

Development Of Smart Ladder Media Assisted By Kolintang Musical Instruments To Increase The Learning Interest Of Grade I Students

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Abstract.

This study aims to develop smart ladder media assisted by kolintang musical instruments, determine the feasibility and interest in learning class I students at SD IT Bustanul Ulum, especially in mathematics subjects in the 2022-2023 Learning Year, especially in mathematics subjects. The research method used was a pretest and posttest conducted to measure the feasibility of the learning media developed. The results of the study revealed that the development of learning media in the form of smart ladder media assisted by kolintang musical instruments was declared feasible based on data analysis obtained through the validity test of material experts, media design experts, teacher responses, and student responses, the average was calculated to obtain a result of 84.2%, including in the category of very good / very feasible to use in the learning process. Based on the results of the pretest and posttest that have been carried out, there is an increase in student interest and learning outcomes before and after using smart ladder media assisted by kolintang musical instruments on addition and subtraction material that has been developed by 12% so that it can increase interest and affect the learning outcomes of grade I elementary school students



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A. INTRODUCTION

Mathematics is a science that trains students to think systematically. Mathematics is a discipline that applies the concepts of analytical and logical thinking, formalising models that are an approach to the real world used in everyday life (Hidayat & Khayroiayah, 2018).

Mathematics is one of the subjects that aims to improve and enhance the quality or quality of teaching in the teaching and learning process. Mathematics is one of the subjects in elementary school that has special characteristics such as abstract, deductive,

invariable, hierarchical and logical. Mathematics is the science of logic, form, structure, magnitude, and concepts that relate to one another. The goal of primary school mathematics education is for students to be skilled in using mathematical concepts in everyday life (Lestari et al., 2015)

In fact, mathematics lessons are difficult to understand with just one meeting, it was also revealed by previous research which stated that mathematics is considered a science that is feared, scary, and boring for students, there are even people who are phobic about learning Mathematics (Nurrita,

2018). The existence of these perceptions felt by some students will hinder the learning process of Mathematics itself. In general, each student has different characteristics. Elementary school students are still located in the concrete operational period, which is the expertise in the thought process to operate logical rules, although still bound by concrete objects. Due to abstract mathematics learning, in the learning process students need tools in the form of media and props that can clarify what the teacher will convey so that it is more quickly understood and understood by students, especially low-grade students, so the use of learning media is very important. (Mustaqim, 2016)

The use of learning media in the teaching and learning process can arouse new desires and interests, arouse motivation and stimulate learning activities, and even bring psychological influences on students. Well-designed media will greatly help learners achieve learning objectives (Iswara & Rosnelli, 2019). The presence of learning media acts as a medium to introduce students to the real form of certain objects or acts as an artificial object to support the delivery of lesson content. Learning media can present different learning experiences for students (Uyun et al., 2021)

Previous research revealed that in the learning process, students not only understand the abstract things conveyed by the teacher but students must also understand the realities of the material. Teachers use learning media to help students better understand the material

as a whole, teachers are skilled in producing fun mathematics learning design products, and teachers are skilled in implementing fun mathematics learning in teaching and learning activities (Lubis & Ritonga, 2023; Sukmawarti & Hidayat, 2021).

So that teachers and students have the same experience in learning. In order for the learning process in the classroom to take place well, it is not only the teacher who is actively involved in the classroom but students are also actively following and involved in the learning process. Students are not only objects but also subjects in learning activities. So students have the opportunity to exercise creativity and develop their potential through activities in the learning process (Hidayat & Sukmawarti, 2021).

Based on interviews and observations conducted by researchers at one of the IT elementary schools, especially in class I, it is known that the learning media used by teachers are limited to images in textbooks that are not real or concrete so that it is difficult to understand addition and subtraction material, not fully understanding number symbols which have an impact on the students' lack of fluency in counting. The media used previously has not increased students' interest in learning which results in less than optimal student learning outcomes, the learning process that is less interesting makes students' learning motivation decrease, especially in learning addition and subtraction, the implementation of learning still tends to be monotonous. Teachers have

difficulty in designing learning media, and learning methods (Sukmawarti et al., 2022). Lack of teacher motivation in developing interesting media in learning, especially in addition and subtraction material, lack of student response and student interest in learning when learning takes place because the learning media used is less fun and attracts students' attention. In addition, the school has not facilitated teachers with interesting learning media other than books so that researchers offer learning media because the previous media has not increased student interest in learning. This is a problem for teachers in using media in teaching (Arikunto, 2014).

From the use of learning media that is less than optimal for students based on the observations above, it can be concluded that self-developed learning media will be easier and more interesting in understanding the learning. Therefore, researchers are interested in making a smart ladder learning media assisted by kolintang musical instruments. Historically, there is a strong relationship between music and maths. Learning is easier and faster if the learner is in a relaxed and respectful state. Music can set the mood, change the mental state of students and support the learning environment so as to produce good grades, and be productive. It makes learners take an active role in learning through the use of learning media that attracts students' attention in learning (Hasanah & Hidayat, 2020). Because with music students are in a relaxed, relaxed and fun condition and

is a learning concept that can influence students' mindsets to be more active, creative and teach students to work together and respect each other's opinions. And it is hoped that during learning students can focus their attention on what is being taught by the teacher, so that students can achieve motivation, increase interest and satisfactory learning outcomes.

With this background, this study will discuss how the results of the development carried out by researchers using smart ladder media assisted by kolintang musical instruments carried out in mathematics subjects.

B. RESEARCH METHOD

The research design used in this study is development or Research and Development (R&D), which is research oriented towards the development of a product. Development research is a research method used to produce certain products, and to test the effectiveness of these products so that the products produced are validated and tested for feasibility. This development research uses the ADDIE model consisting of five stages including Analysis, Design, Development, Implementation and Evaluation.

To analyse the data collected from the questionnaire can be grouped into 2 types of data, namely qualitative descriptive and quantitative descriptive. Qualitative data was obtained from a questionnaire containing criticisms and suggestions from media validators, material and grade I elementary

school teachers. The data obtained as a reference for making revisions to the developed product.

While quantitative data in the study is data obtained from questionnaires given by validators of media experts, materials, and learning experts (grade I teachers) that have been previously received as well as a response questionnaire of grade I elementary school students. To determine the feasibility of the smart ladder media developed, the questionnaire used a Likert scale. The following is the Likert Scale used in each statement in the questionnaire:

Table 1. Likert Scale

Statement	Score
Very Decent	5
Decent	4
Decent Enough	3
Less Worthy	2
Not Feasible	1

Furthermore, the questionnaire given by grade I elementary school students uses a Guttman Scale. The following is the Guttman Scale that will be used:

Table 2. Guttman Scale

Score	Description
1	Yes
0	No

After obtaining the scores that have been filled in by media validators, material validators, grade I SD teachers and student trials, calculations are then carried out in order to obtain the feasibility score of the smart ladder media developed. The descriptive statistical formula taken in previous studies (Sinta, 2023) is as follows:

$$P = \frac{\sum R}{N} \times 100\%$$

Description:

P = Percentage Score

$\sum R$ = Number of answer scores from the assessor

N = Ideal score

After knowing the percentage of the feasibility of smart ladder media, then look at the classification of the feasibility of the smart ladder media developed. Research conducted (Eriviana & Muslimah, 2019) (Eriviana & Muslimah, 2019) states that the classification of the feasibility of smart ladder media can be seen in the table below:

Table 3 Classification of Feasibility

No	Level of Achievement	Qualification
1.	81-100%	Very Good/ Vert Feasible
2.	61-80%	Good/ Worthy
3.	41-60%	Fairly Good/ Adequate
4.	21-40%	Less Good/ Not Feasible
5.	<21%	Very Poor/ Not Feasible

In this development, the smart ladder media is said to be valid if it fulfils at least good/appropriate qualifications.

C. RESULTS AND DISCUSSION

This research produces a product in the form of smart ladder media assisted by kolintang musical instruments. After the product is designed, the development produced in this study is a smart ladder media assisted by kolintang musical instruments that have been validated by media experts.

In its implementation, the media is given to the teacher to be used in learning. Researchers conducted product trials of smart ladder media to first grade students with the assistance of the first grade teacher Mrs Alviana Damayanti, S.Pd to find out students' interest and response in learning in accordance with the previously prepared lesson plans. Researchers conducted a trial of 2 times, namely before using the media, students first did a pretest and after using the developed media, a posttest was conducted. After the pretest and posttest, students were also given a student response questionnaire to the smart ladder media assisted by kolintang musical instruments.

Based on the teacher's response questionnaire to the media that has been developed by researchers, it can be seen that the media is very good / very feasible to use in the learning process. And based on the questionnaire / response questionnaire given to 20 grade I students at the end of the lesson using the Guttman Scale, getting a good response and increasing student interest when using smart ladder media assisted by kolintang musical instruments, where students are very enthusiastic in participating in learning, this makes students more excited and better understand the lesson through the media that has been developed and has been validated by media expert lecturers. This is also reinforced by previous research which states that kolintang musical instruments can increase student learning motivation (Puspitaratna, 2020)

Previous research revealed that students' interest in learning music can be fuelled by games. The study revealed that there was a significance that had an impact on students' interest in learning combined with music and games (Satriawan et al., 2021). Simply put, the research is also a form of support that there is a need for the development of learning media in the form of musical instruments that contain a little elements of play in it. This is because at the age of grade I elementary school, students usually still have a childlike character or nature that is below the previous level, namely PAUD, which incidentally is learning while playing.

The research also supports that the development of learning media with smart ladder media assisted by kolintang musical instruments can be used in learning mathematics in grade I elementary school. Research that develops learning with games has also been done before to improve student learning (Dwi Utami, 2013). Of course this illustrates that students who are in elementary school are very interested and have a high interest in learning with interesting learning media. Therefore, the importance of developing learning media continues to be carried out both independently and specifically.

Development is carried out to get maximum results from learning media. One of the main objectives of learning media development is to increase the effectiveness of learning. Good learning media can help

students understand and master the subject matter better. This is also the same as expressed in previous research (Rasyid et al., 2016). Another study mentioned that each student has a different learning style. The development of diverse learning media can help accommodate different learning styles, such as visual, auditory, or kinesthetic (Nurfadillah et al., 2021).

After the development is carried out, the next thing to do is to evaluate the results of the development carried out. The implementation of the evaluation in this study shows that the media that has been validated and has been implemented in learning, then the researcher describes the evaluation results based on the validation of lecturers, learning experts (first grade teacher responses), and student responses. So it can be concluded that the smart ladder media assisted by kolintang musical instruments that have been designed by researchers on addition and subtraction are very feasible to be used as learning media for grade I elementary school students because they can increase students' interest in learning. This means that this research supports research that has been done before (Mandiangan, 2020) but in this study developments were made such as collaborating snakes and ladders with kolintang musical instruments.

Based on the results of the data analysis, the validation results from the material expert received a score of 52, then the score was processed and obtained 80%. The percentage data is converted to the

feasibility qualification table including the good/worthy category by making one revision. The validation results from media design experts received a score of 44, then the score was processed and obtained 80%. The percentage data is converted to the feasibility qualification table including the good/worthy category by making one revision. The validation results from the first grade teacher's response received a score of 59, then the score was processed and obtained 90%. The percentage data is converted to the feasibility qualification table including the very good/very feasible category.

After being revised, it was tested on 20 students in the first grade addition and subtraction mathematics learning at SD IT Bustanul Ulum. The score obtained is 139, the score is processed in the form of a percentage obtained by 86.8%. The percentage data is converted to the feasibility qualification table including the very good/very feasible category.

Based on the percentage results from material experts, media design experts, teacher responses and student responses, the average result is 84.2%. The percentage is converted to the feasibility qualification table and is included in the Very Good / Very Feasible category for use in the learning process. The results of the media development carried out in this study can be seen in the figure below:

Picture 1



Thus, the media developed has valid, practical, effective qualities and can increase student interest and response and affect student learning outcomes so that it can be applied in the teaching and learning process in class I Elementary School.

D. CONCLUSION

Based on the results of research and development that has been carried out by researchers, it can be concluded that research and development using the ADDIE model with the steps of Analysis, Design, Development, Implementation, and Evaluation has produced products in the form of smart ladder media assisted by kolintang musical instruments in learning addition and subtraction mathematics.

Based on the feasibility of media from the validation of material experts, media design experts, teacher responses and student responses, the development of smart ladder media assisted by kolintang musical instruments in learning addition and subtraction mathematics developed by researchers received a score with an average of 84.2%. The score results are included in the Very Feasible category to be used as media in

the learning process. Based on the results of the pretest and posttest that have been carried out, there is an increase in student interest and learning outcomes before and after using smart ladder media assisted by kolintang musical instruments on addition and subtraction material that has been developed by 91% with a total of 20 students who are complete so that it can increase student interest and response and affect the learning outcomes of grade I elementary school students.

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