DEVELOPMENT OF JAVANESE SCRIPT LEARNING MEDIA BASED ON UNO STACKO GAME AND PENTA HELIX APPROACH AT SDN 2 SIDOWARNO

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ABSTRACT

The fading of Javanese culture and the literacy crisis are complex problems that have a further impact on the world of education on elementary school students in Javanese script literacy in a multicultural country like Indonesia. Factors that influence the lack of Javanese script literacy are learning media that are less attractive and limited. In realizing Education for Sustainable Development (ESD), one of the efforts to preserve and introduce Javanese script to support Indonesia gold 2045 can use gaming learning media. Empowerment of the Javanese script can be implemented through the role of education staff in learning based on the uno stacko game and the penta helix system. The purpose of this study was to determine the feasibility of learning media based on the uno stacko game and the penta helix approach at SD N 2 Sidowarno and to determine student responses to the feasibility of learning media based on the uno stacko game and the penta helix approach. This research uses the research and development (R&D) method with the Borg & Gall model. Data were obtained from teacher questionnaires and student responses, validation questionnaires from subject matter experts, media experts, and also interviews. The results of the expert assessment were 87.45% for subject matter experts, 85.84% for media experts, and 87.77% for educators, while the student response was 82.43%. From the research results it is known that learning Javanese script using the Uno Stacko game can increase student learning motivation and form effective learning. In addition, based on assessments from material experts, media experts, and teachers as well as responses from students, it can be concluded that the Javanese script learning media based on the uno stacko game and the penta helix approach are suitable for use as learning media. In addition, based on the research results, it can be seen that the existence of a penta helix collaboration system can be an effective effort in supporting Education for Sustainable Development (ESD).

Keywords: Javanese Script, uno stacko game, penta helix

A. INTRODUCTION

Javanese culture is a culture that develops in Indonesia. One form of Javanese culture that is used as a writing system is the Javanese script. The Javanese script consists of 20 basic letters and several additional letters, with artistic and beautiful forms. Javanese script is used to write various types of literary works, such as kakawin, suluk, and fiber. In studying Javanese script, Javanese script literacy skills are needed. Literacy is a person’s ability to read, write, and understand written or visual texts in a particular language (Utami, 2021). Javanese script literacy is very important in maintaining and preserving Javanese culture. With Javanese script literacy, people can gain access to information contained in various sources that use Javanese script, such as ancient texts, folk songs, and so on.
addition, Javanese script literacy also makes it easier for people to communicate with others who use Javanese script, such as elders and Javanese cultural figures.

In the era of modernization and globalization, Javanese culture can be eroded and replaced by new cultures that come from outside, such as western culture. This can shift people’s interest in studying and maintaining Javanese culture. The fading of Javanese culture and the literacy crisis is a complex problem that has a further impact on the world of education, especially for elementary school students in Javanese script literacy in a multicultural country like Indonesia. One of the elementary schools that has experienced the decline of Javanese culture in terms of Javanese script literacy is SD Negeri 2 Sidowarno. Based on the results of interviews with Trihananto as the principal of SDN 2 Sidowarno, students tend to follow new cultures from outside rather than Javanese culture. In the opinion of Aliefka, one of the students at SD Negeri 2 Sidowarno said that he found it difficult to accept, understand and master the Javanese script material given by the teacher. 

Lack of understanding and mastery of Javanese script can hinder students’ ability to understand and appreciate Javanese culture as a whole.

Based on the results of questionnaires and interviews with grade 5 teachers at SDN 2 Sidowarno, it can be seen that students’ lack of Javanese script literacy can be caused by various factors, one of which is learning media that is less attractive and limited. Students often do not have adequate access to literature and Javanese script learning resources. This condition can be further exacerbated by the development of popular culture, thus changing students’ preferences and interests towards traditional culture such as Javanese script. Therefore, collaborative efforts are needed from various parties, such as educators, government, private sector, academia, media and society, to increase Javanese script literacy and preserve Javanese culture as a whole.

In the era of increasingly advanced technology and information as it is today, the use of more innovative and interesting learning media is very important to motivate young people to learn Javanese script. In realizing Education for Sustainable Development (ESD) in learning Javanese script, one of the efforts that can be used is gaming learning media. Gaming learning media can attract students’ interest in learning Javanese script, because it is able to combine elements of fun games with effective learning. In its use, gaming learning media can teach Javanese script through various types of games, one of which is the uno stacko game. The Javanese script uno stacko game allows students to learn independently and get direct feedback from the games they play. This can increase student involvement in the teaching and learning process, so that they are more motivated and motivated to learn Javanese script well.

Javanese script empowerment can be done through the role of educational staff who have an important role in providing effective and fun learning for students. The Uno stacko game is a strategy game that involves selecting and stacking tubular wooden blocks (Indriastuti and Abidin, 2021). Uno stacko game based on Javanese script is a game developed using wooden blocks inscribed with Javanese script.

Innovation in learning media certainly cannot be done alone, this must be supported by various parties such as students, teachers, facilities, communities, programs, and the government (Rusdiana, 2014). One of the collaborative concepts that we can use in educational technology innovation is the penta helix system. The penta helix system is a five-party collaboration system known.
as ABCGM and stands for Academia, Business, Community, Government, and Media (Halibas, Sibayan, & Maata, 2017).

Based on various problems and the potential of learning media at SDN 2 Sidowarno. This paper offers the concept of developing Javanese script learning media based on the uno stacko game and the penta helix approach at SDN 2 Sidowarno, Surakarta.

Before determining the title, the researcher reviewed several studies that had been conducted by previous researchers. The researcher found several relevant studies, including: "Development of Accounting Snakes and Ladders Learning Media to Increase Learning Motivation Competency in Accounts Receivable Management for Class XI Students of Financial Management at SMK Muhammadiyah 1 Prambanan Klaten in the Academic Field in 2016/2017" (Mardhani, 2014) and "MEMBANGE PARADIGM OF VOCATIONAL EDUCATION FOR ALL (VoEFA) THROUGH A SYNERGISTIC COOPERATION STRATEGY" (Wagiran, 2017).

This research is very important considering the need to use game-based learning media to support the development of students' understanding of SDN 2 Sidowarno on Javanese script material. The limited use of media in learning Javanese script makes this research even more important to do. The focus of this study was to determine the feasibility of the Uno Stacko Game-based Javanese script learning media and the penta helix approach at SDN 2 Sidowarno and to determine student responses to the feasibility of the Uno Stacko Game learning media and the penta helix approach.

B. METHOD

This research was carried out at SDN 2 Sidowarno from January 14 to April 20, 2023. The research was conducted empirically by going directly to the field to determine the role of educators in empowering Javanese script through continuing education based on Uno Stacko Game and penta helix. The results of this study were carried out empirically using Research and Development (R&D) research methods. The research approach and methodology used in this study is based on the design of learning media development by Borg and Gall. The products developed in this study are Javanese script learning media based on Uno Stacko Game and penta helix approach that can be utilized by teachers and students of SDN 2 Sidowarno. The Borg & Gall model, as modified by Sugiyono, involves ten development steps to produce a final product that is ready to be implemented in educational institutions, as follows:

1. However, researchers limit the research and development step from ten to seven steps due to limited time and available opportunities. The procedures carried out by researchers include:
2. Identifying Potential and Problems; This research has the potential to simplify learning problems in schools.
3. Data Collection; data obtained from SDN 2 Sidowarno.
4. Product Design; The design used is a learning design that can be accessed through gadgets and is easily understood by students.
5. Design validation; Validation is carried out by material experts, media experts, and information technology experts.
6. Design revisions; The revision was carried out after getting input and suggestions from experts.
7. Product Trials; conducted on 30 students in each class in each school.
8. Product revisions; Conducted after conducting research in each school and obtaining feasibility as a learning medium.

The determination of informants in this study used purposive sampling techniques. According to (Sugiyono, 2017) purposive sampling is a technique for determining informants with certain considerations. The requirements for determining informants in this study are to know for sure, know the involvement, and be directly involved in the literacy management of SD Negeri 2 Sidowarno, and have no emotional attachment to the researcher. Based on these criteria, informants in this study include school principals, teachers, media (Solo Pos), Surakarta City Education and Culture Office, and Uno Stacko producers. The research instruments used were validation questionnaires and response questionnaires to students and educators as well as interviews. The poll used is in the form of a checklist with an assessment of the score of each aspect using a Likert scale.

Research data was collected using validation sheets from material experts including content quality, language, implementation, visual appearance, image aspects, and ease of use. Media experts assess the design and content of the application. Response sheets from educators and students were also used to assess content quality, media display, and technical quality, while data analysis used Likert scales to measure responses. The formula for calculating the percentage is as follows:

\[ x_i = \left( \frac{\sum s_i}{S_{\text{max}}} \right) \times 100\% \]

Information:

- \( S_{\text{max}} \) = score
- \( \sum s \) = Number of scores
- \( x_i \) = Feasibility score of questionnaire in each aspect (Sugiyono, 2015)

The results of the calculation of the percentage of the survey regarding the use of 5 product choices are evaluated based on the relevance of the questions asked. Evaluation is carried out by material experts, media experts, educators, and learners. Scores are given based on the following table:

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB (Excellent)</td>
<td>5</td>
</tr>
<tr>
<td>B (Good)</td>
<td>4</td>
</tr>
<tr>
<td>C (Sufficient)</td>
<td>3</td>
</tr>
<tr>
<td>K (Less)</td>
<td>2</td>
</tr>
</tbody>
</table>
The table above presents assessment guidelines used for survey responses in assessing Javanese script learning media based on Uno stacko Game and penta helix approach at SDN 2 Sidowarno. Respondents are given a questionnaire, and the final score is obtained by calculating the average value of the relevant items in the survey, which is determined by dividing the suitability score for each aspect by the number of statements. The percentage score obtained from the study is interpreted based on the criteria presented in Table 2.

Table 2. Feasibility of learning media

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 20 %</td>
<td>Very less feasible</td>
</tr>
<tr>
<td>21 % - 40 %</td>
<td>Less viable</td>
</tr>
<tr>
<td>41 % - 60 %</td>
<td>Pretty suitable</td>
</tr>
<tr>
<td>61 % - 80 %</td>
<td>Proper</td>
</tr>
<tr>
<td>81 % - 100 %</td>
<td>Very suitable</td>
</tr>
</tbody>
</table>

(Sugiyono, 2015)

Interview techniques are carried out through dialogue to get a certain answer so that it can be used to construct people, social situations, social order, feelings, phenomena, relationships, and so on (Neuman and Guggenheim, 2011; Nugrahani, F., & Hum, 2014). The interview used in this study is an in-depth interview because this technique can explore deeper meaning so that this case study research can be more comprehensive (Moleong, 2007).

C. RESULT AND DISCUSSION

RESULT

The main result of the needs analysis conducted by the researchers is a Javanese script learning media based on the Uno Stacko game and the penta helix approach. The research and development were carried out at SDN 2 Sidowarno. The participants in this study were the school principal, educators, and students of SDN 2 Sidowarno.

The researchers used the Research and Development (R&D) model adapted from the Borg and Gall method, modified by Sugiyono, from stage 1 to stage 7. The research and development resulted in a Javanese script learning media product based on the Uno Stacko game and the penta helix approach. After successfully developing the product, the next step was to validate the media's feasibility by validating the product. The product design or validation was done after creating the initial product. Validation was conducted by three subject matter experts and three media experts. Before validating the product design, the research instrument was validated by an expert lecturer. Validation sheets were given to three subject matter experts and three media experts as validators. Afterward,
the product was tested with students to evaluate the Javanese script learning media based on the Uno Stacko game and the penta helix approach.

1. Learning Media Design

The Javanese script learning media based on the Uno Stacko game is designed with careful consideration of the needs of the students at SDN 2 Sidowarno. The design of the instructional media can be seen in the following image:

![Learning Media Design](image)

Figure 1. Learning Media Design

Identifying the needs of students serves as the foundation for the concept of instructional media desired by the students. The specifications of student needs, derived from observations and surveys, indicate a desire for engaging and interesting instructional media. Consequently, instructional media is developed with the assistance of the Uno Stacko game. Through this design, students will learn Javanese characters while playing the game, thereby preventing them from feeling bored during the learning process.

The results of this instructional media design are subsequently validated and tested. Validation of the design and media product is conducted by subject matter experts and media experts through the completion of a validation questionnaire.

2. Expert content validation

The results of content expert validation on the product are presented in Table 3 as follows:

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Quality</td>
<td>87,62%</td>
</tr>
<tr>
<td>Language Proficiency</td>
<td>85,00%</td>
</tr>
<tr>
<td>Feasibility</td>
<td>87,62%</td>
</tr>
<tr>
<td>Visual Presentation</td>
<td>93,33%</td>
</tr>
<tr>
<td>Image Aspect</td>
<td>84,44%</td>
</tr>
<tr>
<td>User Friendliness</td>
<td>86,67%</td>
</tr>
</tbody>
</table>
3. Expert media validation:
The results of expert media validation for the product are presented in Table 4 as follows:

Table 4. Expert Media Assessment Results

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Design</td>
<td>86.67%</td>
</tr>
<tr>
<td>Media Content Design</td>
<td>85.00%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>85.84%</strong></td>
</tr>
</tbody>
</table>

4. Educator’s Response
The response of educators from SDN 2 Sidowarno to the Javanese character instructional media can be seen in Table 5 as follows:

Table 5. Educator’s Response Assessment Results

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Quality</td>
<td>92.22%</td>
</tr>
<tr>
<td>Media Design</td>
<td>86.66%</td>
</tr>
<tr>
<td>Technical Quality</td>
<td>84.44%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>87.77%</strong></td>
</tr>
</tbody>
</table>

5. Students’ Response
The response of students from SDN 2 Sidowarno to the instructional media on Newton’s laws of motion can be seen in Table 6 as follows:

Table 6. Students’ Response Assessment Results

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Quality</td>
<td>82.06%</td>
</tr>
<tr>
<td>Media Design</td>
<td>82.89%</td>
</tr>
<tr>
<td>Technical Quality</td>
<td>82.33%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>82.43%</strong></td>
</tr>
</tbody>
</table>

DISCUSSION

1. Learning media analysis
Based on the research findings, it is known that the average score for expert content validation
Development of Javanese Script

is 87.45%, which indicates that it is highly suitable. The expert media validation resulted in an average score of 85.84%, also indicating high suitability. The educator's response yielded an average score of 87.77%, while the students' response resulted in an average score of 82.43%, both indicating high suitability.

Based on the validation results and assessment responses, it can be concluded that the Javanese character instructional media based on the Uno Stacko game is highly suitable for implementation. This conclusion is supported by previous research conducted by Kusumaningsih, Buchori, & Cahyono (2020), Nadiya, Aswarliansyah, & Valen (2022), and Suraiya, Amiruddin, Razak, & Pertiwi (2021). These studies have shown that instructional media based on the Uno Stacko game is effective and capable of enhancing students' understanding.

Comparing the findings of this research with previous studies, it can be inferred that this study, with the Javanese character instructional media based on the Uno Stacko game, can be an effective tool in improving students' understanding of Javanese characters at SDN 2 Sidowarno. This aligns with Arsyad's statement (2008:15) that good instructional media can stimulate new interests in the teaching and learning process, motivate learning activities, and even have psychological effects on students. In terms of ease of use in the learning process, the Javanese character instructional media based on the Uno Stacko game is highly user-friendly and does not require any special skills. The snake and ladder game developed by the researcher fulfills the cognitive function of visual media, as explained by Arsyad (2008:17). The cognitive function of visual media can be observed through visual images that facilitate understanding and remembering the information or messages conveyed in the images.

2. Penta helix approach analysis

Based on the research interviews conducted, it is evident that the penta helix approach is necessary in the Javanese character learning process at SDN 2 Sidowarno. The penta helix can serve as an effective system to maximize the benefits of good instructional media in Javanese character education at SDN 2 Sidowarno. The effectiveness of implementing the penta helix system is supported by research conducted by Wagiran (2017), which states that the penta helix system is one of the systems that can be applied in education to generate effective and collaborative learning systems. Other studies by Sulaeman, Syahman, Ruspandi, & Yoyoh (2021) and Mutaqin & Rini (2022) also support the notion that the penta helix system is effective in increasing the involvement and collaboration of various stakeholders in education, resulting in more effective learning outcomes. Additionally, this research is supported by the study conducted by Wiharjo, Hartono, & Muharrar (2022), which suggests that the penta helix system can serve as an excellent solution to facilitate the establishment of a good learning system through collaboration among various stakeholders.

Based on the research interviews and comparisons with previous studies, it can be concluded that the Javanese character instructional media with the penta helix system can be an effective and efficient product for implementation. The collaborative actors in the penta helix system can be observed in Table 9 during its implementation.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Subject Identity</th>
<th>Function</th>
</tr>
</thead>
</table>

Development of Javanese Script

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| **Government** | Sidowarno village government | - Issue policies that encourage the learning of Javanese script in schools  
- Provide funds for the development and dissemination of innovative and interactive Javanese script learning materials. |
| **Academics** | Class teacher at SDN 2 Sidowarno | - Develop and develop curricula and learning methods according to student needs  
- Conduct training for teachers to improve their skills and knowledge in teaching Javanese script  
- Applying the learning concept in accordance with the Learning Implementation Plan (RPP) that has been designed |
| **company** | Jadi Jaya Store | - Provide financial and technological support in learning Javanese script  
- Provide and produce uno stacko so that existing learning media can facilitate the number of partners in Sidowarno Village |
| **Public** | Residents of Sidowarno village, parents of students | - Promoting and appreciating Javanese script as cultural heritage  
- Assist in introducing Javanese script to children through activities such as cultural festivals or art performances |
| **Media** | Youtube, Instagram and Tiktok | - Disseminating information about learning Javanese script to the wider community |
D. CONCLUSION

The development of Javanese character instructional media and the implementation of the penta helix approach is considered suitable for implementation in SDN 2 Sidowarno. The product’s suitability is reflected in the average percentage scores of 87.45% for expert content validation and 85.84% for expert media validation, both falling into the highly suitable category. The small-scale trial conducted at SDN 2 Sidowarno resulted in average percentage scores of 87.77% for educator response and 82.43% for student response, both categorized as highly suitable.

Acknowledgments

The author would like to express my gratitude for the opportunity given to the author to publish an article entitled "Development Of Javanese Script Learning Media Based On Uno Stacko Game And The Penta Helix Approach At SDN Sidowarno 2" well. The author also thanks the reviewers who have taken the time and provided valuable input to improve the quality of this article. The criticism and suggestions given were very helpful in developing my ideas and improving this writing. Not to forget, I would also like to thank those who have supported this research process, both financially and in providing technical assistance. Without their support, this article would not have been realized. Once again, thank you very much to the editorial team of this journal for the opportunity and cooperation provided. I hope to continue to contribute to producing quality research in the future. Hopefully this journal continues to grow and become a valuable source of information for the scientific world.
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