

A STRATEGY FOR USING WORDWALL FLASH CARDS TO IMPROVE ELEMENTARY SCHOOL STUDENTS' UNDERSTANDING OF IPAS CONCEPTS

Chalistya Syahla Ilham Radinda¹, Yoga Fernando Rizqi², Muhisom³,
Frida Destini⁴

¹²³⁴Elementary School Teacher Education Program, University Lampung

e-mail: tiyasyaha@gmail.com, yoga.fernando@fkip.unila.ac.id,
muhisom@fkip.unila.ac.id, frida.destini@fkip.unila.ac.id,

Abstract

Conceptual understanding is an important aspect in learning Natural and Social Sciences (IPAS) in elementary schools under the Independent Curriculum, but it is still not optimal due to the use of less varied learning media. This study aims to analyze the effect of the strategy of using Wordwall Flash Cards on students' conceptual understanding. The study used a quantitative approach with a quasi-experimental method through non-equivalent control group. The sample consisted of 58 students selected. Data were collected through a conceptual understanding test and analyzed using simple linear regression. The results showed an R Square value of 0.644, which means that Wordwall Flash Cards had a 64.4% effect on students' understanding of the concept of IPAS. Thus, this strategy has a positive effect on elementary school students' conceptual understanding.

Article History

Submitted: 2 February 2026
Received: 10 April 2026
Published: 30 April 2026

Kata kunci: *Wordwall Flash Card, conceptual understanding, IPAS, elementary school.*

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A. PENDAHULUAN

In Indonesia, there are still various educational issues that pose challenges in efforts to improve the quality of and equal access to education. Quality education is a fundamental necessity for supporting a nation's progress because education not only serves as a means of transferring knowledge to the younger generation as the nation's future successors but also functions as an important instrument in creating sustainable social change. Therefore, the role of educators is crucial in designing and implementing effective, innovative, and meaningful learning processes for students (Hasanah et al., 2024).

One manifestation of this role is the effort to improve students' conceptual understanding during the learning process. Conceptual understanding is a fundamental aspect that determines students' success in comprehensively understanding learning materials. Students who possess strong conceptual understanding will find it easier to develop higher-order thinking skills and apply

their knowledge in different contexts (Kurnia, 2015). In addition, conceptual understanding serves as the foundation for building a comprehensive knowledge structure because each concept is interconnected and forms a systematic network of knowledge (Murtiyasa et al., 2022).

Conceptual understanding has become increasingly important in the implementation of the Merdeka Curriculum, particularly in the subject of Natural and Social Sciences (IPAS). The IPAS subject requires students to develop a deep understanding of concepts because it integrates various disciplines, namely natural sciences and social sciences, while relating them to real-life phenomena. This integration aims to enhance students' scientific and social literacy in a balanced manner. Scientific literacy includes the ability to understand scientific concepts and interpret data-based information, whereas social literacy relates to the ability to understand social dynamics, cultural values, and active participation in community life (Zakarina et al., 2024).

However, in practice, achieving conceptual understanding in IPAS among elementary school students still faces various obstacles. Based on classroom observations, it was found that some students still experienced difficulties in understanding the material conceptually. This was indicated by low learning outcomes, with many students not meeting the Minimum Mastery Criteria (KKM), as well as their limited ability to explain the concepts they had learned. These conditions indicate that the learning process has not yet fully supported the development of optimal conceptual understanding.

One factor contributing to this low level of conceptual understanding is the use of learning media that lack variety and are unable to visualize the material effectively. Learning that is still dominated by conventional methods tends to make students passive and less actively involved in the learning process. Therefore, innovative learning strategies that are appropriate to the characteristics of elementary school students are needed, one of which is the use of technology-based learning media.

Along with the advancement of the times, the use of interactive multimedia in learning has become increasingly relevant, especially in the era of rapid developments in information and communication technology. Digital transformation in education has become an essential necessity for creating more effective, efficient, and engaging learning experiences. The use of technology in learning enables educators to provide more varied learning experiences while encouraging students' active participation (Andita & Rafaela, 2023).

Digital-based learning media are currently developing rapidly and provide various alternatives for educators in delivering learning materials. Interactive media function not only as instructional aids but also as tools that enable students to construct their own knowledge through direct interaction with learning materials. This is consistent with the constructivist approach, which emphasizes that learning

is more effective when students actively participate in the process of constructing knowledge (Khofifah Indra Sukma & Trisni Handayani, 2022).

One interactive learning medium that can be utilized is Wordwall. Wordwall is a digital platform that offers various learning activities in the form of engaging and interactive educational games. This medium allows students to learn through enjoyable activities, thereby increasing their motivation, engagement, and conceptual understanding. The use of Wordwall also provides students with opportunities to review learning materials independently or collaboratively, making the learning process more effective (Jannah et al., 2025).

In IPAS learning at the elementary school level, Wordwall can be combined with Flash Cards as a more effective instructional strategy. Flash Cards serve as visual media that help students recognize and remember concepts, while Wordwall provides an interactive, game-based learning experience. The combination of these two media is expected to strengthen conceptual understanding through visualization, repetition, and students' active involvement in the learning process.

The Wordwall Flash Card strategy emphasizes systematic planning and implementation of learning through visual activities, interactive games, and gradual reinforcement of concepts. Through this strategy, students not only receive information but are also trained to answer questions, explain concepts in their own words, and connect concepts to real-life situations. Consequently, the learning process becomes more meaningful and student-centered.

Based on the explanation above, it can be concluded that the use of Wordwall Flash Cards has the potential to serve as an innovative solution for improving elementary school students' conceptual understanding of IPAS. Therefore, this study was conducted to empirically analyze the effect of using Wordwall Flash Cards on students' conceptual understanding of IPAS.

B. RESEARCH METHODOLOGY

This study uses a quantitative approach with a quasi-experimental method. The research design employed is a non-equivalent control group design, involving two groups: an experimental class and a control class. The experimental class received treatment using the Wordwall Flash Card media, while the control class used conventional learning media in the form of PowerPoint.

The research subjects consisted of 58 students, with 29 students in the experimental class and 29 students in the control class. The sampling technique used was total sampling, in which the entire population was used as the research sample.

C. RESULTS AND DISCUSSION

This study used pretest and posttest data to determine changes in students' understanding of IPAS concepts in the experimental and control classes. The

pretest was administered before instruction to assess students' initial abilities, while the posttest was administered after instruction to assess improvements in conceptual understanding. The experimental class received instruction using Wordwall Flash Cards. The pretest and posttest scores are presented in the following table.

Table 1. Pretest and Posttest Scores for the Experimental Class

Value	n	Achieved	Not Yet Achieved	Lowest Value	Highest Score	On average
<i>Pretest</i>	29	3	26	55	80	64,48
<i>Posttest</i>		20	9	70	90	81,03

According to Table 1, the average pretest score of 64.48 increased to 81.03 on the posttest. The lowest score increased from 55 to 70, while the highest score increased from 80 to 90. These results indicate an improvement in the students' conceptual understanding following the implementation of Wordwall Flash Cards.

The control group did not receive instruction using Wordwall Flash Cards or PowerPoint presentation materials. The pretest and posttest scores are presented in the following table.

Tabel 1. Nilai Pretest dan Posttest Kelas Kontrol

Value	n	Achieved	Not Yet Achieved	Lowest Value	Highest Score	On average
<i>Pretest</i>	29	6	23	40	80	63,44
<i>Posttest</i>		18	11	55	90	73,96

Based on Table 2, the average Pretest score of 63.44 increased to 73.96 in the Posttest. The lowest score increased from 40 to 55, while the highest score increased from 80 to 90. This improvement indicates that the learning process also had an effect on students' conceptual understanding, although not as great as in the experimental class.

Overall, the increase in scores in the experimental class was higher than that in the control class. This indicates that the use of Wordwall Flash Cards produced more optimal results in improving students' conceptual understanding. Therefore, further analysis is needed to determine the significant effect of using Wordwall Flash Cards through a simple linear regression test. Before conducting the test, the data were tested for normality and homogeneity. The test results showed that the data were normally distributed and homogeneous, thus meeting the requirements for simple linear regression analysis.

Hypothesis testing was conducted using simple linear regression analysis

to determine the effect of using Wordwall Flash Cards on students' understanding of IPAS concepts. The results of the regression analysis are presented in the following table.

Table 3. Simple Regression Analysis

Name	Value
Intercept Y	40,399
Koefisien X	0,652
Fhitung	48,884
Significance F	0,000
Multiple R	0,803
R Square	0,644
Adjusted R Square	0,631

Based on the analysis results, a Multiple R value of 0.803 was obtained, indicating a strong relationship between the use of Wordwall Flash Cards and students' conceptual understanding. The R-squared value of 0.644 indicates that the use of Wordwall Flash Cards accounts for 64.4% of the variation in students' conceptual understanding, while the remaining 35.6% is influenced by other factors. The ANOVA test results show a calculated F-value of 48.884 with a significance level of $0.000 < 0.05$, indicating that the regression model is significant. The regression equation obtained is: $Y = 40.399 + 0.652X$. The regression coefficient of 0.652 indicates that every increase in the use of Wordwall Flash Cards is followed by an increase in students' conceptual understanding. Thus, H_0 is rejected and H_1 is accepted.

DISCUSSION

The research findings indicate that the use of Wordwall Flash Cards has a positive and significant effect on elementary school students' understanding of Integrated Science and Social Studies (IPAS) concepts. This is evident from the higher increase in the average scores of the experimental class compared to the control class, and is further supported by the regression analysis results, which show an effect of 64.4%. These findings demonstrate that the use of interactive learning media can improve the quality of students' conceptual understanding more effectively than conventional learning.

The improvement in conceptual understanding was not solely due to the use of the media, but also to the characteristics of Wordwall Flash Cards, which enable students to actively participate in the learning process. Through game-based activities, students engage in repetition and gradual reinforcement of concepts. This process helps strengthen long-term memory and makes it easier for students to

connect new concepts with their prior knowledge. In addition, presenting the material in a visual and interactive format helps students understand concepts more concretely, in accordance with the developmental characteristics of elementary school students.

The findings of this study are consistent with the research conducted by Jannah et al. (2025), which states that the use of Wordwall can increase students' learning motivation and engagement in the learning process. Furthermore, these findings are supported by Khofifah Indra Sukma and Trisni Handayani (2022), who argue that interactive media are constructivist in nature because they allow students to construct knowledge through direct interaction with the learning media. In this context, Wordwall Flash Cards function not only as instructional media but also as a tool that actively promotes the construction of knowledge.

Compared with the learning outcomes in the control class, the improvement was relatively lower because the instruction remained teacher-centered and involved less active student participation. This indicates that students' active involvement is a crucial factor in enhancing conceptual understanding. Therefore, the use of Wordwall Flash Cards offers an advantage in creating a more interactive, engaging, and student-centered learning environment. The effectiveness of Wordwall Flash Cards lies not only in their visual and interactive features but also in their ability to facilitate students' cognitive processes. Activities involving repetition, answer selection, and immediate feedback encourage students to elaborate on information. This process plays an important role in strengthening conceptual understanding and improving learning retention.

D. CONCLUSION

Based on the research findings and discussion, it can be concluded that the strategy of using Wordwall Flash Cards has a positive and significant effect on elementary school students' understanding of IPAS concepts. The implementation of this strategy enhances students' conceptual understanding through the presentation of visual, interactive, and engaging materials, thereby encouraging their active participation in the learning process. The combination of the Wordwall digital game and Flash Cards makes it easier for students to understand, remember, and relate IPAS concepts to their daily lives; therefore, the strategy of using Wordwall Flash Cards can serve as an innovative alternative learning strategy to improve elementary school students' understanding of IPAS concepts.

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