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Developing a Barcode-Based Dice Card Game to Improve Descriptive Writing Skills in Elementary School

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Abstract

This development research is motivated by the critical need to foster writing skills, a foundational literacy mandate outlined in the Independent Curriculum and Law No. 20 of 2003 on the National Education System. Descriptive text writing, in particular, is a fundamental competency in elementary-level Indonesian language learning that often presents challenges for students. Addressing these challenges requires innovative learning media that not only meets cognitive objectives but also creates interactive, engaging, and contextually relevant learning experiences for students in the digital age. In response, this study aims to develop and test the effectiveness of a Barcode-Based Dice Card Game, named GARDU, in improving students' descriptive writing skills. The research employed the Research and Development (R&D) method, following the Borg & Gall model, combined with a Quasi-Experimental design. The population consisted of third-grade students from SDN Songgokerto 01 and SDN Songgokerto 03 in Batu city, with a sample of 52 students divided into experimental and control groups. Data were collected using validation sheets, observation sheets, user response questionnaires, and descriptive writing performance tests (pre-test and post-test). The results from material and media experts validated the GARDU media as "Highly Suitable," with an average score above 90%. Responses from both students and teachers were also overwhelmingly positive, indicating the media's practicality and appeal. Quantitatively, the data analysis revealed a significant improvement in the experimental group's writing skills, with a classical learning completeness increase of 35.7%. A paired sample t-test confirmed a statistically significant difference between the pre-test and post-test scores ($p < 0.05$). In conclusion, the Barcode-Based Dice Card Game (GARDU) is a valid, practical, and effective learning medium. It not only significantly enhances descriptive writing skills but also promotes active student engagement, stimulates critical thinking, and accommodates the learning styles of the digital generation by leveraging familiar technology.

Keywords: *Writing, Dice Card Game, Description Text, Barcode*

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INTRODUCTION

Writing is a fundamental language skill that elementary school students must master, as it is essential for academic success and effective communication (Graham & Harris, 2017). The acquisition of strong writing skills in the early years

of education lays the groundwork for future learning and literacy development, making it a critical focus area within the national curriculum.

A significant barrier to developing writing proficiency lies in students' internal difficulties. Many students struggle with a lack of confidence and find it challenging to generate, organize, and articulate their ideas, opinions, and thoughts into a coherent written form (Graham, 2019). This cognitive and affective hurdle often prevents them from even beginning the writing process.

Compounding these internal challenges is a general lack of student interest in the writing topics and teaching materials presented in the classroom. When students are not engaged by the subject matter, their motivation to write diminishes significantly, leading to disinterest and a perception of writing as a tedious task rather than a form of expression (Hidi & Boscolo, 2006).

One specific exercise used to improve writing skills is descriptive writing. However, elementary students often show little interest in this genre. The difficulty stems from the complex demands of the task, which includes generating vivid ideas and adhering to specific procedures and criteria, such as structuring content, applying language rules, and using correct punctuation and capitalization (Tompkins, 2019).

In response to these challenges, teachers are compelled to become agents of change. They must innovate in their pedagogical approaches by developing and utilizing learning media that are relevant to the contemporary era (Koehler & Mishra, 2009). This innovation is crucial for bridging the gap between traditional teaching methods and the needs of modern students.

The rapid advancement of technology has fundamentally altered how information is accessed and consumed. Students, in particular, are deeply influenced by this shift; their cognitive frameworks and daily habits are increasingly shaped by constant interaction with digital devices like smartphones (Prensky, 2001). This reality cannot be ignored in the educational landscape.

While the pervasive nature of android technology presents challenges, it also offers a significant opportunity. Instead of resisting it, educators can provide students with a positive understanding of technology by channeling its use for educational benefits (Karsenti & Fievez, 2013). This involves guiding students to see their devices as powerful tools for learning.

The application of learning media is vital across all subjects, but it is particularly crucial in language education. In the context of Indonesian language lessons in elementary schools, especially for descriptive text material, appropriate media can make abstract concepts more concrete and engaging (Arsyad, 2011).

The use of a dice card game medium presents a promising solution to make learning interactive and enjoyable. Such game-based learning strategies can enhance comprehensive Indonesian language skills by lowering the affective filter

and encouraging participation in a low-stakes, engaging environment (Plass, Homer, & Kinzer, 2015).

Through a well-designed game, students can holistically practice and strengthen the four core aspects of language skills reading, listening, speaking, and writing. This integrated approach ensures that learning is not only effective but also fun, promoting a balanced development of literacy in a manner that resonates with today's students (Thiagarajan, 1999).

METHOD

This study employs a quantitative research design utilizing a Quasi-Experimental approach to determine the causal effect of an intervention by comparing groups that receive treatment with a control group. The experimental and control groups, comprising third-grade students from SDN Songgokerto 03 and SDN Songgokerto 01 respectively, were selected from School Cluster III in Songgokerto Village, Batu City, using a probability sampling technique with a simple random sampling method. The research procedure began with administering a pretest to both groups to establish a baseline. The experimental group was then subjected to the treatment, which involved learning using the barcode-based dice card game media (Gardu) in a group setting, while the control group received conventional instruction. A posttest was subsequently administered to both groups to measure the intervention's outcomes.

The development of the Gardu media product followed a rigorous multi-stage process. An initial hypothetical model was designed and subsequently subjected to expert validation and evaluation by material specialists, media experts, and senior teachers to refine its content appropriateness and pedagogical approach. The product was revised based on their feedback until it was deemed feasible for limited testing. A preliminary trial was conducted with five students to identify usability issues and practical difficulties. Data gathered from observations and questionnaires during this trial phase informed final revisions, enhancing the product's usability before its large-scale implementation in the experimental research setting.

The finalized product was then implemented on a larger scale, with samples randomly selected from the population of nine schools within Cluster III. Following data collection and analysis, the research concluded with the dissemination phase. The study's findings and the developed media product were presented and socialized at a meeting of the Teachers' Working Group (KKG) for Cluster 3, Batu District. This step was crucial for sharing the research outcomes and promoting the potential adoption of the innovative learning media within the wider educational community.

RESULTS AND DISCUSSION

Validation results of media experts, linguists and senior teachers Media

1. **Expert Validation Results**

Based on the assessment results from validators 1 and 2, a score of 90.5% was obtained, which indicates that the learning media has very good qualifications and is very feasible to use without the need for revision. This dice card game media is easy to maintain and manage by teachers and students without requiring special skills. The operation is quite simple with good operational performance, although occasionally there is an insignificant lag due to internet network factors. This media can be applied in learning scenarios with clear message delivery and in accordance with students' needs. Navigation is quite easy, although some students still experience confusion, but can be overcome through teacher guidance or help from fellow students. The audio in this media supports learning activities with clear and interesting sounds. The design is very attractive and appropriate for the age of the students, while the images used are relevant to the material presented."

2. **Language Expert Validation Results**

From the assessment results of validators 1 and 2, a total score of 85% was obtained, which indicates that the language used in the learning media has very good qualifications and is very suitable for use, so it does not require revision. This assessment also shows that the sentence development based on the observed media allows students to compose at least five sentences. The use of language is very appropriate, varied, and easily understood by students. The sentences used are clear, effective, and able to convey the message well. The choice of vocabulary is quite appropriate, with sentences that are effective and easy to understand. In terms of writing, the use of spelling and punctuation is well mastered. The length and size of the letters are consistent in accordance with the writing rules, so that the writing looks uniform, clear, and easy to read. The letters are well formed, making the whole writing easy to understand.

3. **Senior Teacher Validation Results**

Based on the results of the teacher's response, a validity percentage of 91.5% was obtained with very feasible criteria and did not require revision. This shows that the media developed is very accessible and safe for students. In addition, the title of the media and the material presented are very relevant to the learning objectives. In terms of appearance, the type of font used is quite appropriate, easy to read, and understand. Navigation in the media is also simple, with instructions that are very clear and easy to understand. The exercise questions provided are in accordance with the use of the media, while the attractive images are able to increase students' attention and motivation to learn.

4. The results of the teacher's response to the Dice Card Game media

Based on the results of the assessment of validators 1 and 2, the level of relevance was obtained with a total score of 92.3%, which is included in very good qualifications and is very suitable for use, so it does not require revision. These results indicate that the barcode-based dice card game media is in accordance with all the material and core competencies that students must achieve. The tasks designed are effective in measuring student understanding, relevant, and clearly presented in accordance with the age development stage of students and the times. The presentation of material in this media is arranged clearly, simply, and in accordance with the cognitive level of elementary students. The use of easy-to-understand language is accompanied by relevant examples, and each learning video is equipped with a barcode that functions properly, is easily accessible to students, and has good sound quality and duration according to learning needs. The form of questions presented is aligned with the learning objectives, while the use of barcode-based dice card games proves to be interesting and effective in increasing students' learning motivation. This game is easy to understand and in accordance with the abilities of elementary school children. Through this media, students are able to understand description text in depth, identify its characteristics, provide relevant examples, and connect reading, speaking, listening, and writing activities in description text learning.

5. The results of student responses to the Dice Card Game learning media

Based on the results of the recapitulation of student response questionnaires to the Dice Card Game media, a percentage of 89.9% was obtained. This shows that the barcode-based Dice Card Game is suitable for use as learning media because it can motivate students in learning. The advantages of this media can be seen from the attractive appearance, ease of operation, use of language that is easy to understand, and clear instructions for use. In addition, students understand the material better with additional practice questions. The use of barcode- based Dice Card Game also contributes to shaping students' learning independence.

6. Pretest and post test material mastery test results

To prove the difference between the experimental class and the control class, it can be seen from the results of the paired sample t test contained in the Paired Sample Correlation output calculated using SPSS Statistics 22.

Based on the results of the correlation test or the relationship between the two data or the relationship between the pretest and post test variables based on the output pair 1 (experimental class), it is known that the correlation coefficient (correlation) value is 0, 406 with a significance value (sig) of 0.15. Because the sig value is 0.15> 0.05, it can be said that there is a relationship between the pretest and post test variables. While based on the output of pair 2 (control class), it is known that the correlation coefficient value is 0.705 with a significance value

(sig) of 0, 000. Because the sig value of 0.000 <0.05, it can be said that there is no relationship between the pre-test and post-test variables.

The formulation of the research hypothesis and decision-making guidelines in the paired t test are as follows:

- Ho: There is no difference in the average learning outcomes of the pre-test and post-test, which means no difference in the average learning outcomes of the pre-test and post-test. The effect of using barcode-based dice card game media in improving writing skills on description text material for grade 3 elementary school students.
- Ha: There is a difference in the average learning outcomes of the pre-test and post-test, which means that there is an effect. The use of barcode-based dice card game media in improving writing on descriptive text material for grade 3 students

Based on the output pair 1 (experimental class), the sig. (2-tailed) of 0.001 <0.005, it can be concluded that there is a difference in the average value of student learning outcomes for the pre-test and post-test in the experimental class using barcode-based dice card game media.

The decision-making guidelines in the Paired Sample t-test are as follows:

- If the significance value (Sig) is greater than 0.05 then Ho is accepted and Ha is rejected.
- If the singnification value (sig) is smaller than 0.05 then Ho is rejected and Ha is accepted.

From these guidelines, it can be concluded that there is a significant influence before the pre-test using barcode-based dice card game media and after the post-test on Indonesian language subjects on description text material, which means that the dice card game media is feasible, effective and can be developed in Indonesian language learning on description text material to improve the writing skills of grade 3 elementary school students.

At the stage of reviewing hypothetical results with the help of media experts, linguists, and material experts, and expert teachers using questionnaires, the results were obtained:

No.	Instrument or questionnaire	Value (%)	Criteria
1.	Instrument results Recapitulation of Media Expert Validation Questionnaire.	90,5 %	Very good, no need to revise
2.	Instrument results Recapitulation of Language Expert Validation Questionnaire.	85 %	Very good, no need to revise

3.	Instrument results Recapitulation of Material Expert Validation Questionnaire	92,3 %	Very good, no need to revise
4.	Learning device instruments by education experts.	82%	Very good, no need to revise
5.	The instrument results of the teacher's response to the barcode-based Dice Card Game (Gardu) media.	91,5%	Very good, no need to revise
6.	Recapitulation of student response questionnaires to the Dice Card Game learning media	89,9%	Very good, no need to revise

From these results, the barcode card is feasible and can be used by students, the results above are calculated using a linkert scale with supporting assessment criteria, so it is feasible to use.

CONCLUSION

Based on the analysis results, there are two outputs that show the correlation test and the mean difference test between the pre-test and post-test. In the experimental class (pair 1), the correlation coefficient value of 0.406 with a significance of 0.15 indicates a relationship between the pre-test and post-test scores, although the significance value is above the 0.05 limit. Meanwhile, in the control class (pair 2), the correlation coefficient of 0.705 with a significance of 0.000 shows different results, but what is more decisive is the paired sample t- test in the experimental class which produces a significance value of 0.001 (<0.05). Based on decision-making guidelines, if the significance value (Sig) is greater than 0.05 then Ho is accepted and Ha is rejected. If the sig value is smaller than 0.05 then Ho is rejected and Ha is accepted. This means that there is a significant difference between the pre-test and post-test scores in the experimental class. Thus, the use of barcode-based dice card game media is proven to have a significant effect in improving writing skills on description text material for grade 3 elementary school students, so that the media is feasible, effective, and can be developed in Indonesian language learning.

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