Vol. 15, No. 01, pp. 769-783, 2025 DOI: 10.23960/jpp.v15i1.pp769-783

Jurnal Pendidikan Progresif

e-ISSN: 2550-1313 | p-ISSN: 2087-9849

http://jurnal.fkip.unila.ac.id/index.php/jpp/

Development of a Game-Based e-Media "Snake Ladder Lumpia" to Improve Vocabulary Acquisition in Elementary Students

Dyah Pramesti Mustikasari*, & Panca Dewi Purwati

Department of Elementary School Teacher Education, Universitas Negeri Semarang, Indonesia

*Corresponding email: dyahpramesti@students.unnes.ac.id

Received: 12 April 2025 *Accepted: 20 May 2025* *Published: 21 May 2025*

Abstract: Development of a Game-Based e-Media "Snake Ladder Lumpia" to Improve Vocabulary Acquisition in Elementary Students. Objective: Students' ability to interpret vocabulary is still inadequate, which is the basis for this research. Students have been able to read but are still deficient in interpreting vocabulary. The use of learning media is still limited, and there is no special media for studying Indonesian. Utilizing digital technology or making simple props pertinent to the material, teachers can be more creative and use more diverse and innovative learning media. This study seeks to determine the feasibility and effectiveness of e-media "Snake Ladder Lumpia" in improving student learning outcomes in the material of interpreting vocabulary of four grade elementary school students. **Methods:** This research employs the research and development (R&D) method with the Borg and Gall model. The product validity test was carried out with two validators, namely material expert validators and media expert validators. Data was collected by interview, observation, test, and non-test techniques. Data was collected using a questionnaire. Analysis techniques used in this research are qualitative and quantitative. **Findings:** The feasibility test results of this study suggest that the media obtained 95% with a very feasible predicate, and the material expert obtained 95% with a very feasible predicate. From the pretest to the posttest, the results of the large-scale utilization trial have improved, with an average n-gain of 0.63 ($p < 0.05$). **Conclusion:** The conclusion from the results of this study indicates that the e-media "Snake Lader Lumpia" is declared feasible and effective in improving the competence of interpreting vocabulary of fourth-grade students of SDN Bringin 02 Semarang.

Keywords: game based learning, vocabulary, elementary student.

To cite this article:

Mustikasari, D. P., & Purwati, P. D. (2025). Development of a Game-Based e-Media "Snake Ladder Lumpia" to Improve Vocabulary Acquisition in Elementary Students. *Jurnal Pendidikan Progresif*, *15*(1), 769-783. doi: 10.23960/jpp.v15i1.pp769-783.

INTRODUCTION

Education is a lifelong and ongoing process that occurs in a variety of settings, such as the family, school, community, and society. We are compelled to pursue knowledge, skills, and experiences through learning at any time and in any location as human beings. The learning process should be designed to be interactive, engaging, interesting, and challenging in educational settings, particularly in formal institutions. This fosters independent learning based on students' talents and interests, while also promoting creativity and psychological development, and encourages students to be actively involved (Purwati, 2021).

Language acquisition is a critical element of early education, and vocabulary mastery is a critical component. The development of reading, writing, speaking, and listening abilities among elementary school students is contingent upon the

possession of a robust vocabulary. Nevertheless, the vocabulary learning media that are currently employed in primary education frequently do not correspond with the cognitive development stages of students. Ineffective for young learners who are in the concrete operational stage of development, many of these media are abstract and lack visual representation. Furthermore, vocabulary instruction continues to be primarily passive, relying too heavily on memorization rather than student-centered, engaging approaches. This condition is further exacerbated in rural schools due to the limited availability of technological learning aids.

Media that are developmentally appropriate, engaging, and capable of incorporating active learning are essential for effective vocabulary acquisition in elementary education. This potential is notably present in digital media that are designed using game-based learning approaches. Digital learning media are defined as media that employ machine-readable protocols to generate, disseminate, and modify educational content (Shoffa in Sari, 2023). Game-based learning (GBL) has been demonstrated to improve students' motivation and engagement in the learning process. Su (in Widiana, 2022) defines GBL as a learning model that incorporates electronic activities to accomplish instructional objectives. Research has shown that game-based learning can considerably enhance student enthusiasm and comprehension in a variety of subjects, such as science (Septiani, 2024) and mathematics (Paulina, 2023).

The Snakes and Ladders game is a well-known and widely used educational aid that has been successfully adapted. According to Anggraeni's (2024) research, digital Snakes and Ladders media not only facilitate access to educational content but also foster digital literacy, technological competence, and student motivation. Additionally, the implementation of game applications in language learning can foster a collaborative, participatory classroom environment that improves both comprehension and retention (An,, 2023).

The learning experience can be further enhanced by incorporating local wisdom into educational media. Sari (2022) underscored the importance of local wisdom-based education in the development of cultural identity and awareness. Sumayana (in Frestiyana, 2023) defined local wisdom as a collection of knowledge and values that are deeply rooted in the daily lives of communities, providing practical solutions to contextual issues. Local wisdom can improve student engagement and cultural appreciation when it is implemented in conjunction with game-based learning. Snakes and Ladders have been employed in previous studies, including that conducted by Anggraeni (2024), to incorporate cultural materials into digital learning aids.

The integration of media in education not only supports instructional objectives but also adapts learning to the technological demands of the modern era. Media use in education is essential for the attainment of educational objectives and is consistent with the global trend of digitalization, as per Natalia and Kristin (2021). Gabriela (2021) also underscored that the learning process is expedited and comprehension is enhanced through the use of media. Digital platforms, particularly those that are Android-based, provide a practical solution to enhance students' engagement and encourage active participation (Hasna, 2023; Sukaryanti, 2021).

Snakes and Ladders, as a learning medium, encourages student engagement and interaction. The motivational appeal of the game was observed by Syaikhu (2022), who observed that students are encouraged to respond to queries that are incorporated into the game. Oktavia (2022) identified numerous advantages of employing Snakes and Ladders in the classroom: it nurtures enjoyment, enhances literacy, supports cognitive development, encourages logical

thinking, and strengthens problem-solving skills. Additionally, it promotes engagement.

In spite of these benefits, a significant number of educators persist in employing conventional lecture methods and neglect to incorporate contextual and diverse learning media. Students frequently encounter challenges in comprehending vocabulary in real-world scenarios due to the absence of contextual relevance and interactive features in existing media. Additionally, the majority of research on Snakes and Ladders has concentrated on its physical appearance or on subjects that are not related to language acquisition, such as social studies (Anggraeni et al., 2023) or science (Rajab, 2023).

This study introduces a digital vocabulary learning media called e-media "Snake Ladder Lumpia" to overcome these constraints. This media is distinct from previous research in that it integrates local cultural elements and employs contemporary technology. An interactive and engaging learning experience is achieved by employing tools such as Canva, CorelDraw, and Genially to develop this media. The objective of the design is to improve students' retention, reduce boredom, and increase their interest in vocabulary acquisition. The following research issues are the focus of the current study:

1. What is the feasibility of e-media "Snake Ladder Lumpia" to enhance vocabulary acquisition among upper-grade elementary students?
2. What is the efficacy of e-media "Snake Ladder Lumpia" in improving students' vocabulary comprehension?

The objective of the investigation is to assess the quality and influence of the media on the learning outcomes of Indonesian language subjects. The efficacy of educational media is contingent upon its capacity to adjust to the local context and student characteristics, which encompasses instructor readiness, access to digital infrastructure, and socioeconomic conditions. These factors are essential for developing lesson plans that are inclusive and responsive to the requirements of a wide range of students.

METHOD

Participants

A population, as defined by Sugiyono (2021:126), is a generalization area that comprises subjects or objects that exhibit specific qualities and characteristics that researchers have identified as being relevant to the study and from which conclusions are derived. The population of this study consisted of fourth-grade students and teachers from SDN Bringin 01 and SDN Bringin 02, both located in the Bringin District of Semarang Regency. Additionally, material and media expert validators were included.

Purposive sampling, which is a type of non-probability sampling, was implemented for the small-scale trials. Purposive sampling is a method that selects samples based on specific criteria (Sugiyono, 2021:133). A total of 32 students participated in the trial, with 26 from SDN Bringin 02 and 6 from SDN Bringin 01. The student participants were chosen based on their responsiveness to teaching methods, academic performance variability, and level of material comprehension.

Research Design and Procedure Procedur

The research methodology employed is the R&D (Research and Development) method. Research methodology implemented to generate specific products and evaluate their efficacy (Sugiyono, 2021). R&D research is a process that is employed in the field of education to develop and validate educational products and discover new knowledge through "base research." Its objective is to promote educational changes that will enhance the positive benefits of

research findings in solving educational problems and to enhance the performance of educational practices. The Borg and Gall R&D method was selected to guarantee that the products produced are genuinely effective and can be successfully implemented in Indonesian education. We selected the Borg and Gall R&D model due to its methodical approach to the development, testing, and refinement of learning media.

ADDIE is the development methodology that will be implemented in this investigation. Analyze, Design, Develop, Implement, and Evaluate comprise the five stages of the ADDIE development model, as per Branch (2009). Stages of the ADDIE model are implemented in this research procedure. In the initial phase, interviews and observations of fourth-grade students and instructors at SDN Bringin 02 Semarang were conducted to analyze potential and existing issues. The findings of the observations were documented in the form of field notes and qualitatively analyzed to identify emergent patterns. In order to resolve the identified issues and potential, a prototype was created in accordance with the analysis. It was subsequently refined into an initial product, tested for feasibility, and implemented with 33 students using a one-group pretest-posttest design to evaluate efficacy. Evaluate the product for sustainability, quality improvement, and suitability during the final stage.

Instruments

The instruments used in this study include non-test instruments, including observation and interview instruments, teacher and student needs questionnaires, expert feasibility validation questionnaires, student worksheets, and teacher and student response questionnaires, and test instruments including pretests and posttests, which include cognitive learning outcomes tests of vocabulary material The material feasibility aspect consists of criteria: presentation feasibility and content feasibility. While media feasibility consists of indicators: language and readability, appearance attractiveness, and user-friendliness. Interviews are used as a data collection technique when researchers want to conduct a preliminary study to find a problem to investigate, or when researchers want to obtain more detailed information about respondents or when the number of respondents is small (Sugiyono, 2021). An unstructured interview is a free interview in which the researcher does not use a systematic and fully developed interview guide for data collection (Sugiyono, 2021).

According to Sugiyono (2021) explains that content validity is carried out by comparing the contents of the instrument with the content of the learning material given to students. If r_{pbi} is greater than r_{table}, then the question can be said to be valid. Meanwhile, if r_{pbi} smaller than r_{table} the question is said to be invalid. The r table at the 5% confidence level. The research instrument used in this study is a written test in the form of multiple-choice questions, totaling 30 questions and tested in class V SDN Bringin 02. The calculation results will be calculated using a dichotomous score, namely if the correct answer gets a score of 1 and if the wrong answer gets a score of 0. The result of $r_{countis}$ obtained from the calculation of the point biserial correlation, while r_{table} is obtained from N = 26 with a significance level of 5% so that r_{table} is 0.388. If r(count) > r(table) then the instrument is valid. Meanwhile, if r (count) < r(table) then the instrument is invalid. Question items that have been said to be valid can be used as pretest and posttest questions at the product usage trial stage.

Meanwhile, according to Sugiyono (2021), it is said that the reliability of an instrument can be tested internally and externally. Sugiyono (2021) said that reliability is related to the degree of precision of the measurement results. An instrument is said to be reliable if data from different points in time are similar. The calculation

results are obtained if the correct answer gets a score of 1 and if the wrong answer gets a score of 0. r countis obtained from the calculation of KR-20, while r_{table} is obtained from the calculation of N = 26 with a significant level of 5%, so that an r_{table} of 0.388 is obtained. If r(count) > r(table), then the instrument can be said to be reliable. Question items that have reliable criteria can be used for pretest and posttest questions during small-scale and large-scale product use trials. Reliable question items include "Very High" criteria, namely 0.864.

Data Analysis

Data analysis in this study is divided into three stages, namely product data analysis, initial data analysis, and final data analysis. Product data analysis includes media feasibility analysis and data analysis of teacher and student responses. Then the initial data analysis was carried out descriptively including the analysis of the needs questionnaire, feasibility test by expert validators, and response questionnaires from teachers and students.

The final data test was conducted through a normality test, a Paired Sample T-test, and an N-gain test. A normality test is used to determine whether the data is normally distributed. A Paired Sample T-test was used to analyze the difference in pretest and posttest scores. The N-gain test was used to measure the effectiveness of the learning process by analyzing the increase in student scores from pretest to posttest. In addition, the scores obtained from the pretest and posttest were analyzed descriptively by calculating the percentage of student learning completeness. Product data analysis in media feasibility data obtained from expert validation of e-media "Snake Ladder Lumpia" based on media validation is used as an analysis for media feasibility. After all the data is obtained, the data will be analyzed and converted into scores in the form of percentages. Based on the provisions of the percentage results that have been obtained, the data will then be converted based on the criteria of very feasible, feasible, sufficient, less feasible, and not feasible.

■ RESULT AND DISCUSSION

Design of e-media "Snake Ladder Lumpia"

Analysis

Digital media enhances one's linguistic proficiency in a more engaging and effective manner (Suryanti, 2024: 506). During the initial phase, the researcher identified a challenge: the poor comprehension of vocabulary material by students, as evidenced by their average scores. The average score of SDN Bringin 02 in Indonesian language learning is 75. However, the average score of a single class with 26 pupils in vocabulary material is only 64.2. Therefore, it can be inferred that Indonesian language lessons continue to lack novel vocabulary material. Other issues were identified as a result of the observations, interviews, and document data collected by the researchers. These include a lack of diverse learning media and students' lack of interest in learning Indonesian, which collectively result in a lack of student engagement in the learning process. Furthermore, learning resources are exclusively derived from student and teacher literature. Additionally, researchers identified an additional issue: the absence of specialized media to facilitate Indonesian language acquisition that educators employ during instruction. Teachers exclusively employ the blackboard and media, including images, as media intermediaries in the learning process. There are only two LCD projectors at SDN Bringin 02 Semarang, and they are seldom utilized by educators. Researchers are motivated to create a product due to the scarcity of diverse learning media.

The subsequent phase of data collection was conducted by researchers in accordance with the identified issues. This phase included the following: observation, interviews, data collection, and questionnaires regarding the requirements of students and teachers. In relation to the desired

product and as a reference to assist researchers in determining the product that needs to be developed. The results of the teacher needs analysis recapitulation indicate that the teacher fails to capitalize on the availability of learning media during Indonesian language instruction, resulting in a lack of interest in the learning process. The teacher exclusively employs the teacher's book and student book as sources of information. In order to engage students, educational media must be both informative and enjoyable. Visual learning media that is presented in engaging and thrilling activities is essential for students to remain engaged and motivated during the learning process.

Design

The subsequent phase involves the development of a product that addresses the issues identified through observations, interviews, data collection, and questionnaires that assess the requirements of students and teachers. Researchers endeavored to offer alternatives by creating a product known as Digital Lumpia Semarang Snakes and Ladders, which was developed using the Game Based Learning model. The product pertains to the interpretation of vocabulary in Indonesian language subject content. The narrative in this media is derived from the local wisdom of Lumpia Semarang. Additionally, this media will include Snakes and Ladders pieces, with each number containing a query for students to answer.

Development

This phase underscores the learning tool's initial design by examining a number of critical components: First, the identification of learning objectives. The objective of this phase is to develop a tool that is tailored to the requirements of students, such as enhancing the vocabulary acquisition of elementary students through an interactive and enjoyable method. The subsequent step will involve the development of the flow chart and storyline. This process encompasses the designing of the game mechanics, user interface, and game flow. As a result, each element of the learning media can be designed in a manner that is both comprehensible and organized. The subsequent phase is the selection of visual design. Colors, characters, icons, and game elements must be age-appropriate and appealing to the intended audience. Students' engagement in the learning process will be enhanced by the use of visually appealing elements. Lastly, game scenarios and queries are developed. For instance, in the Snakes and Ladders board game concept, each box may contain vocabulary queries that students must resolve prior to progressing. This not only enhances the interactive nature of the learning experience but also motivates students to engage in active learning and critical thinking. During this phase, learning media can be effectively designed to be engaging, enjoyable, and capable of achieving the predetermined learning objectives. The "Snake Ladder Lumpia" from e-media is a product that has been previously designed. Prototyping the game, which involves the creation of an early iteration of the game using game development software such as Canva, CorelDraw, and Genially web, commences this stage. The prototype functions as an initial framework that enables the developer to evaluate the concept and game mechanics prior to the release of the final version. Subsequently, interactive capabilities were implemented. In order to enhance the user experience, a variety of components were implemented, including audio effects, navigation icons, animations, and scoring systems. The purpose of these features was to enhance the game's engagement and facilitate its playability for students.

Implementation

The stages of applying the Game-Based Learning model are first, students will be directed to observe the surrounding environment to determine the learning theme, then students are invited to read the story of Lumpia Semarang which in each paragraph has new vocabulary and

its meaning. This media is also equipped with a guidebook for players, to make it easier for players. During the implementation process, pretests, learning process using Lumpia Snakes and Ladders e-media, students' worksheets, evaluation, and posttests were conducted.

Evaluation

The evaluation stage aims to assess the effectiveness of e-media "Snake Ladder Lumpia" in achieving learning objectives. Feedback from teachers and students was collected through questionnaires and then analyzed descriptively. The evaluation results became the basis for improving the e-module to make it more relevant and improve students' understanding.

This electronic media is produced using Genially web technology, as well as the Canva and CoelDraw applications. The existence of this era has rendered Snakes and Ladders more than just a print. Almost all students now possess digital devices, including laptops and mobile phones, as a result of technological advancements. This will bolster students' enthusiasm for multimedia-based learning (Maity, 2022). From an early age, students are exposed to future scientific and technological advancements through the use of technology (Spiteri & Chang Rundgren, 2020). Subsequently, the researcher's product, e-media "Snake Ladder Lumpia," was developed in accordance with the Game-Based Learning paradigm to enhance the comprehension of vocabulary among fourth-grade students at SDN Bringin 02 Semarang.

Product validation is the subsequent phase, which involves the evaluation of a product to identify its strengths and weaknesses with the assistance of experts in the relevant disciplines. Media and material specialists conducted the validation of e-media "Snake Ladder Lumpia" at this juncture. Mr. Bagas Kurnianto S. Pd., M. Pd., a lecturer in the PGSD study program at Semarang State University, conducted media expert validation. In the PGSD study program at Semarang State University, material expert validation was conducted with Dr. Sri Sukasih, S.S., M.Pd., a lecturer in Indonesian Language.

Expert validators acquire material and media feasibility test data to evaluate the development of products that are developed in accordance with their recommendations. The validation results provided to the material expert yielded a 95% percentage, which was deemed to be very feasible. Additionally, the material expert achieved a 95% percentage with the very feasible criteria. The data is presented in the subsequent table.

The Digital Lumpia Semarang Snakes and Ladders product is highly feasible to operate, as indicated by these findings. The defects of the product can be identified after consulting with media and material experts. Researchers will enhance the identified deficiencies in accordance with the recommendations of the experts (Sugiyono, 2019: 302). The media validator provides suggestions and enhancements, including the reversal of the finish and start positions. Therefore, the improvement is to reverse the finish and start positions. The story in the question was excessively lengthy, and the material validator recommended that it be condensed. Consequently, the question was revised to be shorter. Following the revision of the product by media and material experts, the subsequent phase involves the enhancement of the Lumpia Snakes and Ladders e-media's appearance.

Pilot Study

Product testing is the subsequent phase. A limited group of individuals participated in the product trial stage to gather feedback and information regarding the efficacy of e-media's "Snake Ladder Lumpia." The researchers conducted a small-scale product evaluation using e-media "Snake Ladder Lumpia." The sample consisted of six students from SDN Bringin 01 Semarang. The experimental method of one group

pretest posttest design was employed to conduct written tests (pretest and posttest) during the product testing stage. The objective was to more accurately compare the situation before and after the use of e-media "Snake Ladder Lumpia." After the learning process concluded, the researcher administered a response questionnaire to the teacher to ascertain their opinion of the e-media product, Spring Roll Ladder Snakes, in the context of Indonesian language learning.

Table 1. Results of the small group product usage trial

Action	Average	Lowes Score	Highest Score	Total of Students Completed	Percentage Description
Pretest	55.0	35	75	1	16%
Posttest	78.3	50	95	5	95%

The results of the small group product utilization trial indicated a substantial improvement in students' Indonesian learning outcomes with respect to the material to interpret vocabulary in the pretest and posttest actions. In the posttest action, the number of students who completed was 5 out of 6 students, or 95% completeness, with an average of 78.3, while the total number of students who completed was 1 out of 6 students or obtained 16% with an average of 55.0. The n-gain formula is then employed to calculate the results of the extant data, which demonstrates that there is a difference in the improvement of students' Indonesian learning outcomes in the material of interpreting vocabulary before and after the use of e-media "Snake Ladder Lumpia" in learning.

Additionally, the researchers utilized the n-gain formula and the t-test to calculate the extant data in the small-scale trial, resulting in the subsequent findings.

Table 2 indicates that the average (n-gain) of small groups increased by 0.56, and this increase was observed in moderate criteria. The

Table 2. Effectiveness test results

Criteria	Value
n-gain	0.56
Sig. (2-tailed)	0.000

average increase indicates that the utilization of e-media "Snake Ladder Lumpia" is effective in enhancing the learning outcomes of fourth-grade students at SDN Bringin 02 in the realm of interpreting vocabulary in class IV in Indonesian. The SPSS 25 application yielded a 2-tailed value of 0.000 for the pretest and posttest average difference test. A paired sample t-test is considered valid if the sig value (2-tailed) is greater than 0.005, which indicates that there is no significant difference between the learning outcomes of Indonesian pupils in the material of deciphering fairy tale messages on the pretest and posttest. The t-test results indicate a significant difference between the pretest and posttest results in the competence of interpreting vocabulary, with a sig (2-tailed) value of $0.000 < 0.005$.

The researcher employed a teacher response questionnaire to identify the product's deficiencies following its small-scale testing. The suggestions provided by the validators will be utilized as enhancement materials to ensure the effectiveness of the developed product during use. A closed questionnaire was employed in this investigation, which utilized a Likert scale that offered respondents, specifically instructors,

alternative response options of "yes" and "no." The questionnaire comprises the following items: 10, 20, 30, 40, 50, 60, 70, 80, and The Large Group Product Trial Results Average is completed by checking the answer options that correspond to the respondent's opinion.

Table 3. Results of teacher response questionnaire

No.	Indicator	1	2	3	4
1.	E-media Snake Ladder Lumpia in accordance with learning competencies, indicators or objectives learning.				✓
2.	The evaluation given is in accordance with the material and learning objectives.				✓
3.	The suitability of the design concept of e-media Snakes and Ladders Lumpia with the material described.				✓
4.	The material presented is clear and easy to understand in accordance with the level of the students think.				✓
5.	E-media Snakes and Ladders Lumpia helps and facilitates the teacher in deliver material vocabulary new vocabulary material and can improve learners' vocabulary knowledge.			✓	
6.	The overall appearance of the Lumpia Ladder e-media is attractive and represents the overall material vocabulary new to improve learners' vocabulary knowledge.			✓	
7.	The use of language in the Lumpia Ladder Snake e-media is suitable for fourth grade elementary school students.			✓	
8.	Type and size of font used in the Snakes and Ladders e-media Lumpia is interesting and easy for learners to read.			✓	

The e-media "Snake Ladder Lumpia" achieved an assessment percentage of 87.5% with the assessment criteria "Very Feasible" based on the analysis of the teacher response questionnaire. When conducting small-scale trials, researchers proceed to revise the product in accordance with the input and suggestions of teachers. Teachers and students proposed modifications to media titles that were unclear.

Table 4. Revision results based on student and teacher suggestions

Appraise	Advice	Before Revision	After Revision
Teachers and Students	Game Title is not big enough		

Effectiveness Test

The trial use is the subsequent phase. The participants of this investigation were 26 fourth-grade pupils from SDN Bringin 02 Semarang, selected through a saturated sampling technique that included all members of the population. The evaluation of the efficacy of the media on the learning outcomes of Indonesian students via the trial use of e-media "Snake Ladder Lumpia" on vocabulary interpretation material. (Sukarelawan, 2024) specifies the gain index interpretation criteria as follows.

Table 5. Gain index interpretation

n-gain Score	Interpretation
$0.70 \leq g \leq 1.00$	High
$0.30 \leq g < 0.70$	Medium
$0.00 < g < 0.30$	Low
g = 0,00	No incrase
$-1.00 \leq g < 0.00$	There was a decrease

Additionally, the researchers utilized the n-gain formula and the t-test to calculate the extant data in the large-scale trial, resulting in the subsequent findings

Table 6. Results of the large scale effectiveness test

Criteria	Value
n-gain Class	0.63
Sig. (2-tailed)	0.000

Table 6 indicates that the average n-gain of small groups on students' Indonesian learning outcomes in the interpretation of vocabulary increased from 53.7 to 84.8 on the posttest, with an average difference of 32.7 and an average increase (n-gain) of 0.65 in moderate criteria. The increase in the average indicates that fourth-grade students at SDN Bringin 02 are effectively utilizing e-media "Snake Ladder Lumpia" to enhance their Indonesian learning outcomes in the class IV vocabulary interpretation material. In addition, Table 11 displays the results of the pretest and posttest average difference test, which were conducted using the SPSS 25 application. The value is 0.000, with two tailed. The standard for conducting a paired sample t-test is that if the sig value (2-tailed) is greater than 0.005, there is no significant difference between the learning outcomes of pupils in Indonesian vocabulary meaning material on the pretest and posttest. There is a significant difference between the pretest and posttest results, as evidenced by the t-test results; sig (2-tailed) 0.000 < 0.005. The e-media "Snake Ladder Lumpia" can be assured of its effectiveness when employed in learning activities, particularly in the vocabulary interpretation material of class IV SDN Bringin 02. This conclusion is supported by the information presented in the data.

Research conducted by Novita (2020) on the enhancement of student learning outcomes through the use of Digital Snakes and Ladders Game Media In cycle 1, the average score was 74.42, which was subsequently increased to 84.02 in cycle 2, a 9.6 point increase. It is therefore inferred that Digital Ladder Snake media has the potential to enhance learning outcomes and alter student learning outcomes.

Kusmiyati (2021) conducted research that yielded a significance value of 0.000 < 0.05 for the experimental class. This indicates that there are disparities in the learning outcomes of Indonesian students between the experimental and control classes. The posttest value data demonstrate that there are disparities in Indonesian learning outcomes between the experimental and control classes, as indicated by the results of the T-test implemented with SPSS 25. It is evident that the game-based learning model, when implemented with UNO stacko media for question cards, can enhance student learning outcomes in experimental classes in comparison to those achieved by students in control classes who are exposed to conventional learning models. This study shows that the e-media Snake Ladder Lumpia, reflected in the significant increase in pretest and posttest scores which can be seen in the following table.

Furthermore, the learning experience offered by e-media "Snake Ladder Lumpia" can also enhance the motivation and confidence of

Table 7. Paired samples test pretest and posttest

Paired Differences								
Score	**Mean Difference**	**SD**	**SE**	**95% CI**		**t**	**df**	**Sig. (2-tailed)**
Pretest-Posttest	-23.33	6.055	2.472	-29.69	-16.98	-9.44	5	.000

participants, thereby resulting in improved outcomes. Consequently, the intervention's effectiveness in enhancing the abilities of participants is suggested by the increase in post-test scores. Furthermore, the learning experience offered by e-media "Snake Ladder Lumpia" can also enhance the motivation and confidence of participants, thereby resulting in improved outcomes. Consequently, the intervention's effectiveness in enhancing the skills of participants is supported by the increase in post-test scores.

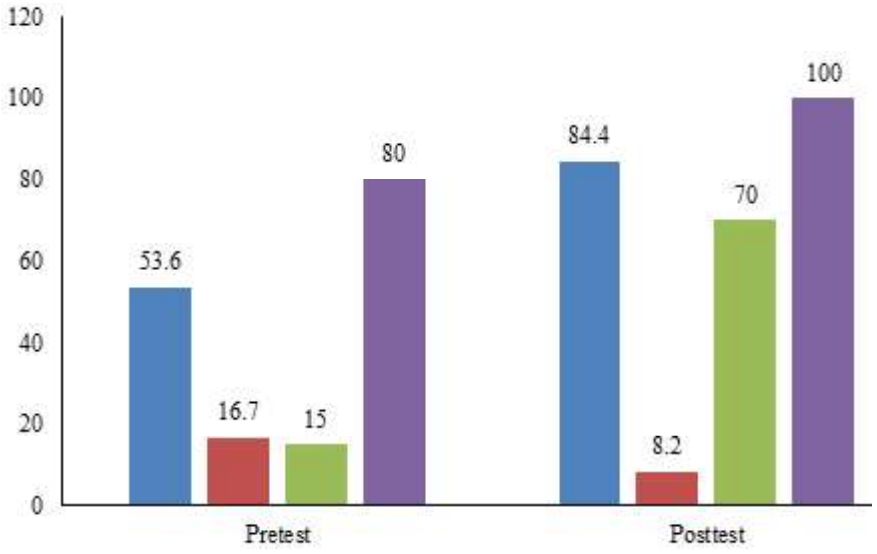

Figure 2. Pretest and posttest results (mean, standard deviation, minimum and maximum value are presented in blue, red, green and purple)

The results of the small group product use trial indicate a substantial improvement in students' Indonesian learning outcomes in the material of interpreting vocabulary in the pretest and posttest actions, as illustrated in Image 1. The pretest yielded a total of 6 students, or 11%, who achieved completeness. Conversely, the posttest action yielded 25 students, or 96%, who achieved completeness. The n-gain formula is then employed to compute the results of the existing data, which demonstrates that there is a difference in the improvement of students' Indonesian learning outcomes in the material of interpreting vocabulary before and after the use of e-media Snake Ladder Lumpia.

The development of e-media "Snake Ladder Lumpia" differs from previous studies in that the media employed in this research are more contemporary, as technological advancements have permeated all aspects of daily human life in the present day. e-media Snakes and Ladders also capitalizes on the sophistication of contemporary technology by employing the Canva, CorelDraw, and Genially web

applications to facilitate the creation of images that are specifically designed to align with the competencies that are to be attained. This is consistent with the notion (Abdulrahaman et al, 2020) that multimedia technology has been demonstrated to be a successful method for overcoming constraints in the provision of unlimited access to high-quality education and enhancing student performance.

The utilization of learning media in the form of snakes and ladders activities has been demonstrated to be effective in enhancing student motivation and learning outcomes, as indicated by prior research. For instance, Zuhriyah (2020) conducted a study in which she developed a Snakes and Ladders game media for social studies courses. The study concluded that this media is highly practical and appropriate for use in the learning process. Furthermore, the research conducted by Saputra et al. (2020) effectively developed and produced educational games for the purposes of number recognition and arithmetic, which were deemed appropriate for children.

The primary distinction between e-media "Snake Ladder Lumpia" and previous investigations is the specific content that is presented. The learning content of e-media "Snake Ladder Lumpia" incorporates local wisdom, specifically lumpia, in contrast to previous studies that concentrated on generic materials such as social studies or mathematics. This discrepancy is the result of the endeavor to connect the learning material with the students' local culture and environment, which can enhance their engagement and relevance in the learning process.

The primary obstacle that may arise is the lack of access to technology devices and an internet connection if the Lumpia Ladder e-media is digital. This issue is primarily encountered by students in regions with inadequate digital infrastructure, where internet connections are inconsistent or even challenging to access. Additionally, the instructors' and students' proficiency in technology utilization is a determining factor in the successful implementation of the Lumpia Ladder Snake e-media. The efficacy of learning through this medium may be diminished if the individual is not proficient in operating or conversant with digital devices. Consequently, it is imperative to ensure that teachers and pupils have adequate access to technology and training in order to fully leverage this e-media in educational activities.

The Lumpia Ladder Snake e-media remains functional regardless of whether it is digital or printed. Furthermore, this investigation is founded on the Game Based Learning paradigm, which alters students' capabilities by referencing the national competency assessment. Students' comprehension can be rapidly enhanced through the use of Semarang's Digital Lumpia Ladder, which comprises images and text that employ straightforward language. Images are static visual displays that convey specific information or messages (Momang, 2021). The Lumpia Ladder Snake e-media features interactive writing and images that can help students better comprehend the material and interpret vocabulary. It has the potential to enhance the learning outcomes and interest of students, particularly in their capacity to comprehend vocabulary in grade IV elementary education.

This is consistent with the research conducted by Manongga (2021), which established that technology can be employed to assist pupils in achieving their desired outcomes. The learning and teaching process is significantly influenced by learning media, which is essential for the development of active, effective, and efficient learning (Wijnen et al., 2023). It will assist educators in the effective communication of knowledge to students, thereby enabling them to accomplish their educational goals (Jureynolds et al., 2021).

The findings indicated that the e-media "Snake Ladder Lumpia" could be beneficial for

grade IV elementary school students, as it has the potential to pique their interest and enhance their motivation to learn. Furthermore, this media stimulates students' intellectual curiosity during the learning process. The media presented here assists teachers in acquiring the meaning of vocabulary through captivating stories and images that are easily comprehensible to students. Furthermore, this medium can facilitate students' comprehension of vocabulary in the classroom.

CONCLUSION

The development of e-media "Snake Ladder Lumpia" was based on the results of the research. The content of the Indonesian language lessons was interpreted on the vocabulary of class IV SDN Bringin 02, and the needs of both teachers and students were met by utilizing digital technology with Canva, CorelDraw, and Genially web applications. The feasibility level of e-media "Snake Ladder Lumpia" has been evaluated by the entire team of validators, which includes material experts and media experts. The results of the material expert research indicated that the project is 95% very feasible, while the media expert research indicated that the project is 95% very feasible. According to a teacher response questionnaire, the feasibility of e-media "Snake Ladder Lumpia" is 87.5%. Effectively, the e-media "Snake Ladder Lumpia" is employed to enhance the comprehension of vocabulary. This is verified by a significance value (2-tailed) ($p<0.05$) and an increase in the average n-gain learning outcome of 0.63. This study's findings indicate that the e-media "Snake Ladder Lumpia" is both feasible and effective in enhancing the vocabulary interpretation skills of fourth-grade students at SDN Bringin 02 Semarang.

The development of a diverse and innovative array of Indonesian language learning media is essential for instructors to enhance the comprehension and learning outcomes of students in Indonesian education. The research and development of Lumpia Semarang Digital Ladder Snake have demonstrated that this medium can bolster the learning process of Indonesian language by providing assistance with vocabulary interpretation in elementary schools. The provision of training facilities to instructors is anticipated to facilitate the development of innovative Indonesian learning media, thereby facilitating the comprehension and enhancement of students' language skills. Lumpia Semarang Digital Ladder Snake is also anticipated to be utilized by students as an independent learning resource at home.

ACKNOWLEDGMENTS

The researcher would like to express their gratitude to Dr. Panca Dewi Purwati, M. Pd, for her guidance thus far, which has enabled the researchers to successfully and joyously complete this research. We are grateful to SDN Bringin 02 and SDN Bringin 01 for their assistance and facilitation of this research. Additionally, it is imperative to express gratitude to the esteemed alma mater of Semarang State University.

REFERENCES

Abdulrahaman, M. D., Faruk, N., Oloyede, A. A., Surajudeen-Bakinde, N. T., Olawoyin, L. A., Mejabi, O. V., Imam-Fulani, Y. O., Fahm, A. O., & Azeez, A. L. (2020). Multimedia tools in the teaching and learning processes: A systematic review. Heliyon, 6(11), e05312. https://doi.org/10.1016/j.heliyon.2020.e05312

Alifah, H. N., Virgianti, U., Sarin, M. I. Z., Hasan, D. A., Fakhriyah, F., & Ismaya, E. A. (2023). Systematic literature review: Pengaruh media pembelajaran digital pada pembelajaran tematik terhadap hasil belajar siswa SD. Jurnal Ilmiah Dan Karya Mahasiswa, 1(3), 103-115.

Anggraeni, N. O., Abidin, Y., & Wahyuningsih, Y. (2023). *Pengembangan media pembelajaran permainan ular tangga digital pada materi keragaman budaya*

indonesia mata pelajaran ips kelas iv sekolah dasar. Jurnal PIPSI (Jurnal Pendidikan IPS Indonesia), *8*(1), 22. https://doi.org/10.26737/jpipsi.v8i1.3976

Anggraeni, N. O., Mulyasari, E., & Gazella, S. D. (2024). *Upaya meningkatkan hasil belajar melalui permainan ular tangga digital pada mata pelajaran IPAS Kelas 3 Sekolah Dasar. Al-Madrasah Jurnal Pendidikan Madrasah Ibtidaiyah*, *8*(2), 495. https://doi.org/10.35931/am.v8i2.3443

An, M. G., Siska, Y., Harjanto, A., & Maryana, D. (2023). *Pengembangan media pembelajaran kosakata baku bahasa indonesia berbasis game android untuk siswa sekolah dasar*. *5*, 290–304.

Branch, RM (2009). *Desain instruksional: pendekatan addie. Dalam pembelajaran digital: konsep-konsep utama* (edisi ke-1). Springer New York.

Faradina, & Effendi, R. (2022). *Kemampuan memahami kosakata bahasa indonesia siswa kelas III SD. Jurnal Bahasa*, *5*(2).

Frestiyana, I. (2023) *Berbasis kearifan lokal pada pembelajaran bahasa indonesia untuk peningkatan kemampuan literasi membaca di sekolah dasar. Pendas: Jurnal Ilmiah Pendidikan Dasar*, *08*, 5724–5734. https://journal.unpas.ac.id/index.php/pendas/article/view/10523

Gabriela, N. D. P. (2021). *Pengaruh media pembelajaran berbasis audio visual terhadap peningkatan hasil belajar sekolah dasar. Mahaguru: Jurnal Pendidikan Guru Sekolah Dasar* , *2*(1), 104–113. https://doi.org/10.33487/mgr.v2i1.1750

I.K, Sari. (2022). *Pengembangan kartu kata bergambar berbasis kearifan lokal dalam membaca permulaan bagi siswa lamban belajar.* Jurnal Penelitian, Pendidikan, dan Pembelajaran.

Kusmiyati, K. (2021). *Pengaruh model pembelajaran game based learning dengan bantuan media uno stacko for question card terhadap hasil belajar bahasa indonesia topik bahasan puisi rakyat. Sarasvati*, *3*(2), 184. https://doi.org/10.30742/sv.v3i2.1602

Manongga, A. (2021). *Pentingnya teknologi informasi dalam mendukung proses belajar mengajar di sekolah dasar. Pascasarjana Univearsitas Negeri Gorontalo Prosiding Seminar Nasional Pendidikan Dasar*, *978-623–98*(November), 1–7.

Momang, H. D. (2021). *Pengembangan model buku ajar digital keterampilan menyimak berdasarkan pendekatan autentik. KEMBARA Journal of Scientific Language Literature and Teaching*, *7*(1), 71–93. https://doi.org/10.22219/kembara.v7i1.16202

Natalia, S. G., & Kristin, F. (2021). *Efektivitas penggunaan media pembelajaran google classroom sebagai bentuk peningkatan kualitas hasil pembelajaran ips sekolah dasar. Jurnal Basicedu*, *5*(6), 5043–5049. https://doi.org/10.31004/basicedu.v5i6.1586

Novita, L., & Sundari, F. S. (2020). *Peningkatan hasil belajar siswa menggunakan media game ular tangga digital. Jurnal Basicedu*, *4*(3), 716–724. https://doi.org/10.31004/basicedu.v4i3.428

Oktavia, R. (2022, June 15). *Game based learning meningkatkan efektivitas belajar siswa.* https://doi.org/10.31219/osf.io/6aeuy

Paulina, C., Rokmanah, S., Syachruroji, A., Studi, P., Guru, P., Dasar, S., Sultan, U., & Tirtayasa, A. (2023). *Efektivitas penggunaan model game based learning dalam pembelajaran matematika di SD. Jurnal Pendidikan Tambusai*, *7*, 31348–31354.

Purwati, P. D., Trimurtini, T., Widagdo, A., Tyas, D. N., & Andriani, A. E. (2021). The

application of PJBL model with the help of virtual debate method to assess article writing competence. *Proceedings of the International Conference on Industrial Engineering and Operations Management*, 3602–3613. https://doi.org/10.46254/an11.20210641

Rajab, T. A., Prasasti, P. A. T., & Listiani, I. (2023). *Ular tangga berbasis digital sebagai media pembelajaran untuk siswa kelas V SD. Al-Madrasah: Jurnal Pendidikan Madrasah Ibtidaiyah*, *7*(4), 1531. https://doi.org/10.35931/am.v7i4.2612

Saputra, V. H., Darwis, D., & Febrianto, E. (2019). *Rancang bangun aplikasi game matematika untuk penyandang tunagrahita berbasis mobile. Computatio/ : Journal of Computer Science and Information Systems*, *3*(2), 116. https://doi.org/10.24912/computatio.v3i2.6033

Sari, W. T., & Prawijaya, S. (2023). *Pengaruh media ular tangga berbasis digital terhadap hasil belajar siswa pada tema 9 Subtema 1 Di Kelas V. Jurnal Pendidikan Dan Konseling*, *7*(4), 587–594.

Septiani, I. R., Ali, E. Y., & Ismail, A. (2024). *Analisis keefektifan implementasi game based learning dalam meningkatkan pemahaman siswa materi sistem tata surya. Ideguru: Jurnal Karya Ilmiah Guru*, *9*(3), 1560–1566. https://doi.org/10.51169/ideguru.v9i3.1171

Septianti, N., & Afiani, R. (2020). *Pentingnya memahami karakteristik siswa sekolah dasar di SDN Cikokol 2. As-Sabiqun*, *2*(1), 7–17. https://doi.org/10.36088/assabiqun.v2i1.611

Sugiyono. (2019). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Bandung: Alfabeta.

Sugiyono. (2021). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Bandung: Alfabeta

Sukarelawan, M. I., Indratno, T. K., & Ayu, S. M. (2024). *n-gain vs Stacking*.

Sukaryanti, D., Nasution, F. N., Indria, S., & Hadi, W. (2021). *Pentingnya media pembelajaran digital dalam mensukseskan pembelajaran bahasa indonesia di masa pandemi. Prosiding Seminar Nasional PBSI-IV*, 185–190.

Suryanti, E., Tri Widayati, R., Nugrahani, F., & Veronika, U. P. (2024). *Pentingnya pengembangan media berbasis digital pada pembelajaran bahasa Indonesia. Jurnal Pendidikan*, *33*(1), 505–514. https://doi.org/10.32585/jp.v33i1.4944

Syaikhu, A. A., Pranyata, Y. I. P., & Fayeldi, T. (2022). *Pengembangan media pembelajaran matematika electronic snake and ladder pada game-based learning. Journal Focus Action of Research Mathematic (Factor M)*, *5*(1), 14–30. https://doi.org/10.30762/f_m.v5i1.629

Widiana, W. (2022). *Game based learning dan dampaknya terhadap peningkatan minat belajar dan pemahaman konsep siswa dalam pembelajaran sains di sekolah dasar. Jurnal Edutech Undiksha*, *10*(1), 1–10. https://doi.org/10.23887/jeu.v10i1.48925

Winarti, S. (2023). *Penguasaan kosakata bahasa indonesia siswa sd ditinjau dari aspek kelas kata: studi kasus pada tiga sekolah dasar di Kota Ternate, Provinsi Maluku Utara. Tematik: Jurnal Penelitian Pendidikan Dasar*, *2*(1), 6–16. https://doi.org/10.57251/tem.v2i1.890

Zuhriyah, A. (2020). *Pengembangan media pembelajaran permainan ular tangga untuk meningkatkan motivasi belajar siswa dan hasil belajar IPS di Madrasah Ibtidaiyah. Attadrib: Jurnal Pendidikan Guru Madrasah Ibtidaiyah*, *3*(2), 26–32. https://doi.org/10.54069/attadrib.v3i2.110