TAKALINTAR MEDIA AND CONCRETE LEARNING EXPERIENCES IN MULTIPLICATION LEARNING: A PHILOSOPHICAL ANALYSIS BASED ON DALE'S CONE OF EXPERIENCE FOR GRADE III STUDENTS OF SDN BANDUNG 2 JOMBANG

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ABSTRACT

This study aims to analyze the role of Takalintar media as a learning tool in improving students' understanding of multiplication concepts in elementary school mathematics learning. The study focuses on examining students' learning experiences through the perspective of Edgar Dale's Cone of Experience, which emphasizes the importance of concrete learning experiences in the learning process. This research used a qualitative approach with a philosophical analysis method. The research was conducted in Grade III at SDN Bandung 2 Jombang. Data were collected through observation of learning activities, documentation of the teaching and learning process, and literature review related to learning media, experiential learning, and mathematics education. The data were analyzed using qualitative descriptive analysis through the stages of data reduction, data organization, interpretation, and conceptual synthesis. The findings indicate that the use of Takalintar media provides concrete, visual, and interactive learning experiences that help students understand multiplication concepts more effectively. Based on Dale's Cone of Experience, Takalintar media facilitates learning experiences that move from abstract verbal explanations toward more demonstrative and visual learning activities. These learning experiences encourage students to actively explore multiplication patterns, participate in discussions, and develop conceptual understanding of mathematical relationships. Therefore, the use of Takalintar media can contribute to the development of meaningful mathematics learning by supporting experiential learning and enhancing students' conceptual understanding of multiplication in elementary school.

Keywords: Takalintar media, concrete learning experience, Dale's Cone of Experience, multiplication learning, mathematics learning outcomes

A. Introduction

Mathematics is one of the fundamental subjects in elementary education because it develops students' logical thinking, problem-solving skills, and the ability to understand quantitative relationships encountered in everyday life. In the context of primary school learning, mathematics also functions as a foundation for mastering more complex scientific concepts in later

stages of education. However, many elementary students still experience difficulties in understanding mathematical concepts because mathematics often presents abstract symbols and representations that are not directly related to their daily experiences (Hasanah et al., 2024).

One of the essential topics in elementary mathematics is multiplication. Multiplication is a basic arithmetic operation that becomes the foundation for learning more advanced mathematical operations such as division, fractions, and algebraic reasoning. Nevertheless, the learning process of multiplication in elementary schools frequently relies on conventional instructional methods, such as memorization and verbal explanation. As a result, students tend to understand multiplication procedurally rather than conceptually. This situation often leads to low learning outcomes, passive classroom participation, and limited student engagement during the learning process (Hasanah et al., 2024).

To overcome these challenges, the use of appropriate learning media becomes an important component in the teaching process. Learning media can function as an instructional tool that bridges abstract mathematical concepts with students' real-life experiences. In elementary education, the use of concrete learning media is particularly relevant because students at this stage are generally in the concrete operational stage of cognitive development, where they understand concepts more effectively through direct manipulation and observation of real objects. Therefore, learning media that provide tangible and interactive experiences can significantly improve students' conceptual understanding of mathematical operations. The use of concrete objects allows students to visualize multiplication concepts more clearly and engage actively in the learning process (Khairunisa et al., 2025).

One theoretical framework that supports the importance of concrete learning experiences is Edgar Dale's Cone of Experience. This model explains that learning experiences range from abstract verbal symbols to direct and purposeful experiences. According to this theory, students tend to retain information more effectively when they are directly involved in learning activities rather than merely listening to explanations or reading

instructional materials. In Dale's model, the lowest level of the cone represents direct experiences, which are considered the most effective form of learning because they involve multiple senses and active student participation (Dale, 1969).

The concept of experiential learning is also closely related to this framework. Experiential learning emphasizes that knowledge is constructed through direct interaction with real situations and meaningful experiences. In this learning approach, students are not only recipients of information but also active participants who construct understanding through observation, reflection, and experimentation. Learning experiences that involve concrete activities can influence both cognitive understanding and affective appreciation of the subject matter (Sholihah & Mahmudi, 2015).

Based on these perspectives, the integration of innovative learning media that facilitate concrete experiences becomes highly relevant in elementary mathematics learning. One of the instructional media that can support such experiences is the Takalintar media, which is designed to help students visualize and understand multiplication concepts through interactive and tangible learning activities. By engaging students in concrete learning experiences, Takalintar media is expected to transform abstract mathematical concepts into meaningful learning processes that align with the principles of experiential learning and Dale's Cone of Experience.

Therefore, this study aims to conduct a philosophical analysis of the use of Takalintar media in multiplication learning based on Dale's Cone of Experience for Grade III students of SDN Bandung 2 Jombang. This research seeks to explore how concrete learning experiences facilitated by instructional media can enhance students' conceptual understanding of multiplication and contribute to the development of more effective and meaningful mathematics learning in elementary education.

B. Research Method

This study used a qualitative research approach with a philosophical analysis method to examine the role of Takalintar media in multiplication learning based on Edgar Dale's Cone of Experience.

Qualitative research is commonly used in educational studies to understand learning phenomena, concepts, and experiences in depth through interpretation and theoretical reflection rather than statistical measurement. This approach allows researchers to explore how learning media contribute to students' conceptual understanding and meaningful learning processes (Sugiyono, 2019).

The philosophical analysis method in this study aims to analyze the conceptual relationship between learning media, concrete learning experiences, and the theoretical framework of Dale's Cone of Experience. Philosophical analysis in education is used to examine the logical foundations, conceptual consistency, and pedagogical implications of educational practices or learning models. Through this method, the study interprets how Takalintar media can facilitate experiential learning in elementary mathematics instruction and how it aligns with the principles of concrete learning experiences (Barnadib, 2013).

The research was conducted in Grade III at SDN Bandung 2 Jombang, Indonesia. The focus of the study is multiplication learning, which is one of the fundamental competencies in elementary mathematics. At the elementary level, students generally learn more effectively through direct interaction with objects and concrete representations. Therefore, the use of instructional media that supports hands-on experiences is considered essential in helping students understand abstract mathematical concepts (Sanjaya, 2016).

The data in this study were obtained through several techniques, including observation, documentation, and literature review. Observation was conducted to examine the implementation of Takalintar media during multiplication learning activities and to identify the forms of learning experiences experienced by students. Documentation was used to collect supporting data such as lesson plans, learning materials, classroom activity records, and visual documentation of the learning process. Meanwhile, literature review was conducted to analyze relevant theories related to learning media, experiential learning, and mathematics education in elementary schools (Arikunto, 2018).

The data analysis technique used in this research was qualitative descriptive analysis. The analysis process consisted of several stages, namely data reduction, data organization, interpretation, and conceptual synthesis. Data reduction was carried out by selecting information relevant to the use of Takalintar media and students' learning experiences. After that, the data were categorized according to the levels of learning experience described in Dale's Cone of Experience, ranging from abstract experiences such as verbal explanations to concrete experiences involving direct student interaction with learning media. The categorized data were then interpreted to explain the philosophical relevance of Takalintar media in supporting experiential learning in multiplication instruction.

To ensure the validity of the analysis, this research applied theoretical triangulation by comparing several educational theories related to learning media, experiential learning, and mathematics learning in elementary schools. Through this process, the findings were strengthened by examining the consistency between theoretical frameworks and learning practices observed in the classroom (Moleong, 2017).

Through this methodological approach, the research aims to provide a comprehensive understanding of how Takalintar media can function as a learning tool that supports concrete learning experiences. The results of this analysis are expected to contribute to the development of innovative learning strategies that emphasize experiential learning and conceptual understanding in elementary mathematics education.

C.Result & Discussion

1. Learning Practice: The Use of Takalintar Media in Mathematics Learning

The implementation of Takalintar media in mathematics learning on multiplication material in grade III of SDN Bandung 2 Jombang demonstrates a significant transformation in the dynamics of classroom learning. Takalintar, designed as an interactive multiplication table medium, functions as a visual learning tool that helps students understand the concept of

multiplication through structured patterns and concrete representation. The presence of this learning media enables students to explore mathematical relationships more actively rather than relying solely on memorization.

At the beginning of the learning process, the teacher conducted a pretest to measure students' initial understanding of multiplication concepts. The results of this assessment indicated that the average student score was 45.38, suggesting that many students still experienced difficulties in understanding multiplication operations systematically. This initial condition reflects a common challenge in elementary mathematics learning, where students often struggle to connect numerical procedures with conceptual understanding.

After identifying students' initial abilities, the teacher introduced Takalintar media as a learning aid during classroom instruction. The learning process involved guided exploration activities in which students were encouraged to interact directly with the visual multiplication structure presented in the media. Through this activity, students were able to observe number patterns, recognize the relationship between multiplication and repeated addition, and gradually construct their understanding of multiplication operations.

Following the learning intervention, a posttest was administered to evaluate changes in student learning outcomes. The results indicated a significant improvement, with the average student score increasing to 83.25. This improvement suggests that the use of Takalintar media effectively enhanced students' understanding of multiplication concepts. The increase in learning outcomes demonstrates that visual and interactive learning media can play a crucial role in facilitating mathematical comprehension at the elementary school level.

These findings are consistent with previous studies highlighting the effectiveness of visual learning media in mathematics education. Research conducted by Pratiwi and Widodo (2022) in Jurnal Basicedu indicates that manipulative and visual learning tools can significantly improve elementary students' mathematical understanding because such tools allow learners to engage with

mathematical concepts through concrete experiences. Similarly, Sari and Nugraha (2023) in Jurnal Pendidikan Dasar reported that visual learning media positively influence students' learning motivation and conceptual comprehension in mathematics.

From a pedagogical perspective, the successful implementation of Takalintar media in this study illustrates the importance of innovative learning strategies in mathematics education. Teachers are not only responsible for delivering instructional content but also for designing learning environments that encourage student participation and meaningful engagement with mathematical concepts.

2. Theoretical Analysis: Interpretation through Experiential Learning Theory

The improvement in students' learning outcomes after the use of Takalintar media can be interpreted through the framework of experiential learning theory. Experiential learning emphasizes that effective learning occurs when students acquire knowledge through direct experience and reflective processes. This theoretical perspective highlights the importance of active engagement in constructing meaningful understanding.

Kolb (2015) explains that experiential learning involves four interconnected stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. In the context of this study, the use of Takalintar media provides opportunities for students to move through these stages of learning.

The first stage, concrete experience, occurs when students interact directly with the Takalintar media. By observing multiplication patterns visually, students gain an immediate experience of how numbers relate to one another within the multiplication system. This stage is particularly important for elementary school students, who often require concrete representations to grasp abstract mathematical ideas.

The second stage involves reflective observation. During this phase, students reflect on the patterns they observe in the multiplication table and discuss their findings with peers and the teacher. Reflection allows students to interpret their experiences

and identify underlying mathematical relationships.

The third stage, abstract conceptualization, occurs when students begin to formulate general mathematical concepts based on their observations. Through guided discussion and explanation, students understand multiplication as a structured mathematical pattern rather than a set of isolated calculations.

The final stage, active experimentation, is demonstrated when students apply their newly acquired understanding to solve multiplication problems independently. At this stage, students test their conceptual understanding through practice exercises and problem-solving tasks.

This learning process aligns closely with constructivist perspectives on education. Bransford, Brown, and Cocking (2020) argue that knowledge is actively constructed by learners rather than passively received from teachers. Learning media therefore function as cognitive tools that support students in constructing their own understanding of mathematical concepts.

Empirical studies also support the effectiveness of experiential learning approaches in mathematics education. Putra and Handayani (2021) in Jurnal Pendidikan Matematika Indonesia found that experience-based learning strategies significantly improve students' conceptual understanding and problem-solving abilities in elementary mathematics. These findings reinforce the theoretical explanation that learning environments emphasizing active engagement and concrete experience contribute positively to students' cognitive development.

3. Philosophical Reflection: Concrete Experience and the Formation of Mathematical Understanding

From a philosophical perspective, mathematics education is not solely concerned with procedural mastery but also with the development of conceptual understanding. Learning mathematics involves the process of constructing meaning from abstract symbols, patterns, and relationships. In this context, concrete experience plays a vital role in bridging the gap between abstract mathematical ideas and students' cognitive development.

John Dewey emphasized that education should be grounded in meaningful experiences that enable

learners to connect knowledge with real-world contexts (Dewey, 1938). According to Dewey's philosophy of education, learning becomes meaningful when students actively engage in activities that stimulate reflection and inquiry. This perspective is highly relevant to mathematics learning, where abstract concepts often require concrete representation to become comprehensible for young learners.

The use of Takalintar media in this study represents a form of concretization of mathematical concepts. By presenting multiplication relationships visually and systematically, the media allows students to observe mathematical patterns directly. This visual representation helps students understand that multiplication is not merely a computational procedure but a structured numerical relationship.

In contemporary discussions of mathematics education, conceptual understanding is considered a fundamental goal of learning. Devlin (2022) explains that mathematical understanding develops through multiple representations, including symbolic, visual, and contextual representations. These representations work together to help learners build coherent mental models of mathematical structures.

Furthermore, exploratory and visual learning activities have been shown to support the development of mathematical thinking. Boaler (2022) argues that when students engage with mathematics through visual patterns, exploration, and discussion, they develop more flexible and creative ways of thinking about numbers and relationships.

Within this philosophical framework, the use of Takalintar media contributes not only to improved learning outcomes but also to the development of deeper mathematical understanding. The learning experience enables students to recognize patterns, construct meaning from numerical relationships, and develop confidence in engaging with mathematical ideas.

The findings of this study also resonate with broader discussions on the role of educational technology and learning media in improving the quality of learning experiences. The use of instructional media such as Takalintar demonstrates how concrete learning tools can bridge the gap between abstract mathematical concepts and

students' real-life understanding. In the context of Dale's Cone of Experience, learning activities that involve visual demonstrations and manipulation of learning objects allow students to engage more actively with the material, thereby enhancing conceptual comprehension (Dale, 1969). This perspective aligns with the idea that meaningful learning occurs when students interact directly with learning resources rather than merely receiving verbal explanations. Dale's model emphasizes that learning retention increases when students participate in experiences that involve multiple sensory channels and active engagement. Consequently, instructional media that provide visual and manipulative experiences, such as Takalintar, can function as a pedagogical bridge between symbolic mathematical representation and concrete understanding (Dale, 1969). Furthermore, the integration of learning technologies and instructional media is increasingly recognized as an important component of modern educational systems. Research conducted by Fedina et al. (2017) highlights that the development of information and communication technologies (ICT) in education requires not only technological infrastructure but also readiness among teachers, institutions, and parents to adopt innovative learning approaches. Their study indicates that although many educators acknowledge the importance of technology in education, effective implementation often depends on institutional support, training, and the availability of appropriate learning resources. In their investigation of preschool education in Russia, Fedina et al. (2017) found that while teachers generally recognize the potential benefits of educational technologies, only about half of them consider themselves fully prepared to implement such innovations in the learning process. This finding suggests that educational innovation is not solely a matter of introducing new tools but also requires pedagogical readiness and professional development for educators.

The implication of this finding is relevant to the use of concrete learning media such as Takalintar. Although the media itself can enhance students' learning experiences, its effectiveness largely depends on the teacher's ability to integrate it

meaningfully into classroom instruction. Teachers play a critical role in facilitating interactive learning environments, guiding students' exploration, and connecting concrete experiences with abstract mathematical reasoning. Therefore, professional readiness and pedagogical competence become essential factors in maximizing the educational potential of learning media (Fedina et al., 2017).

Moreover, the findings of Fedina et al. (2017) also highlight the importance of awareness and understanding among stakeholders regarding the use of educational technologies. Their research shows that although many parents are aware of digital learning technologies, a significant portion still lacks a comprehensive understanding of how these technologies support learning processes. This indicates that educational innovation must also be accompanied by efforts to improve digital literacy and awareness among the wider educational community.

From this perspective, the implementation of Takalintar media can be seen not only as a pedagogical innovation but also as part of a broader effort to create meaningful and accessible learning environments. By providing concrete and interactive experiences, Takalintar helps transform abstract mathematical operations into observable learning activities that align with students' cognitive development stages. Such an approach reflects the fundamental principle of experiential learning, where knowledge is constructed through active engagement with learning materials and real-world representations.

Therefore, the integration of concrete instructional media, supported by theoretical frameworks such as Dale's Cone of Experience and complemented by technological readiness as discussed by Fedina et al. (2017), offers a comprehensive approach to improving mathematics learning in elementary education. This combination of pedagogical theory, practical learning media, and institutional readiness can contribute to more effective and meaningful learning experiences for students.

Thus, the findings of this study highlight the importance of integrating concrete learning experiences into mathematics instruction. Such approaches not only improve students' academic performance but

also foster the development of meaningful conceptual understanding that supports long-term mathematical learning.

D. Conclusion

This study demonstrates that the use of Takalintar media provides a meaningful contribution to improving students' understanding of multiplication concepts in elementary mathematics learning. The findings indicate that learning outcomes increased significantly after the implementation of Takalintar, as reflected in the rise of the average score from the pretest to the posttest. This improvement suggests that the use of concrete and visual learning media can help students grasp mathematical concepts that are often perceived as abstract at the elementary school level.

From the perspective of Dale's Cone of Experience, the Takalintar media facilitates learning experiences that move beyond purely verbal instruction toward more concrete and demonstrative forms of learning. Through visual representation and interactive engagement, students are able to connect symbolic multiplication operations with tangible learning experiences. Such experiences support students' cognitive development, particularly for learners at the concrete operational stage, where understanding is more effectively constructed through direct interaction with learning objects.

Furthermore, the implementation of Takalintar media encourages more active student participation in the classroom. Students become more engaged in exploring multiplication patterns, discussing problem-solving strategies, and participating in collaborative learning activities. This interactive learning environment not only strengthens conceptual understanding but also contributes to the development of students' motivation and confidence in learning mathematics.

In conclusion, Takalintar media can be considered an effective instructional strategy for improving multiplication learning in elementary schools. By integrating concrete learning experiences with visual and interactive media, teachers can create a more meaningful and student-centered learning process. Therefore, the use of innovative instructional media such as Takalintar is recommended as an alternative

approach to enhance mathematics learning outcomes and conceptual understanding among elementary school students.

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