Vol.1 No.2 June 2025 Hal.69-74
E-ISSN : 3090-8639
DOI : http://dx.doi.org/10.23960/jpck
https://jurnal.pbs.fkip.unila.ac.id/index.php/JPCK

Article History
Submitted: 17 Mei 2025
Accepted: 28 Mei 2025
Published: 30 June 2025

THE EFFECT OF STAIRCASE MEDIA ON UNDERSTANDING THE CONCEPT OF LENGTH MEASUREMENT IN ELEMENTARY SCHOOL

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ABSTRACT

The third-grade students enrolled at SDN 3 Tanjung Raja are currently experiencing notable challenges in comprehending the educational content related to the measurement of length, which is a fundamental concept in mathematics. The primary objective of this research endeavor was to assess and evaluate the extent of children's comprehension when utilizing the ladder teaching media as a pedagogical tool. The research methodology employed for this study was quantitative in nature, which involved the systematic distribution of questionnaires to a specific group of respondents, namely the teachers affiliated with SD Negeri 3 Tanjung Raja. The findings derived from the administered questionnaires indicate that the incorporation of ladder teaching media significantly facilitates students' understanding of the material pertaining to length measurement; moreover, it has been observed that students derive enjoyment from the learning process as a result of this innovative approach. In light of these findings, it is evident that the implementation of ladder teaching media within the context of mathematics education, particularly concerning length measurement, proves to be an effective strategy that aids students in grasping the material more thoroughly. Consequently, it is recommended that educators consider the utilization of ladder teaching media as a supportive resource in their instructional practices, as it not only enhances understanding but also fosters a positive learning environment. Ultimately, the integration of such engaging teaching aids is likely to yield improved educational outcomes for students in their mathematical studies.

Keywords:Media Steps, Length, Weight

A. A. INTRODUCTION

Measurement stands as a fundamental cornerstone within the realm of mathematical education, representing a crucial area that learners must grasp proficiently from the very beginning of their academic journey. The concept of length measurement serves not merely as a standalone idea but rather as a vital underpinning that facilitates the comprehension of more intricate mathematical theories and ideas that students will encounter as they progress through subsequent levels of their educational experience. Nevertheless, it is not uncommon for students to encounter significant challenges when attempting to grasp these measurement concepts during their learning endeavors.

In this context, the introduction of innovative and engaging learning media has the potential to significantly enhance students' motivation to learn while simultaneously simplifying their understanding of abstract mathematical concepts. One promising educational tool designed to bolster learners' grasp of measurement concepts is the ladder medium, which offers a tangible visual representation of measurement units, enabling students to more effectively compare and comprehend the relationships that exist among various units of measurement.

The advantages associated with the utilization of ladder props in educational settings encompass a variety of positive outcomes:

Firstly, the incorporation of these ladder props can evoke a sense of exhilaration among learners when they engage with extensive measurement topics, thereby heightening their overall interest in the learning process. This heightened engagement fosters an

environment where students feel joyful, stimulated, and intrigued, cultivating a positive attitude toward their educational experience. Secondly, the representation of abstract mathematical constructs through the ladder medium can facilitate greater comprehension for younger, lower-level learners who may struggle with these concepts.

Additionally, the use of ladder props can significantly enhance visual clarity, eliminating the need for students to merely imagine various length units. By providing a tangible ladder medium, educators can bolster students' visual perception, thereby improving their overall success in mastering the relevant content.

Several critical considerations must be taken into account during the development of effective learning media props, which include the following:

First and foremost, durability is a key factor, as the ladder learning medium should be constructed from sufficiently robust materials to withstand regular use. Furthermore, the incorporation of visually appealing colors and shapes is essential, as the ladder medium should be designed with aesthetic elements that capture students' attention and enhance its overall attractiveness.

Moreover, the size of the ladder medium must be appropriately tailored to suit the dimensions and physical capabilities of primary school children to ensure ease of use and engagement. The conceptual framework underlying the ladder medium should align with the standards of unit length measurement, ensuring that mathematical concepts are presented in a clear and comprehensible manner.

Demonstration is also a foundational element that supports the cultivation of understanding among learners, as active learning strategies encourage students to engage in hands-on experiences. This active learning approach invites students to participate individually or collaboratively, allowing them to manipulate, hold, and explore the props through various interactive activities.

Numerous previous investigations have confirmed that the practical application of learning media, such as manipulatives, can significantly enhance students' comprehension of mathematical concepts. Nonetheless, there remains a dearth of research specifically focused on the effectiveness of ladder media in improving primary school learners' understanding of both length and weight measurement concepts. Consequently, the primary objective of this study was to systematically examine the impact of ladder media on the understanding of length and weight measurement concepts among primary school students.

B. RESEARCH METHODS

This comprehensive research endeavor was meticulously carried out at the esteemed Negri 3 Tanjung Raja Elementary School, specifically during the odd semesters of the academic calendar. The focal point of this investigation was the dedicated primary school educators employed at Negri Tanjung Raja, whose insights were deemed invaluable. In employing a rigorous approach, the study adopted quantitative research methodologies, which are fundamentally characterized by the systematic collection and analytical review of numerical data, aimed at providing thorough descriptions, insightful explanations, productive assessments, or effective control over various phenomena of significant concern within the educational landscape (Gay, Mill, & Airasian, 2011). The application of

quantitative research techniques in this particular study involved the strategic distribution of meticulously crafted questionnaires directed towards the targeted respondents, namely the teachers associated with the Negri 3 Tanjung Raja Elementary School. To effectively gauge the responses of the participants, the research implemented the Likert technique, a well-established method designed for the precise measurement of respondents' attitudes and perceptions. Conducted without the imposition of controls on the subjects involved in the study, this approach ensured that the information gathered reflected genuine insights that aligned closely with the actual circumstances experienced by the participants. The analysis of the questionnaire data utilized a Likert scale, which is instrumental in measuring the perceptions, opinions, and attitudes of individuals or groups regarding various social phenomena. Each item within the instrument was designed to yield responses that encompassed both negative and positive perspectives, thereby closely resembling a comprehensive questionnaire analysis table that facilitates a nuanced understanding of the data collected. This methodological framework not only enriches the research findings but also contributes significantly to the broader discourse on educational practices and teacher perceptions in the context of primary education. Ultimately, the study aims to illuminate the intricate dynamics that characterize the experiences of educators within this specific academic environment, thereby informing future policy and practice.

Table 1. answer choice score

Kategori	Negative Statement Score	Positive Statement Score
Strongly agree	1	5
Agree	2	4
Neutral	3	3
Disagree	4	2
Strongly disagree	5	1

The following are the criteria for interpreting scores based on intervals:

0% – 20% = STS

21% – 40% = TS

41% – 60% = N

61% – 80% = S

81% – 100% = SS

C. RESULTS AND DISCUSSION

Mathematics learning, according to Bruner (Herman Hudoyo, 2000: 56) is learning about mathematical concepts and structures contained in the material studied and looking for relationships between mathematical concepts and structures in it. According to Cobb (Erman Suherman, 2003: 71), mathematics learning is a learning process that involves students actively constructing mathematical knowledge. From the description above, it is concluded that mathematics learning is an active and constructive process so that students can try to solve existing problems as well as being the recipient or source of what is learned,

as well as finding the relationship between mathematical concepts and structures in it.

Media is any form of intermediary used to communicate. According to (Fatria, 2017: 136) media is anything that can be used to channel messages and can stimulate the mind, can arouse the enthusiasm, attention and willingness of students so that it can encourage the learning process in students. So it can be concluded that the media is an intermediary tool to convey messages or information in the communication process between the information provider and the message recipient. According to (Syaiful bahari Djamarah and Azwan Zain, 2020: 121) Learning media is any tool that can be used as a channel for messages to achieve learning goals. (Ashar, 2011) Says learning media is a tool in the learning process both inside and outside the classroom, further explaining that learning media is a component of learning resources or physical vehicles that contain instructional material in the student environment that can stimulate students to learn. Meanwhile, according to (Fatria, 2017: 140) Learning media is a tool in the learning process.

From some of the above opinions, it can be concluded that the media is a tool or intermediary used to channel information or messages and encourage students to carry out learning activities to achieve learning goals. Apart from being an intermediary tool, learning media can also help stimulate students' interest in learning activities. Learning media is a component of learning resources that contains instructional elements in stimulating students to learn. So that the effectiveness and objectives of learning and learning will be achieved.

Mathematics is one of the subjects that students are less interested in. Mathematics is a subject that is taught to students starting from basic education. Educators in learning mathematics rarely use learning media so that in explaining learning material it is less interesting for students. Based on the results of interviews with 3rd grade teachers at SD Negeri Tanjung Jaya, there are still some students who do not understand mathematics on length measurement material.

Learners have difficulty in length measurement material, namely in the use of multiplication or division if the ladder goes up and if the ladder goes down whether to use multiplication or division. In the learning process, educators only explain using pictures on the blackboard, so that students only pay attention and copy in the book, they do not practice directly in class so that students lack understanding because they think learning is too fast and educators do not provide opportunities for students to try or be actively involved.

After conducting interviews with educators, researchers are interested in making learning media that can overcome difficulties in understanding length measurement material. The media is named ladder media. The stairs media is made with the concept to attract students' interest in learning, with the use of attractive colors so that students can understand easily related to length measurement. The main material in using the stairs media is styrofoam coated with cardboard.

Researchers conducted a survey to prove whether learning media using stairs media can affect elementary school math learning outcomes. Researchers used google form as a tool to conduct research by asking questions to respondents. The following are the results of the survey of respondents.

No	Assessment Aspect	V1	V2	V3	V4	V5	Total score	One point	%	Kategori
1.	Can staircase learning media attract and increase student motivation to learn?	5	5	5	5	5	25	25	100	Strongly agree
2.	Can staircase learning media create an active mathematics learning environment?	3	5	5	5	5	23	25	92	Strongly agree
3.	Is staircase learning media suitable for supporting mathematics learning in the subject of length measurement?	4	5	4	4	5	22	25	88	Strongly agree
4.	Can staircase learning media help educators in delivering length measurement material?	4	5	5	4	5	23	25	92	Strongly agree
5.	Can staircase learning media improve student achievement and interest?	4	4	5	5	5	23	25	92	Strongly agree
6.	Can staircase learning media help students learn, understand, and apply mathematical concepts in length measurement material?	4	4	4	5	4	21	25	84	Strongly agree
7.	Can staircase learning media reduce obstacles in the mathematics learning process?	4	5	5	5	4	23	25	92	Strongly agree
	Total Overall Aspect	**32**	**33**	**33**	**33**	**33**	**160**	**175**	**91,42**	**Strongly Agree**

In question one based on the table above, that talking about ladder learning media can be interesting and can increase students' learning motivation, we can see that it has a percentage of 100%, namely strongly agree. In the second question based on the table above, that the ladder learning media is able to make an active learning atmosphere, we can see that it has a percentage of 92%, which is strongly agreed. In question three based on the table above, that talking about learning media stairs is suitable to support learning math measurement material, we can see that it has a percentage of 88%, which is strongly agreed. In question four based on the table above, that the ladder learning media can help educators in delivering length measurement material, we can see that it has a percentage of 92%, which is strongly agreed. In the fifth question based on the table above, that talking about ladder learning media can increase learning achievement and student interest, we can see that it has a percentage of 92%, which is strongly agreed. In the sixth question based on the table above, that the ladder learning media can help students in learning, understanding, and applying the mathematical concept of length measurement, we can see that it has a

percentage of 84%, which is strongly agreed. In the seventh question based on the table above, that the ladder learning media can reduce obstacles in the math learning process, we can see that it has a percentage of 92%, which is strongly agreed.

Based on the data above. In general, respondents strongly agree with the use of ladder media on length measurement material, because ladder media is very effective and easy to use so as to increase students' understanding and interest in mathematics subjects. By using this ladder media, educators no longer need to teach material by drawing on the blackboard.

D. CONCLUSION

The findings derived from the comprehensive analysis conducted in this study have unequivocally indicated that there exists a remarkably substantial influence, quantified at an impressive 91.42%, stemming from the implementation of educational media on the academic performance outcomes of learners. In a broader context, these results provide robust evidence that advocates for the integration of ladder media as an instrumental tool in the domain of mathematical education, thereby significantly contributing to the enhancement of both comprehension and enthusiasm among students. This innovative medium facilitates the learning experience, transforming it into a more dynamic and participatory endeavor, which effectively diminishes the dependence on conventional instructional methods, such as the archaic practice of illustrating concepts on a blackboard. Furthermore, the utilization of the ladder learning medium fosters a conducive environment for students to comfortably engage with the content related to length measurement, as it allows them to assimilate knowledge through playful interactions, thereby promoting a more enjoyable learning atmosphere. Consequently, this engaging approach not only simplifies the intricate concepts associated with length measurement but also serves to significantly elevate the students' ability to grasp and internalize this particular subject matter with greater ease and confidence. Ultimately, the implications of these findings underscore the necessity for educators to embrace and implement innovative educational tools that can revolutionize the learning experience, making it more effective and enjoyable for all learners involved.

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