

SLR: The Use of Number Cards as a Mathematics Learning Media in Elementary Schools

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Abstract

This research is motivated by the understanding of basic mathematical concepts often being a challenge for students in elementary schools. One solution that can be applied is to use concrete media, such as number cards. The purpose of this study is to determine how effective the use of number cards is in learning mathematics in elementary schools. The method used in this study is the Systematic Literature Review (SLR). Data were collected from various relevant scientific articles and analyzed based on the themes of impact, benefits, and challenges in implementing this media. This study includes 12 relevant articles, with an in-depth analysis of 5 main articles. The results of the study indicate that number cards are effective in increasing student motivation, student participation, and student learning outcomes. In addition, this media makes abstract mathematical concepts more real and easier to understand. However, the use of number cards requires good planning and teacher creativity to design interactive and fun learning activities. This study recommends the integration of number cards with active learning methods to improve the quality and effectiveness of mathematics learning at the elementary school level.

1. Introduction

Mathematics is one of the essential subjects taught from the elementary school level, as it plays a crucial role in developing students' critical, analytical, and systematic thinking skills. However, many students experience difficulties in understanding mathematical concepts, particularly in grasping basic arithmetic operations and number concepts. These challenges can hinder the development of students' cognitive abilities, which form the foundation for higher-level learning.

The use of diverse instructional media is one strategy to enhance students' understanding of mathematical concepts. Concrete media such as number cards are considered effective in helping students comprehend number concepts and basic arithmetic operations in a more tangible and interactive manner. Number cards allow students to better grasp abstract concepts through concrete illustrations, enabling them to understand and apply arithmetic concepts in everyday life.

Several previous studies have shown that the use of number cards in mathematics instruction yields positive outcomes. Arni et al. (2024) found that using number cards in teaching the concept of time units to third-grade students significantly improved their learning outcomes. Similarly, research by Muhamad Akrom and Sukmadi (2023) revealed that playing number card games enhanced second-grade students' multiplication skills. Purba et al. (2022) also reported that number card media effectively increased students' understanding of equivalent fractions in fourth grade. Furthermore, Yuliyanti et al. (2021) concluded that using number card games in second grade improved students' ability to add whole numbers. According to Oktafyani et al. (2022), the use of multiplication number cards as a learning tool increased students' interest in mathematics in third grade.

Based on these studies, it can be concluded that number cards hold significant potential for enhancing elementary school students' understanding and interest in mathematics. Although numerous studies have explored the use of number cards in elementary mathematics instruction, most of them are case-specific and limited in scope. Few studies have systematically reviewed the impacts, benefits, and challenges associated with number card usage. Therefore, this research seeks to present a comprehensive analysis through a Systematic Literature Review (SLR) approach.

Based on this background, the formulation of the problem in this study is: (1) What are the impacts, benefits, and challenges of using number cards in mathematics learning in elementary schools? (2) How effective are number cards in improving student learning outcomes? (3) What methods can be applied to teach mathematics in elementary schools?

The purpose of this study is to analyze the impact, benefits, and challenges of using number card learning media. In addition, this study aims to determine how effective the use of number card learning media is in mathematics lessons. This study also provides recommendations on methods that can be applied to teach mathematics in elementary schools. The results of this study are expected to contribute to the development of concrete media-based mathematics learning strategies in elementary schools.

The benefits of this study include several aspects. This study is expected to provide knowledge to teachers about the benefits of using number cards and effective ways to apply them in mathematics learning. On the other hand, it is expected that the use of number card media will help students understand and be more interested in learning mathematics in a more interactive and interesting way. Meanwhile, for schools, this study can be a reference in developing learning media based on number cards to improve students' understanding in mathematics lessons.

2. Method

This study employed the Systematic Literature Review (SLR) method to assess the effectiveness of number cards as instructional media in elementary school mathematics learning. The research process began with the collection of various relevant sources, such as journals and research articles discussing the use of number cards in mathematics instruction. These sources were then filtered according to criteria appropriate for the writing of this article.

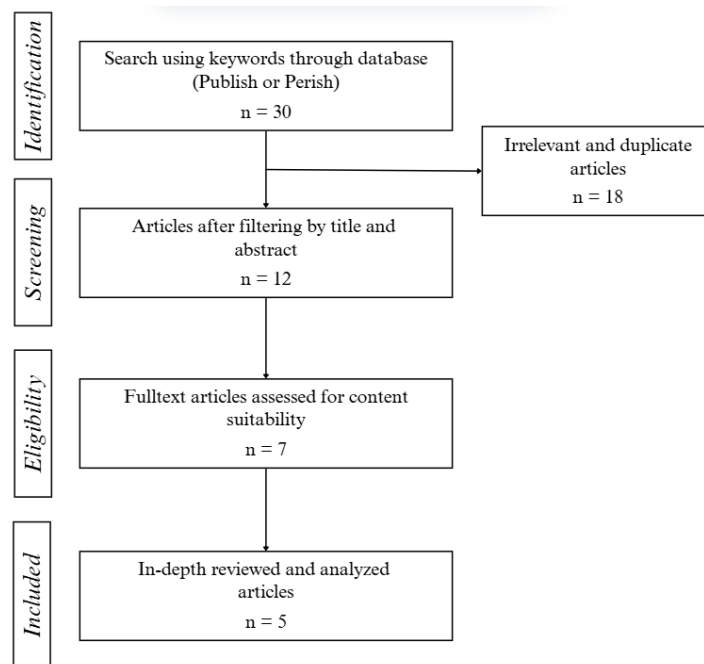


Figure 1. Prisma Flow Diagram

Following the selection process, the data were categorized based on key themes, such as improvement in students' understanding of number concepts, the impact on students' learning motivation, and the effect on learning outcomes. The analysis was conducted by comparing findings from various studies to draw comprehensive conclusions. The results of this analysis were compiled into a research report that includes the main findings, implications for mathematics teaching, and recommendations for the implementation of number cards in elementary schools. The conclusions

drawn from this study are expected to provide insights into both the benefits and challenges of using number cards as instructional media in classroom settings.

3. Results and Discussion

3.1 Impacts, Benefits, and Challenges of Using Number Card Media

The researchers conducted a literature review by identifying thirty articles relevant to the research topic. From this total, twelve articles were selected based on titles that specifically addressed the use of number card media in elementary school mathematics learning. These selected articles were further screened and analyzed in depth to align with the research objectives. The selection strategy used by the researchers is presented in Table 1 below.

Table 1. Article Selection Strategy

No.	Discussion Categories	Search Engines	Search Results
1.	Search year 2020 – 2025	<i>Publish or Perish</i>	30
2.	Relevant titles		12
3.	Articles analyzed		5
	Results discussed		5

The articles analyzed in this study were chosen based on predetermined criteria, focusing on the use of number cards as instructional media in elementary school mathematics. From the twelve selected articles, five were identified as the most relevant and closely aligned with the objectives of this study. Each article offers a unique perspective on the impact, benefits, and challenges of using number cards in the classroom. The analysis results are summarized in Table 2.

Table 2. Impacts, Benefits, and Challenges of Using Number Card Media

Article	Research Methods	Impact of Using Number Cards	Benefits for Student Learning Process	Implementation Challenges in Elementary Schools
The Effect of the Application of Colored Number Card Media on Results Learn Mathematics Integer Operation Material for Grade III Students UPTD SDN No.1 Budong-Budong, Budong-Budong District, Central Mamuju Regency (Arisma & Samad, 2023)	Eksperimen	Improving student learning outcomes through the use of number cards as a learning medium.	Students become more active, enthusiastic and enthusiastic about learning	Teachers are required to be able to manage learning time properly so that all stages of learning can be carried out.
Application of Number Card Learning Media to Time Unit Materials to Improve the Learning Success of Grade 3 MI Students (Arni et al., 2024)	Qualitative	Student learning outcomes increased after the application of number cards as a mathematics learning medium.	Number card media can foster student enthusiasm and increase student learning motivation. In addition, the media of number cards can be another option for students who have difficulty understanding the concept of units of time.	Educators must have the ability to maintain creative and interactive learning.
The Influence of Number Card Media on Elementary School Students' Learning Outcomes in Mathematics Learning (Lestari & Tanjung, 2022)	Eksperimen	Classes that use number card media have better learning outcomes than classes that do not use number card media.	Using teacher number cards can increase student motivation, as evidenced by students actively answering questions given by teachers. In addition, number card media can also make it easier for	Students are required to be active and brave in asking and answering questions. Teachers must also plan learning activities well so that the implementation is more structured.

			students to understand the concept of addition and subtraction.	
Application of Problem Based Learning Model Assisted by Number Card Media to Improve Learning Outcomes of Grade III Students at SDN Sambirejo 02 Semarang (Astuti et al., 2023)	Classroom Action Research (PTK)	Posttest results show that the use of number cards can improve student learning outcomes.	Able to help students to visualize the material being taught, so that students can easily understand the material being taught. In addition, with the PBL model, the number card media can easily encourage students to be active and think critically.	Students are not used to using number card media, so the use of this media cannot be just one meeting. Teachers are also required to be creative by inserting ice breaking, so that students are not easily bored when participating in learning.
Application of Problem Based Learning Model Assisted by Number Card Media to Improve Learning Outcomes of Grade III Students at SDN Sambirejo 02 Semarang (Astuti et al., 2023)	Classroom Action Research (PTK)	Posttest results show that the use of number cards can improve student learning outcomes.	Able to help students to visualize the material being taught, so that students can easily understand the material being taught. In addition, with the PBL model, the number card media can easily encourage students to be active and think critically.	Students are not used to using number card media, so the use of this media cannot be just one meeting. Teachers are also required to be creative by inserting ice breaking, so that students are not easily bored when participating in learning.
Application of Number Card Media in Learning Mathematics Grade II Students of SD Negeri 4 Megang Sakti (Avrianti et al., 2021)	Eksperimen	The average score of students is declared complete after using the number card media	Students become more active in learning and can do their own assignments without the help of teachers.	Teachers who previously used the lecture method must get used to using other methods so that the use of number card media becomes more effective.

3.2 The Effectiveness of Using Number Cards as a Mathematics Learning Media

The use of number cards as instructional media in elementary mathematics has shown a significant impact on students' learning outcomes. Based on the analysis of various articles, it can be concluded that number cards positively influence the learning process. Their use has been proven to enhance both motivation and academic achievement (Arni et al., 2024; Lestari & Tanjung, 2022). Additionally, students become more active and independent during lessons (Avrianti et al., 2021), suggesting that number cards support not only cognitive development but also foster student autonomy and classroom engagement.

Beyond cognitive aspects, number cards have also been shown to increase students' activity and participation throughout the learning process. This media encourages students to be more inquisitive and responsive during lessons. Being tangible and visually appealing, number cards create a more interactive and lively classroom atmosphere.

Moreover, number cards play a crucial role in connecting abstract mathematical concepts with students' real-world learning experiences, helping them grasp and retain the material more effectively. These tools have proven effective in supporting students' ability to visualize mathematical ideas, making the content more accessible and memorable.

Lastly, number card media contributes to enhancing students' independence. With this media, students are more motivated to complete tasks on their own without relying on teacher assistance. This increased independence also boosts students' confidence in understanding and applying mathematical concepts. As a result, the learning process becomes more meaningful and encourages continuous learning.

3.3 Applicable Methods for Teaching Mathematics in Elementary School

Several learning strategies recommended in this study are derived from findings of previous research. These strategies include the use of the experimental approach (Arisma & Samad, 2023), learning through games (Avrianti et al., 2021), and the problem-solving approach (Astuti et al., 2023). These findings form the basis for formulating effective teaching methods that can be employed alongside number card media, particularly in mathematics learning at the elementary school level.

First, the experimental approach provides opportunities for students to actively engage in solving mathematical problems with the aid of number cards. This approach has been shown to enhance students' enthusiasm for learning and create a more dynamic classroom environment. Second, the Problem Based Learning model encourages students to develop critical thinking skills, especially when number cards are used within the context of real-world problem solving. Third, the play-based learning method offers an enjoyable learning experience, for example through activities such as matching or sequencing numbers, which not only reinforce the understanding of mathematical concepts but also increase students' motivation to learn.

3.4 Conclusion

It is possible that the use of number cards as a learning tool in elementary school mathematics has a significant positive impact on student learning outcomes. This conclusion is drawn based on findings from research conducted through a systematic literature review of several relevant articles. This media not only helps students to understand abstract mathematical concepts in a more concrete and visual manner but also enhances students' motivation, participation, and independence in the learning process. The use of number cards has proven effective when applied in various learning methods, such as the experimental method, problem-solving, interactive discussion, and educational games. Each of these methods is capable of creating a more active, enjoyable, and meaningful learning environment, thereby strengthening student engagement in gaining a deeper understanding of mathematical material.

However, the implementation of this media also requires teachers to be prepared to design creative and interactive lessons while considering the needs and characteristics of their students. Therefore, it is recommended that teachers develop their competencies in selecting and integrating learning media as well as adapting teaching strategies according to the classroom learning context. This study has limitations in the number of articles analyzed in depth. Further research is suggested to explore a broader context and to employ quantitative approaches or field experiments.

Author Contributions

The success in preparing this article cannot be separated from the contribution of the two authors from planning to editing the article. The first author, Mella Eka Febriyanti contributed to the conceptualization of the research topic, designing the methodology, conducting field investigations and writing the manuscript in the form of an original draft and final editing. Meanwhile, the second author, Candra Utama contributed to the supervision of the research process, data validation, review and editing of the final manuscript. Both authors have contributed equally to the article. In addition, both authors have read and approved the final manuscript.

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The authors declare that they have no conflict of interest, either financially or personally. Thus, the process of research, writing and publication is not influenced by any conflicting matters.

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All the references that used in the article must be listed in this part. In this part, all the used references must be taken from **primary sources** (scientific journals at least 85% from all the references) that published in the **last ten years**. Cite the main scientific publications on which your work is based. Citation and Reference are written according to the APA 6th edition style.

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