

Development of Interactive Media in Learning to Read and Write Javanese Script: Literature Review

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SUBJECT

Education

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Abstract

Learning to read and write Javanese script is a skill that students must master from elementary school to high school/equivalent in Javanese language lessons. In reality, there are several problems in this learning, including (1) teachers' difficulties in teaching Javanese script, (2) students having difficulty understanding Javanese script material, and (3) students feeling bored because of the minimal use of Javanese script learning media. Media is a means to make it easier for students to understand the material. The forms of media used can be varied, such as interactive media. The research method used is a Systematic Literature Review (SLR), which identifies, reviews, evaluates, and interprets all available research. Based on the research results, 17 articles on the development of interactive media in learning to read and write Javanese script were found in the Google Scholar database with the help of the Publish or Perish application. The media that has been developed is intended for elementary, middle and high school students and

even the general public. Interactive media is developed using the latest technology, such as Adobe Flash software, Macromedia Flash, RPG Maker MV, and Augmented Reality (AR) applications. With these facilities, researchers use various research methods, including ADDIE, Research and Development (R&D), Virtual Machine Forensic Analysis and Recovery (VMFAR), Waterfall, Lee & Owens, Multimedia Development Life Cycle (MDLC), and others. Based on the test results, it can be seen that interactive media has various benefits, such as students becoming more active and independent in learning, the quality of student learning, making it easier for teachers to explain the material, making it easier for students to understand the material, and not being easily damaged.

1. Introduction

Reading is classified as a receptive language skill. This language skill is called receptive because the reading activity only accepts something contained in a reading (Kartini, 2018, p. 110). Reading activities are all processes carried out to understand, respond, criticise and produce messages or information contained in written language (Abidin, 2010, p. 8). Reading skills are classified into two types, namely (1) beginning reading and (2) advanced reading. Beginning reading ability is characterised by recognising written

symbols and sounding them correctly. In this phase, the reader focuses more on recognising the symbols of language sounds, while in advanced reading, it is more oriented towards understanding the content of the reading (Mulyati, 2007, p. 13).

Writing is an active-productive skill. This language skill is considered the most complicated among other language skills. Writers must not only copy words and sentences but must also be able to express thoughts or concepts in a logical and systematic writing structure so that readers easily understand them. Like reading skills, writing skills can be classified into two categories. The classification of writing skills is (1) beginning writing and (2) advanced writing. In the initial writing phase, students copy symbols of language sounds into written form, while in advanced writing, students express ideas expressed in writing through written language (Mulyati, 2007, p. 14).

Reading and writing skills are two inseparable language skills. Someone can express their thoughts and ideas well if they have many reading references, along with reading activities. After readers have read something, they can strengthen their understanding by writing notes or summaries. Therefore, these two language skills are related to each other.

Reading and writing are also two skills that students must master when learning Javanese. One of the material contents studied by students from elementary to high school/equivalent levels is reading and writing Javanese script texts with various Learning Outcomes (CP) or Basic Competencies (KD). Beginning reading activities will be taught to elementary-middle school students, while students will learn advanced reading at the high school/equivalent level.

Students at elementary to high school/equivalent levels have learning problems reading and writing Javanese scripts. Ulya (2021) states that learning problems in recognising Javanese characters occur at SD Negeri Mranggen 1. The average score for class IV students at this school is 58.8. This means there needs to be more student learning outcomes in getting to know the Javanese script. Apart from that, Efendi (2023: 447) also wrote almost the same thing. Some of the problems experienced are:

1. Teachers need help teaching Javanese script material.
2. Students need help understanding Javanese script material.
3. Students feel bored because of the minimal use of Javanese script learning media.

The problem of the lack of Javanese script learning media is also found in research (Kusuma, 2019, p. 61). The teacher only uses the lecture learning method, so students need help understanding the Javanese script material. Based on the results of this research, it can be concluded that the problem of learning to read and write Javanese script is caused by several factors, namely (1) teachers only use the lecture method so that students feel bored and have difficulty understanding the material and (2) the lack of Javanese script learning media to overcome these problems.

Based on the circumstances described above, teachers are obliged to take action to facilitate students in honing their skills in reading and writing Javanese script. One way to do this is to combine education with various forms of modern technology. Technological advances are occurring very rapidly so that teachers can use them to solve the challenges students face (Lestari, 2023, p. 940). Ponmozhi and Thenmozhi (2017) found that technology can penetrate many aspects of contemporary life and function as a valuable tool for students during the teaching and learning process. Students can

understand broader topics and abstract things thanks to technology. Interactive learning media is a technology product that can be useful in education.

Learning media is a means used by teachers to convey material to students. With this learning media, it is hoped that students will easily understand complex material to achieve learning objectives effectively and efficiently. Apart from that, learning media also aims to motivate students to participate in the teaching and learning process completely and meaningfully (Hasan et al., 2021, p. 26). Interactive learning media combines audio and visual elements to accommodate students in learning. Students who use interactive learning media will get feedback from the system. With the ease and completeness of this media, students practice independently because they can use it without guidance from others (Pujawan, 2012).

In connection with the abovementioned issues, the author intends to conduct a literature review on developing learning media for reading and writing Javanese scripts. This section aims to investigate how to develop interactive media for reading and writing Javanese script and its impact on improving students' reading and writing skills.

2. Research methods

This research was conducted using the Systematic Literature Review (SLR) method. This research method is carried out by identifying, reviewing, evaluating and interpreting all available research. With this method, researchers conduct reviews and identify journals in a structured manner, with each process following predetermined steps (Triandini et al., 2019). The articles to be researched come from the Google Scholar database with the help of the Publish or Perish application. The keyword in the article search is 'development of Javanese script interactive media'. The articles collected and researched were only published from 2019 to 2023. Based on the data reduction results from various articles, 17 articles were obtained as research data sources.

3. Result and Discussion

Students learn to read and write Javanese script from elementary to high school/equivalent. In practice, learning this material causes many obstacles for teachers and students. The learning method used by the teacher was only lectures, so students were bored and needed help understanding the Javanese script material. Teachers also experience limitations in technology, so they cannot create technology-based learning media. This rich and complex Javanese script material is also one of the materials that students complain about difficulties with. Therefore, as time passes, more teachers develop interactive media for learning Javanese. This is done to attract students' attention, make it easier for them to understand the material, and achieve learning goals.

Based on the results of article analysis in Google Scholar, 17 researchers who developed interactive learning media for reading and writing Javanese scripts in 2019-2023 were found. This interactive media development is from elementary to high school/equivalent levels. The development of interactive media for learning to read and write Javanese scripts based on level can be seen in Table 1.

Table 1. Number of interactive media developments based on level

Level	Amount
Elementary school (SD)	12
Junior high school (SMP)	1
Senior high school (SMA)	2
General (umum)	2

The table above shows that interactive learning media on reading and writing Javanese script material has been widely developed at the elementary school level. Not only that, but other forms of learning media, such as audio, visual, and audio-visual media, are also widely developed at this level. Introduction to Javanese script material starts from the elementary school level. To the learning characteristics of elementary/MI age children, namely from concrete to abstract, from simple to complex, an increasingly expansive environment, learning and playing, the media prepared is adapted to this (Rahayu, 2019). Teachers must provide tools or facilities that attract students' attention when learning Javanese script. The Javanese *nglegena* script has 20 forms, pair script, *sandhangan*, number script, peer script, *murda* script, and *swara* script so media is needed to make it easier for students to memorise it.

Interactive media development can utilise the latest technology, such as Adobe Flash software, Macromedia Flash, and RPG Maker MV. Apart from that, there is also media in the form of Android-based applications such as Augmented Reality (Fatimah, 2021). This software and various applications are also used in developing interactive media for learning to read and write Javanese scripts. Adobe Flash was chosen as the media because this program can produce moving animations combined with sound and writing, attracting more student interest in learning. Apart from that, Adobe Flash is also suitable for students' cognitive development (Nuryani, 2020; Pradana, 2021). The resulting application is of type .apk, which can be operated on smartphones that use the Android Operating System (Pradana, 2021). Likewise, the Macromedia Flash CS6 software has complete features for motion animation and multimedia applications (Hartiyani, 2023). Multimedia and mobile learning are also used to learn Javanese characters, such as in Smart Apps Creator (SAC). This Android-based SAC contains sound, images, writing and animation to make the appearance more attractive to attract and please students (Ningrum, 2023).

RPG Maker MV software can also produce an effective and practical educational game (Saputra, 2023). The games designed not only focus on reading activities but also on writing Javanese characters. Javanese script writing games can utilise Convolutional Neural Networks with text recognition methods to recognise Javanese script patterns (Hadinegoro, 2019). This activity can also apply Android-based Augmented Reality (AR) technology. Students can track Javanese characters that have been scanned. The Augmented Reality (AR) application can help users visually understand the form of Javanese script and help teachers utilise IT-based technology (Kusuma, 2019). With the development of various interactive learning media, learning can be done anywhere and anytime without being limited by space and time.

The development of interactive media in learning to read and write Javanese script is produced by applicable procedures. Media development is based on student needs, material characteristics, and the learning environment. Various ways or methods can be used in developing interactive media, such as the ADDIE method, Research and Development (R&D), Virtual Machine Forensic Analysis and recovery (VMFAR), Waterfall, Lee & Owens, Multimedia Development Life Cycle (MDLC), and other research methods. The research methods used by the 17 researchers in the articles that have been analysed can be seen in diagram 1.

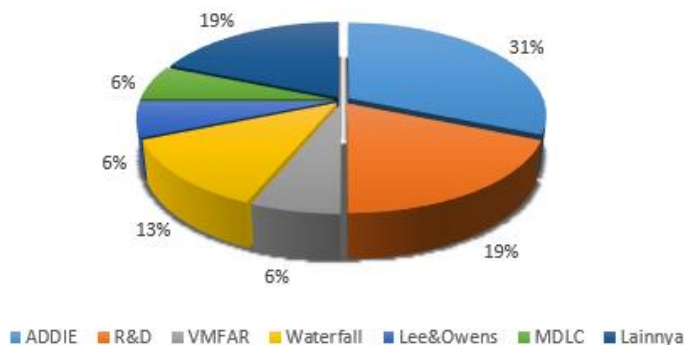


Diagram 1. Interactive Media Development Research Methods.

The Research and Development (R&D) research method refers to the theory of Borg and Gall. Research and development methods are used to produce specific products and test the effectiveness of those products (Sugiyono, 2015, p. 409). The stages in this research method consist of 10 steps, namely (1) potential and problems; (2) collect information; (3) product design development; (4) design validation; (5) design revision; (6) product testing; (7) product revision; (8) trial use; (9) product revision, and (10) production. In practice, development research is carried out at the last step but adapts to the needs of researchers (Zustiyantoro, 2020). Dick and Carey developed the ADDIE research method to design and develop interactive multimedia. Utilisation of this method is commonly used in the instructional design sector as a guide for creating adequate learning resources (Branch, 2009). The ADDIE research method consists of 5 stages: analysis, design, development, implementation and evaluation. Another software development method is waterfall. This model was introduced by Winston Royce in 1970, so it is often considered ancient. However, this model is widely used in Software Engineering (SE) development. This model is linear because it must be passed step by step sequentially and cannot be repeated to the previous stage. The stages used in the waterfall model are requirements, design, implementation, verification, and maintenance. Lee & Owens' (2004) research model is also used in developing interactive media. This model is specifically for developing multimedia and has a sequence of steps that are arranged systematically and clearly. The five research steps include assessment/analysis, design, development, implementation and evaluation. Another multimedia development method is the Multimedia Development Life Cycle (MDLC).

MDLC creates linear and nonlinear multimedia products (Roedavan et al. Sujana, 2022). Linear multimedia, such as TV and films, runs straight or sequentially. However, if the user can control multimedia, nonlinear multimedia is often called interactive multimedia. This method consists of six stages: concept, design, material collecting, assembly, testing and distribution (Binanto, 2010). The Virtual Machine Forensic Analysis and Recovery (VMFAR) method consists of several stages: problem identification, data collection, system requirements identification, system implementation/design, testing, results analysis, and documentation. Another development research method adapted from the humanities field is research with an ethnographic approach. This research is an information design development project that departs from the problems in society regarding the existence of Javanese script, which is increasingly being abandoned (Fakhrudin, 2019). This research series includes two stages, namely the research and design stages.

Material and media experts have tested various forms of interactive media to achieve the learning objectives of reading and writing Javanese scripts. All interactive media developed are declared suitable for use. Before being tested, the media needs to be revised according to suggestions and input from material and media experts. Based on the results of the analysis, using interactive media makes students more active and independent in learning. With this media, students are more interested in directly participating in teaching and learning activities than conventional learning. Students not only listen to explanations from the teacher but also participate in solving problems encountered during the learning process. The quality of student learning can also be improved, and the learning process can be carried out anywhere and at any time without having to be accompanied by a teacher (Nugroho, 2020), likewise with Ningrum (2022), who tested his product on class XI students at SMK Negeri 3 Jepara. The Android-based application, namely Smart Apps Creator (SAC), is efficient, engaging, and easy for students and other users to use. The learning media "Si Raja" (Sinau Aksara Jawa) is also Android-based and was developed by Efendi (2023). This media can be used flexibly, makes it easier for teachers to explain the material, makes it easier for students to understand the material, is not easily damaged, and is a digital-based media that adapts to current developments.

4. Conclusion

There were 17 articles on developing interactive media in learning to read and write Javanese script studied in 2019-2023. Interactive media development has been carried out based on student needs, material characteristics and the learning environment. This media is intended for elementary, middle and high school students and even the general public. Interactive media is developed using the latest technology, such as Adobe Flash software, Macromedia Flash, RPG Maker MV, and Augmented Reality applications. With these various means, researchers use various methods to develop their research. The development research methods used include ADDIE, Research and Development (R&D), Virtual Machine Forensic Analysis and Recovery (VMFAR), Waterfall, Lee & Owens, Multimedia Development Life Cycle (MDLC), and other research methods. After the product is successfully created, it is then tested on students. Based on the test results,

interactive media affects students and teachers. Students become more active and independent in learning, the quality of student learning can improve, it makes it easier for teachers to explain the material, makes it easier for students to understand the material, and is not easily damaged.

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