese language subjects contributes to education as an introduction to regional languages in Indonesia. Education can be applied through learning, in which there is a process of interaction between educators and students to achieve learning goals and develop the potential of students (Wardani 2016)each cycle consisting of planning, action, observation, and reflection. The subjects of this research are the teacher and students of 4th grade in Dadapsari No 129 SurakartaElementary School. The data collectingtechniques of this research are observation, interview, and documentation. The data validity of this research is tested using sourcetriangulation and technique triangulation. The data analysis technique used is interactive analysismodel. The result of this research was shown that implementation of QuantumTeaching model can improve social skill (responsibility and communicative. One of the ways to introduce regional languages in Indonesia is through reading activities. Reading activity is to understand and obtain information or knowledge from a text conveyed by the author. Efforts to understand the writing content require reading skills that must be considered to obtain the objectives of reading activities (Rahayu and Riska 2018). Students who do not have or have not been able to master reading skills well will experience problems in learning because almost all learning activities involve reading activities(Budiawan, M. A., Wimarni, R., & Sriyanto 2020). Moreover, a reading activity is not passive but accepts, rejects, compares, and believes in opinions in a reading (Ilmaknun 2020). In this case, reading the Javanese script is included in the mandatory material learned in Javanese language learning, starting from the elementary school to the high school level (Setianingrum 2016).

Along the way, people now think that using a foreign language will have more prestige than using the national language, let alone the regional language. It undoubtedly makes the existence of regional languages the final priority, and if it is left unchecked, regional languages can eventually become extinct. People also tend to use foreign or national languagesto facilitate communication and reach all regions. In addition, the use of foreign languages by the community is deemed more educated and has higher social strata. Conversely, regional languages are considered to have lower social strata (Widianto 2018). Under Central Java Governor Regulation Number 57 of 2013 concerning Instructions for Implementing Regional Regulations of Central Java Province Number 9 of 2012 regarding Javanese Language, Literature, and Script, Javanese language lessons are still available. For the Javanese script itself,

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even though it has been studied at school, some students still have difficulty assuming that the Javanese script has complicated forms and writing rules (Avianto and Prasida 2018).

Moreover, reading skills are part of one of the language skills besides listening, speaking, and writing. Reading is also one of the language skills in the form of active activities of readers to obtain information conveyed by the author through written language media (Hidayat 2018). In addition, reading can open a window of knowledge, which will add and expand knowledge in various fields. Reading is also a basic need for every group, such as students, academics, practitioners, to the general public, to get to know something (Muhsyanur 2019). Therefore, reading is part of the main teaching at the next level of education (Aida 2018).

On the other hand, learning media is an essential component of learning (Sumiharsono and Hasanah 2017). Learning media is more directed in the form of a tool, means, intermediary, and liaison, which is useful for spreading, carrying, and conveying the contents of a message and idea to stimulate the thoughts, feelings, actions, interests, and attention of students so that the teaching and learning process occurs (Cahyadi 2019). For material delivery, learning media can be hardware or software that can foster stimulation in thinking and interest in learning (Jalinus and Ambiyar 2016).

Furthermore, the development stage carried out in this study used a modification of the ten steps of Borg and Gall, which was simplified into three stages by referring to the data results obtained from the initial needs analysis in the preliminary study. This stage included product design, design validation, design revisions, data analysis techniques, product revisions, and evaluation of improvements. The following is an overview of the research design used.

In this case, a quiz game is where the player plays the role of one of the participants and answers various questions asked to win the quiz (Rohmah and Sumarsih 2017).

Quiz games are in the form of software specifically designed to improve learning outcomes by making practice questions (Adiwisastra 2016). In this study, the learning media was designed in the form of *a drag and drop game*, which can be used on smartphones utilizing the Construct2 application to design the entire game and the help of Adobe Photoshop CS6 and CorelDRAW X5 to create graphic designs. The media that had become a game was then uploaded to Adobe PhoneGap Build to be downloaded by students.

Based on the previous research results, an android-based quiz application about folklore has been developed, equipped with games to improve students' ability to understand folklore material (Saidah and Damariswara 2021). An application is also utilized to introduce language vocabulary, which is effectively used for young students (Santosa, Pratama, and Putra 2020). Game-based application development also positively responded to students (Haridhi and Susanto, 2020). Currently, many mobile-based applications are being developed for learning, but the most positive response is the utilization of games (Wei et al. 2015)as well as the teaching efficiency of creative design, by introducing augmented reality (AR. Supported by the research results on the effectiveness of android-based quiz games on thematic subjects, the results of student response questionnaires obtained a score of 82%, in which the criteria were very good, so it was feasible and very effective in improving the quality of learning (Amelia 2021).

For this reason, this research is crucial because students today cannot be separated from technology. Using games is an alternative to keep up with the rapid technological advances in the 21st century. In addition, the development of elementary school students is currently surrounded by the digital world, affecting how they respond to learning. Atsusi (2014) suggested that carrying out learning using traditional methods is unsuitable for today's students because many things have changed. These changes are due to the influence of TV, the internet, cellphones, and others. In this case, if teachers still use conventional media, they will not keep up with the swift development of technology, so the quality of learning will not increase.

Accordingly, this study aims to develop an android-based game media to empower Javanese script reading skills for elementary school students. Hopefully, with the developed media, students' ability to read Javanese scripts can increase so that cultural values can be preserved for current and future generations.

Method

Research Design

The researchers used a development research design known as research and development. The development research method aims to produce a product and test its effectiveness (Sugiyono 2015). The development of educational research can produce entirely new products, combinations of existing products, or improvements to previous products (Budiyono 2017). This development research employed ten R & D research steps from Borg and Gall, modified into three stages preliminary studies, model development, and model testing (Sukmadinata Syaodih 2012).This research only reached the second stage, or model development, due to the limited time and ability of the researchers.

The preliminary study stage in this research employed qualitative methods. Qualitative methods are used to examine objects naturally, and researchers are key instruments to emphasize the results in the form of meaning (Sugiyono 2014). The data used in this preliminary study were teacher interviews, interviews with students, and document analysis.

Furthermore, the development stage carried out in this study used a modification of the ten steps of Borg and Gall,

which was simplified into three stages by referring to the data results obtained from the initial needs analysis in the preliminary study. This stage included product design, design validation, design revisions, data analysis techniques, product revisions, and evaluation of improvements. The following is an overview of the research design used.

Population and Sample/ Study Group/Participants

This research was conducted at SD N Mangkubumen Kidul No. 16 in Jl. Doctor Moewardi No. 52, Penumping, Laweyan Sub-district, Surakarta City, Central Java. The researchers chose SD N Mangkubumen Kidul No. 16 as a place of research due to the basic problem of the lack of learning media for Javanese language subjects at this elementary school so that it could be used for development research. The sampling technique used was purposive sampling. The selection of elementary schools was based on school quality, included in the superior category, the ability of teachers to use IT-based media, students' readiness to use IT-based media, and facilities supporting the utilization of learning media.

Data Collection

The data collection techniques used are as follows:

Interviews

Interviews conducted in the preliminary study used an open interview type. This interview was used to discover the problems in learning media and determine the teacher's needs for learning media to be developed. In preparing the interview draft, the researchers were based on the outline of questions related to the required learning media information. Aspects asked in the interview included students' skills in writing Javanese script, the media utilized in learning to read Javanese script so far, the readiness of teachers to face digital-based learning, students' readiness to use digital-based learning media, and student needs analysis related to the learning media to be developed.

Document Analysis

Document analysis in this study aimed to complete the additional needs of the researchers. The data comprised curriculum, syllabus, student and teacher books, and teaching materials used in learning.

Questionnaire

This stage was in the form of an assessment of the design of the developed product prototype. The assessment was based on rational thinking by experts. Validation can be done by presenting experienced experts to assess the product and discover its advantages and disadvantages (Sugiyono 2015). The validators in this study involved media experts and practitioner experts.

A product feasibility analysis was obtained from assessment data carried out by material experts, media experts, and expert practitioners. The questionnaire results were analyzed descriptively and quantitatively. Assessments from experts were still in the form of scores or numbers, so conversion was needed to know the quality of the products developed. The way to change the form of the score into quantitative descriptive conversion is as follows:

- Changing the Likert scale questionnaire with a score to find the gradation (Sugiyono 2015).

Calculating the total score and the mean score for each component (Lestari 2015)

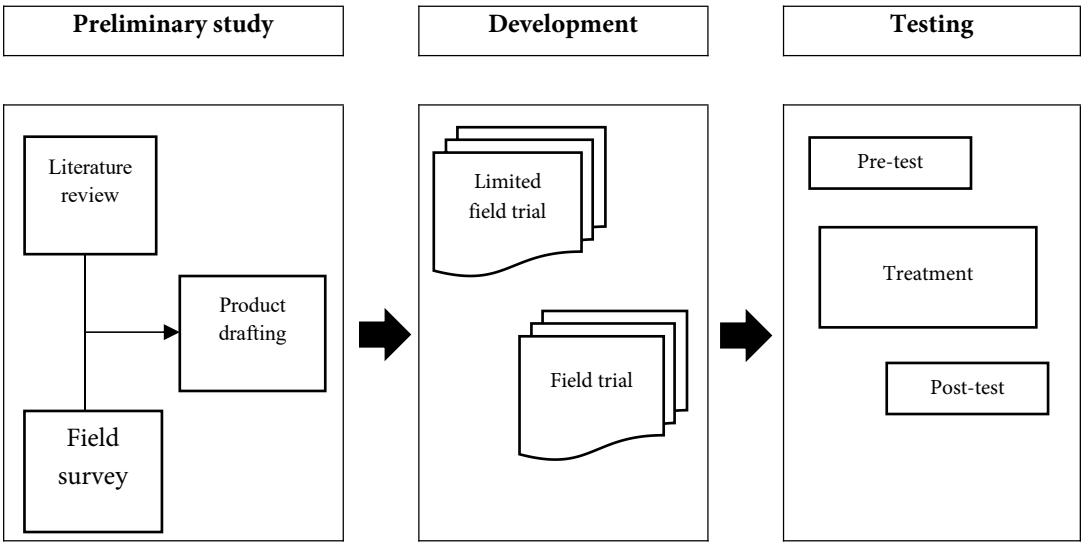

Fig. 1: Research and Development Modification of Borg and Gall (Sukmadinata, 2013:184-189)

$$X \frac{\sum fx}{n}$$

Description

X : Mean score
Σ*fx* : Total score
n : Number of components

– The mean score obtained was then converted into a qualitative descriptive conversion using the Djemari Mardapi formula (Lestari 2016) to a scale value of four.

Data Analysis

(Ahyar, Andriyani, and Sukmana 2020) explained data validity as a form of degree of accuracy between existing data and data reported by researchers. The data validity test was held to determine how valid an instrument was. The data are said to be valid if the data reported by the researchers are the same as the actual situation. The researchers employed the data validity triangulation technique to check the data validity and biases in the study, namely source triangulation, using different sources through the same technique (Ahyar et al. 2020).

The data obtained in this stage were analyzed using interactive analysis techniques disclosed by (Miles, Huberman, and Saldana 2014): (1) Data collection is an integral part of data analysis activities. This study's data collection activities used interviews, questionnaires, and documentation studies. (2) Data reduction (data condensation) is the process of summarizing, selecting the main things, focusing on the important things, and discarding the unnecessary. It was intended that the reduced data provided a clearer picture and made it easier for researchers to collect further data. Researchers did data reduction by selecting and summarizing matters relating to the problem under study. (3) The data display describes a structured information set, which allows concluding and taking action. The qualitative data is presented in the form of narrative text. Presentation of data can also be in the form of matrices, diagrams, tables, and charts. (4) Conclusion drawing is the final activity of data analysis. Drawing conclusions are in the form of interpretation activities, namely finding the meaning of the data presented. There is an existing data analysis activity between the presentation of data and drawing conclusions.

Table 1: Likert scale

Answer	*Score*
Very good	4
Good	3
Enough	2
Less good	1
	(Sugiyono, 2015:135)

Table 2: Conversion

Value	*Score range*	*Category*
A	X ≥Mi 1.Sbi	Very good
B	Mi + 1.Sbi >X≥Mi	Good
C	Mi > X≥Mi-1.Sbi	Not enough
D	X < Mi-1.Sbi	Very less
		(Lestari 2016)

Findings

From interviews conducted with students, several problems were found related to Javanese language subjects in fifth-grade students at SD N Mangkubumen Kidul No. 16. Learning Javanese in the classroom had limited time and was less than optimal. One of the most difficult materials was about Javanese script. The rather difficult to remember form of writing, less or even rare application of daily life, and the limited time made it difficult for students. In addition, learning at home was still constrained by the role of parents who had difficulty in teaching because some did not understand. Interviews with classroom teachers also uncovered that most students still found it very difficult to read Javanese scripts. It was because the time was very limited at school, as evidenced by the schedule that should be used for Javanese language subjects was for thematic subjects instead. Parents of students also had difficulty when they had to teach children Javanese subjects at home because of busy activities and low enthusiasm.

In addition, the media utilized in elementary schools for learning Javanese script was still limited. Teachers used thematic books provided by the government. The book was the main source of learning. In addition, the teacher used two-dimensional media, such as pictures, posters, and a display of Javanese script from PowerPoint. It denotes that teachers were still limited in using learning media. So far, there was also no special media to teach Javanese script material. Besides, teachers still have not maximized the potential in developing learning media, even though teachers can use Android-based game media.

Currently, at SD N Mangkubumen Kidul No. 16, there were no learning media to support Javanese script reading skills. From the classroom teacher assessment, learning that included media use would increase the students' enthusiasm. For this reason, the research carried out aimed to develop Quiz Game learning media for the Javanese script reading skills for fifth-grade elementary school students. The research procedure employed was research and development. The initial process of developing this product was to look at the Javanese script material in fifth grade according to the basic competencies and indicators determined. In the fifth grade, the material about Javanese script entered the introduction of the use of pairs.

The material was then compiled to be used as a learning media in the form of a game utilizing the Construct2 application. Construct2 is a software application developed from Scirra and can be used to create games with various features presented. The making requires config to run the program from the game as desired. Construct2 uses an HTML (HyperText Markup Language) base but does not use a special programming language in its creation. Everything has been presented in the Event Sheet of various kinds of programming that can be developed. At this stage, the researchers made the flow of the game. The following is a sample display of the initial product making results:

Figures 1 and 2 illustrate the material arranged to be used as a learning media in the form of a game utilizing the Construct2 application. In addition, Adobe Photoshop CS6 and CorelDRAW X5 were employed for graphic design needs or in creating questions and changing Javanese script texts that had previously gone through the translation process through a special website for Javanese script translation service providers. The assessment was then carried out by experts, including material experts, media experts, and practitioners. The expert's assessment was then calculated and analyzed to get a value in the form of a conversion to determine the developed product's quality.

The material validation of this product was validated by Mr. Rendra Agusta, S.S., M.Hum., who is a philologist from the Sraddha Institute and an expert in Javanese language learning materials. The validation assessment rubric consisted of 24 assessment items, using a scale of 4, then converted into a percentage.

Table 3 shows the calculation of the formula proposed (Lestari 2015). The category of assessment scores of the material assessment is as follows:

Table 4 shows the categories of material expert assessment. The score obtained from the assessment of material experts for this learning media was 85, with a percentage value of 88.54% and was included in the very good category, which was feasible for being used for research.

Next, the media validation of the developed product was validated by Mr. Dr. Chumdari, M.Pd., a lecturer from Elementary School Teacher Education, Faculty of Teacher Training and Education, UNS, and an expert in learning media. The validation assessment rubric consisted of 20 assessment items, using a scale of 4, then converted into a percentage.

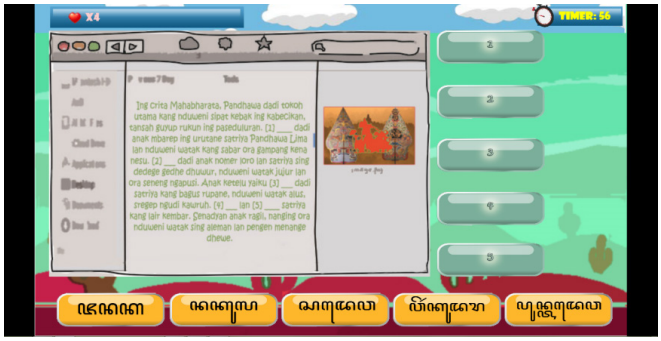

Fig. 1: Questions about the Five Pandavas in the Quiz Game

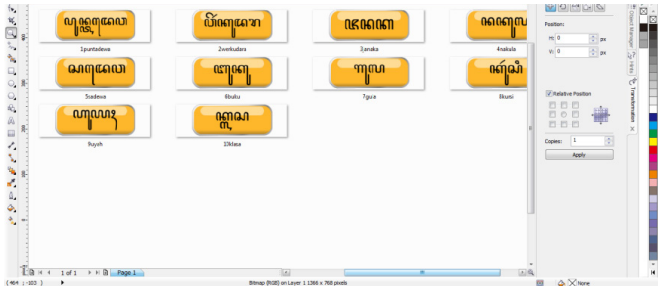

Figure 2: Making Question Answers in CorelDRAW X5 After the Translation Process

Table 3: Material Expert Validation Results

Type of Assessment Rubric Validation	*Mean Score*	*Percentage*	*Category*
Material	85	88.54	Very good

Table 4: Category of Material Expert Assessment

Aspect	*Score Interval*	*Value*	*Category*
Material	$X \geq 72$	A	Very good
	$72 > X \geq 60$	B	Good
	$60 > X \geq 48$	C	Not enough
	$X < 48$	D	Very less

Table 5: Media Expert Validation Results

Type of Assessment Rubric Validation	*Mean Score*	*Percentage*	*Category*
Media	79	98.75	Very good

Table 6: Category of Media Expert Assessmen

Aspect	*Score Interval*	*Value*	*Category*
Media	$X \geq 60$	A	Very good
	$60 > X \geq 50$	B	Good
	$50 > X \geq 40$	C	Not enough
	$X < 40$	D	Very less

Table 7. Validation Results of Expert Practitioners

Type of Assessment Rubric Validation	*Mean Score*	*Percentage*	*Category*
Product	150	85.22	Very good

Table 8: Category of Expert Practitioner Assessment

Aspect	*Score Interval*	*Value*	*Category*
Product	$X \geq 132$	A	Very good
	$132 > X \geq 110$	B	Good
	$110 > X \geq 88$	C	Not enough
	$X < 88$	D	Very less

Table 5 displays the calculation of the formula proposed (Lestari 2015). The category of assessment scores of the media assessment is as in Table 5.

Table 6 presents the categories of media expert assessment. The score obtained from the assessment of media experts for this learning media was 79, with a percentage value of 98.75% and was included in the very good category, which was feasible for being used for research.

Then, the practitioner validation of the developed product was validated by Mrs. Puji Hastuti, S.Pd., who is a fifth-grade teacher from the Mangkubumen Kidul State Elementary School No. 16. The validation assessment rubric consisted of 44 assessment items using a scale of 4, then converted into percentage form.

Table 7 reveals the calculation of the formula proposed (Lestari 2015). The category of assessment scores of the expert assessment is as follows:

Table 8 shows the categories of practitioner expert assessment. The score obtained from the expert practitioner's assessment for this learning media was 150, with a percentage value of 85.22% and was included in the very good category, which was feasible for being used for research.

Discussion

Javanese language subjects have a role in the learning process as an introduction to one of the regional languages in Indonesia. One of the means to get to know the Javanese language is through Javanese script reading material, which is included in language skills other than listening, speaking, and writing skills (Aida 2018). Reading activity is certainly crucial to do at the elementary school level. Reading is also a basic need for every student, academician, practitioner, and the community to find out information (Muhsyanur 2019). It includes reading the Javanese script as a mandatory material that must be learned in Javanese language learning, starting from elementary school to high school (Setianingrum 2016).

In addition, the use of learning media is vital as a step in the learning process implementation in elementary school classes. Following Piaget's theory of cognitive development, the age of elementary school level students aged 7-11 years is included in the concrete operational stage (Juwantara 2019), where students have changed intuitive reasoning to logical reasoning but are still limited to concrete situations and not yet at the abstract level (Mumin Saud and Oktiana 2016). In this case, learning media can help students at this stage because they use concrete, can be held and can be observed media. Learning media in games can be played for a sufficient time to develop brain abilities related to cognitive or logic-mathematical intelligence, such as arithmetic abilities and problem-solving (Putra, Sanubari, and Manggen T F 2017) shapiro-wilk dan uji mann-whitney. Penelitian ini dilakukan di Sekolah Dasar Kristen Satya Wacana Salatiga kelas 3 berjumlah 60 anak. Hasil penelitian Responden dengan nilai kemampuan berhitung < 70 sebanyak 30 anak dengan rata-rata waktu bermain game 4.9 jam per hari dan 4.5 jam per minggu. Responden dengan nilai kemampuan berhitung > 70 sebanyak 30 anak dengan rata-rata waktu bermain game 2.8 jam per hari dan 2.2 jam per minggu. Data ini menunjukkan bahwa nilai ≤ 70 cendrung bermain game lama. Durasi bermain game ≤ 3 jam per hari dan > 3 jam per hari memiliki pengaruh signifikan terhadap kognitif. Durasi bermain game ≤ 21 jam per minggu dan > 21 jam per minggu memiliki pengaruh signifikan terhadap kognitif. Kata kunci: bermain game, kognitif (Kecerdasa Logika-Matematika.

It has been proven that the learning process by using learning media to practice Javanese script reading skills could foster stimulation in thinking and interest in learning (Jalinus and Ambiyar 2016). This learning can make students build their knowledge. Specifically, Quiz games in special software were designed to improve learning outcomes through practice questions (Adiwisastra 2016). The practice questions were adapted to elementary school's fifth-grade Javanese script learning material. The Javanese script material has introduced paired scripts totaling 20 characters as support when an "end" letter is not at the end of a word, which can only be used by *pangkon*. The material was also adapted to the Widya Utama textbook for the fifth grade of the first semester, in which it is enough to study ten pairs, starting with the letters *ha* to *la* (Sumarlam, Suryani & Wijiyanti, 2015: 48).

In this study, the learning media prototype had been adapted to the Regulation of the Minister of National Education of the Republic of Indonesia Number 41 of 2007 concerning Process Standards, stating that learning must be carried out interactively, inspiring, fun, challenging, motivating students to participate actively and providing space sufficient for the initiative, creativity, and independence in accordance with the talents, interests, and physical and psychological development of students. In addition, the media had gone through the assessment of experts with predetermined values in terms of material, media, and practitioner aspects. Each assessment contained input and suggestions, which were always followed by improvements. Thus, the quiz game prototype for fifth-grade elementary school students' Javanese script reading skills

has been feasible as a learning medium and can be developed further.

Moreover, games can effectively facilitate students to learn while playing **(Matthew, 2019)**. Children learn to read, write, count, and more in elementary school. However, the ability to learn all these things and get along well with other children is trained and developed by the child at an early stage through play. It signifies that playing is not only for fun but is also directly related to their future success in school **(Bodnar, 2019).** The study results showed that more than 80% of teachers saw games as challenging for successful curriculum implementation and effective use in the classroom **(Denham, Mayben, & Boman, 2016).**

Based on the previous research results, games can improve students' social skills and their skills in understanding and problem solving (Kirikkaya, Işeri, and Vurkaya 2010). Game-based learning has also been found to promote positive attitudes toward learning, develop memory skills, and help learners build knowledge (Cojocariu & Boghian, 2014). In addition, game-based learning presents an ongoing challenge because it is necessary to find and design diverse game activities and adapt their learning to the needs and interests of students (Avdiu 2019).Furthermore, the study results revealed that quiz games were suitable for elementary school students since school age is a period where students have to play more than stay silent (Gustiana 2011). By using games, it can make students' hearts happy; not only that but games are also an important part of human life, especially for elementary school students, because games have become an inherent feature of students; thus, games are the main activity carried out by students (Dewi and Verawati 2022). The development of this quiz game was in accordance with the characteristics of elementary school students who still like to play so that the next stage could be carried out to improve the reading skills of Javanese scripts.

Conclusion

The results of this study demonstrated that the utilization of learning media for Javanese script material was still limited to textbooks, pictures, and Javanese script posters. Teachers had not used IT-based learning media to teach Javanese script material. It impacted the low skills of students in reading Javanese scripts. Thus, the existence of quiz game media can help teachers teach Javanese script material so that students' Javanese script reading skills can improve. The media quiz game developed also contained questions in the form of games, such as matchmaking, filling in short answers, guessing the sounds of Javanese characters, *a drag and drop game*, and description questions. In this study, the score obtained from the assessment of material experts for this learning media was 85 with a percentage value of 88.54% and was included in the very good category and was feasible to be used. The score obtained from the assessment of media experts for this learning media was 79 with a percentage value of 98.75% and was included in the very good category and feasible for use. Furthermore, the score obtained from the expert practitioner's assessment for this learning media was 150 with a percentage value of 85.22% and was included in the very good category and was feasible to be used.

This study has a limitation. The product developed had not been tested. Thus, the feasibility of the new learning media was only from the content validation aspect and had not been based on empirical validation. Hence, this research is recommended to conduct trials utilizing quiz games for learning Javanese script and measure changes in students' reading skills in Javanese script before and after employing the learning media.

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