Proceeding of Integrative Science Education Seminar Vol. 4 No. 1, 2024, pp. 39 - 50

Available online at

PISCES

Proceeding of Integrative Science Education Seminar

Journal homepage : https://prosiding.iainponorogo.ac.id/index.php/pisces

Article

DEVELOPING LEARNING MEDIA OF TOOL BOX FOR SCIENCE PRACTICE IN GRADE 8 OF MTS NURUL ISLAM, KEDIRI CITY TO IMPROVE STUDENTS' LEARNING OUTCOMES

Mukrofin Aulia Rahma[1], Fatya Dewi Mayada[1], Shahabuddin bin Hashim[2], Ratna Wahyu Wulandari[1], Ummiy Fauziah Laili[1], Atika Anggraini[1]

[1]Natural Sciences Education, Faculty of Tarbiyah, Kediri State Islamic Institute, Kediri City

**Corresponding Address: ratnawahyuwulandari@iainkediri.ac.id*

Article Info

4th AVES
Annual Virtual Conference of Education and Science 2021

Keywords:

Instructional Media
Science Practical
Learning outcomes

ABSTRACT

This study aims to develop learning media in the form of a science practicum toolbox in class 8 of MTS Nurul Islam, Kediri City to improve student learning outcomes. This study was conducted due to low student motivation and learning outcomes, which were caused by minimal laboratory facilities and learning models that tended to focus on lecture methods. This study used the research and development (R&D) method with the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model. The developed toolbox contains simple practicum tools for four main materials for class 8: mixtures, circulatory system, vibrations, and earth structure. The validation results from material and media experts showed that this media was feasible to use with an average validity level of 85%. The trial on students showed a significant increase in learning outcomes with a Sig value <0.001 with an average post-test value higher than the pre-test with an N gain score of an average value of 0.9222. The use of this practicum toolbox has proven effective in improving students' understanding of concepts and practical skills.

© 2024 Mukrofin Aulia Rahma, Fatya Dewi Mayada, Shahabuddin bin Hashim, Ratna Wahyu Wulandari, Ummiy Fauziah Laili, Atika Anggraini

INTRODUCTION

According to Law No. 20 of 2003, education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have spiritual religious strength, self-control, personality, intelligence, noble morals, and skills needed by themselves, society, nation and state. Based on Law No. 20 of 2003 article 1 paragraph 19, the curriculum is a set of plans and arrangements regarding the objectives, content, and learning materials and methods used as guidelines for organizing learning activities to achieve certain educational goals. CriteriaGood science learning according to the Education Unit Level Curriculum is not enough to only be sourced from books, but the teaching must be equipped with practical tools and connected to the surrounding environment. Students will be encouraged to develop scientific skills and attitudes in learning that are useful for continuing their education or for living in society. Related to conveying knowledge, it is

Copyright © 2024 Mukrofin Aulia Rahma, et.al, p-ISSN 2808-5337 e-ISSN 2808-5345

necessary for students to have an understanding of concepts and problem solving, teaching aids are one of the learning media that can help teachers and students in achieving learning objectives. Teaching aids play a major role in the success of a learning process. The use of teaching aids must be done properly, as well as the selection of types that must be relevant to the educational material to be studied.Learning outcomes areobservable behavior that shows a person's abilities. Student abilities which are behavioral changes as a result of learning can be classified into certain dimensions (Ahiri, 2017).Learning outcomes are experiences that students have gained after students receive learning. According to the statement (Febryananda, 2019) that learning outcomes are the mastery that a person or student has gained after students have absorbed learning experiences.

The use of learning media is one of the efforts to improve the effectiveness of the teaching and learning process in schools. One method that is quite effective is observation or observation that uses the five senses as the main tool (Morissan, 2017). However, limited laboratory facilities and non-interactive learning models, such as lectures, often make students feel less enthusiastic and have difficulty in understanding the material, especially in Natural Sciences (IPA) subjects. At MTs Nurul Islam, Kediri City, 8th grade students showed less than satisfactory results in the IPA subject, where only 65% of students scored above the KKM (Minimum Completion Criteria) on the mid-semester exam, while the remaining 35% were still below the KKM. This obstacle is exacerbated by the lack of laboratory facilities, so that practicums are only carried out once a semester with simple tools and materials. This condition affects students' learning motivation and their understanding of the concepts taught. Based on these findings, it is necessary to develop innovative learning media to improve student learning outcomes.

This study was conducted to determine the process of developing teaching aids for science practicums, analyzing the feasibility of teaching aids for science practicums, and the effectiveness of teaching aids for science practicums in grade 8 at MTs Nurul Islam. Previous studies have shown that teaching aids-based teaching aids can significantly improve student learning outcomes.This is proven by the assessment of reports containing product design plans with a score range of between 82 and 92 and from the assessment of products that have been made by students, more than 85% have received a good category.(Widiyatmoko and Pamelasari, 2017). (Shahibul Ardhi, 2019) also stated that teaching aids from used materials can produce better learning outcomes, with validation from material and media experts showing a very high level of validity. Withobtained an average score of 90.2% with very valid criteria and media experts obtained an average score of 85.7% with very valid criteria.

This study offers a solution in the form of developing easily accessible, affordable, and efficient science practicum props to help students understand the material more deeply. This prop box will contain four practicums for grade 8 science material, allowing students to actively participate in the learning process. This tool is designed so that practicums can be carried out even though a complete laboratory is not available. The novelty of this study lies in the development of a prop box that is integrated with four science practicum materials at once in one box, which has not been widely developed in previous studies. In addition, the use of simple and economical materials makes this prop able to be used by schools with limited facilities, increasing the accessibility of practicum learning media in various schools.

METHOD

This study uses the R&D (research and development) research and development method with the ADDIE model, which includes five stages: Analysis, Design, Development, Implementation, and Evaluation. This model was developed to produce learning media for teaching aids used in science practicums in grade 8. This study was conducted at MTs Nurul Islam involving 18 grade 8B students with 7 male students and 11 female students in the trial

activity. The following is a description of the ADDIE development procedure carried out by the researcher

A. Analysis Stage:
   Needs, curriculum, and performance analysis is carried out to determine the feasibility of the product to be developed.
B. Design Stage:
   Designing teaching aids that are in accordance with the objectives of 8th grade science learning. The preparation of the framework for making teaching aids is done by determining the materials, tools, and materials needed.
C. Development Stage:
   The teaching aids were developed based on the design, then validated by media experts and material experts to ensure their feasibility. Improvements were made based on suggestions from experts (Arif and Sarwanto, 2020).
D. Implementation Stage:
   The developed product was tested on students at MTs Nurul Islam to see the effectiveness and feasibility of the learning media. The trial involved giving a questionnaire to assess student and teacher responses as well as pre-test and post-test to measure learning outcomes.
E. Evaluation Stage:
   Evaluation is carried out based on the results of implementation and suggestions from students and teachers to ensure that the media is effective and suitable for use in the learning process.

Data were collected through observation, expert validation questionnaires, student questionnaires, and pre-test and post-test tests. Analysis was carried out quantitatively and qualitatively to assess the feasibility and effectiveness of the media. Data analysis of the results of the validation of teaching aids was carried out by finding the value of the validator's assessment. The formula used is the Likert scale as follows:

$$P = \frac{\sum x}{\sum xi} \times 100\% \quad (1)$$

Information :
P = Score Percentage
$\sum x$ = Number of respondents' answers in one item.
$\sum x\, i$ = Number of ideal values in one item

By using this formula, researchers can obtain the criteria for the level of success of this product by referring to the criteria from the validation results according to the following table:

Table 1. Product validity categories

Percentage	Criteria	Information
1%-100%	Very good	Very Valid
1%-80%	Good	Valid
1%-60%	Pretty good	Quite Valid
1%-40%	Not good	Less Valid
1%-20%	Very Poor	Invalid

Then for the effectiveness test, a hypothesis test is carried out if the significance value t <0.05, then H0 is rejected, meaning that there is a significant influence between one independent variable on the dependent variable. If the significance value t> 0.05, then H0 is accepted, meaning that there is no significant influence between one independent variable on the dependent variable. Then the normality test, and the N Gain test with the formula:

$$\text{N-Gain} = \frac{\text{Skor posttest} - \text{skor pretest}}{\text{Skor Ideal} - \text{skor pretest}} \times 100\% \quad (2)$$

Table 2.N Gain interpretation category

Score Interval	Validity Criteria
0<40%	Ineffective
40% − 55%	Less Effective
56% -75%	Quite effective
>76%	Effective

Table 3. Gain score distribution

N-Gain Value	Validity Criteria
G<0,7	Tall
$0{,}3 \leq g \leq 0{,}7$	Currently
g<0.3	Low

Information:

- **Post-test:**Average final test scores after intervention.
- **Pre-test:**Average test score before intervention.
- **Ideal Maximum Score:**The maximum score possible on a test.

Interpretation of N-gain

- **N-gain = 1:**Shows the maximum possible improvement. This means that the learner has utilized the full potential for improvement.
- **N-gain = 0:**There was no improvement from the pretest to the posttest. This means there was no change in scores or learning outcomes.
- **0 < N-gain < 1:**Shows varying improvement between the pre-test and post-test, but does not reach the maximum level.

RESULTS AND DISCUSSION

The presentation of research data "Development of Learning Media for Science Practical Tool Boxes in Class 8 of MTs Nurul Islam to Improve Student Learning Outcomes" using the ADDIE model involves several important steps. The ADDIE model itself is a systematic framework used in learning design and development, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation.

1. Analysis

   In the results of interviews with science teachers at MTs Nurul Islam, it was explained that the source of learning science is still focused on student books without any learning media that can be used to support the learning process further. That way, students independently understand the material presented. The delivery method is also quite short, because the material in the student book is only a summary of the material. This causes the level of student understanding to be quite low. The curriculum applied at MTs Nurul Islam is the independent curriculum. As is widely known, this curriculum requires students to be more active in the learning process while educators are only facilitators. However, educators and books are still the main sources of learning. Thus, educators must have high creativity so that the learning process can run optimally. One of the subjects that is less popular with students is science. With the curriculum that is applied, it becomes one of the triggers for student problems in dealing with science problems, because students are less active and less focused on the material presented.
2. Design

   Design in learning media research for science practicum demonstration boxes is a process that involves preparing detailed plans about the content, instructions, and visuals

of the demonstration box. By designing the demonstration box systematically, starting from goal setting to prototyping and training planning, this design aims to produce effective demonstration tools, in accordance with the curriculum, and supporting the learning process at MTs Nurul Islam. Good design will ensure that the demonstration box not only meets educational needs but also makes it easier for students and teachers in its practical use.

The design of this science practicum demonstration box is in the form of a cube with each side being 20 cm long. Made from harbot wood which is formed into a cube using a saw, nails, hammers, etc. This box is formed into 4 sides, each of which can be opened by providing a cross (X) partition on the inside so that it has 4 sides of space that can be opened. The door is designed to open downwards, with 2 small hinges installed at the bottom and a wooden slot to close it. As well as an iron handle on the front of the door to make it easier to open. Each side is also given a title of the practicum to mark what practicum is inside and a Science Education sticker as a complement. In addition, each side is painted with a different color, red, yellow, green, and blue. Here are more details:

In this earth structure practicum, it is painted blue, and the title of the practicum is printed and then laminated with IAIN Kediri stickers as a complement. On the inside of the earth structure practicum, the shape of the earth is made with white cement mixed with white eagle glue and water with a dough texture that tends to be thick, then printed on a toy ball that has been cut into a quarter as in the picture on the side. After the cement is dry, the outside is painted blue and green, and on the inside, paper is attached with a picture of the inner structure of the earth along with the name of each part. The earth is placed on a plastic coaster and glued so that it does not come off. Explanatory material about each part of the earth's structure is printed and inserted into an envelope made of wrapping paper to make it look attractive.

In this vibration practicum, it is given yellow paint, and the title of the practicum is printed and then laminated and also the IAIN Kediri sticker as a complement. In the vibration practicum, in addition to making a simple pendulum. At the top of the box, a wooden support is made that can be removed and hung with iron connected to the top. For the pendulum, it is made of wood shaped into a box and then wrapped in wrapping paper. The box is tied with a rope made of jute which is tied and connected to the top wood as shown in the picture. This practicum is also equipped with a bow and ruler to measure the angle and length of the rope during the practicum.

In this blood circulation practicum, it is given green paint, and the title of the practicum is printed and then laminated with IAIN Kediri stickers as a complement. In this blood circulation practicum, it is made by, first making a practicum base from cardboard covered with wrapping paper, with the length of the side adjusted to the size of the door. Second, printing pictures of the lungs, heart, and body are laminated and then attached to the cardboard board as shown in the picture. Third, making a blood circulation system using transparent plastic hose material that is shaped according to the blood circulation system, glued using a glue gun. Then given a description of the name of the veins, arteries, aorta, pulmonary veins, and pulmonary arteries. Fourth, preparing a 50 ml injection and red water to be injected into the hose as its blood flow.

In the Homogeneous and Heterogeneous mixture practicum, it is painted blue, and the title of the practicum is printed and then laminated with IAIN Kediri stickers as a complement. In this homogeneous and heterogeneous mixture practicum, six types of materials are needed, namely coffee, sugar, salt, oil, powdered milk, and sand. The containers use plastic clips, six for material containers and six more empty containers for mixing during the practicum. Each container is labeled with a name to make it easier. Water is also provided in a bottle as a solvent and a spoon for stirring.

3. Development

In the process of developing this science practical demonstration tool box, the researcher validated the media and materials with experts. The following are the results from the validator.

a. Subject matter expert validation

Table 4. Material expert validation results 1

NO.	Assessment Aspects	*f*	N	P(%)	Validity Level
1.	Curriculum Validation	4	5	80%	Valid
2.	Compliance with Learning Objectives	4	5	80%	Valid
3.	Quality of Teaching Aids	4	5	80%	Valid
4.	Quality of Teaching Aids	3	5	60%	Quite Valid
5.	Ease of Use	3	5	60%	Quite Valid
6.	Compliance with Science Concept	4	5	80%	Valid
7.	User Feedback	4	5	80%	Valid
8.	Alignment with Practical Activities	3	5	60%	Quite Valid

Based on the validation data from material expert 1, where the maximum value for all answers is 40, for the total value given is 29, so the score obtained is calculated using "equation (1)" below:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

$$P = \frac{29}{40} \times 100\%$$

$$= 72\%$$

Table 5. Material expert validation results 2

NO.	Assessment Aspects	*f*	N	P(%)	Validity Level
1.	Curriculum Validation	4	5	80%	Valid
2	Compliance with Learning Objectives	3	5	60%	Quite Valid
3.	Quality of Teaching Aids	4	5	80%	Valid
4.	Quality of Teaching Aids	4	5	80%	Valid
5.	Ease of Use	4	5	80%	Valid
6.	Compliance with Science Concept	4	5	80%	Valid
7.	User Feedback	4	5	80%	Valid
8.	Alignment with Practical Activities	4	5	80%	Valid

Meanwhile, the data from the validation results of material expert 2, where the maximum value for all answers is 40, for the value given a total of 31, so that the score obtained is calculated using "equation (1)" below:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

$$P = \frac{31}{40} \times 100\%$$

$$= 77.5\%$$

From the calculations above, material experts 1 and 2 obtained final results with a calculated percentage of 72% and 77.5% with the conclusion that the material in the science practicum tool box learning media is good or valid for use in learning.

b. Media expert validation

Table 6. Media expert validation results 1

NO.	Assessment Aspects	*f*	N	P(%)	Validity Level
1.	Curriculum Suitability	4	5	80%	Valid
2	Compliance with Learning Objectives	3	5	60%	Quite Valid
3.	Quality and Suitability of Teaching Aids	4	5	80%	Valid
4.	Ease of Use	4	5	80%	Valid
5.	Suitability to Difficulty Level	3	5	60%	Quite Valid
6.	Effectiveness in Learning	3	5	60%	Quite Valid
7.	Security of Use	3	5	60%	Quite Valid
8.	Student Engagement and Motivation	4	5	80%	Valid

Meanwhile, the data from the validation results of media expert 1, where the maximum value for all answers is 40, for the value given a total of 28, so that the score obtained is calculated using "equation (1)" below:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$
$$P = \frac{28}{40} \times 100\%$$
$$= 70\%$$

Table 7. Media expert validation results 2

NO.	Assessment Aspects	*f*	N	P(%)	Validity Level
1.	Curriculum Suitability	4	5	80%	Valid
2	Compliance with Learning Objectives	4	5	80%	Valid
3.	Quality and Suitability of Teaching Aids	3	5	60%	Quite Valid
4.	Ease of Use	4	5	80%	Valid
5.	Suitability to Difficulty Level	4	5	80%	Valid
6.	Effectiveness in Learning	4	5	80%	Valid
7.	Security of Use	4	5	80%	Valid
8.	Student Engagement and Motivation	3	5	60%	Quite Valid

Meanwhile, the data from the validation results of media expert 2, where the maximum value for all answers is 40, for the value given a total of 30, so that the score value obtained is calculated using "equation (1)" below:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$
$$P = \frac{30}{40} \times 100\%$$
$$= 75\%$$

From the calculations above, media experts 1 and 2 obtained final results with a calculated percentage of 70% and 75% with the conclusion that the media in the science practicum tool box learning media is good or valid for use in learning.

4. Implementation

The implementation of research data in the context of learning media involves several steps to ensure that the research results are applied effectively in the development of learning materials. In this study of the science practicum demonstration tool box at MTs Nurul Islam, the implementation uses pretest and posttest data to determine how effective this learning media is in the study. The following are the pretest and posttest scores of MTs Nurul Islam students taken on different days.

a. Effectiveness analysis

1) Hypothesis testing

a) Normality test

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PRETEST	,152	18	,200*	,888	18	,035
POSTTEST	,288	18	<,001	,737	18	<,001

*. This is a lower bound of the true significance.

i. Lilliefors Significance Correction

Based on the results of the normality test above, the significance is less than 0.005, which is 0.001, so it can be concluded that the data is not normally distributed. If so, the next step is to conduct a non-parametric test (Wilcoxon).

b) Non-parametric analysis test (Wilcoxon)

The Wilcoxon signed test is a non-parametric test to determine the average difference of objects that have non-normally distributed data.

Ranks

		N	Mean Rank	Sum of Ranks
after implementation media - before	Negative Ranks	0[a]	,00	,00
	Positive Ranks	18[b]	9,50	171,00

media implementation	Ties	0[c]		
	Total	18		

a. after media implementation < before media implementation
b. after media implementation > before media implementation
c. after media implementation = before media implementation

Based on the results of the descriptive analysis above, the average value of positive rank = 9.5 and negative rank = 0.00. This means that there is an increase in the value of student learning outcomes after the implementation of the science practicum demonstration tool box learning media. Thus, it can be concluded that the provision of science practicum demonstration tool box learning media has a significant effect on increasing the value of student learning outcomes at MTs Nurul Islam.

Test Statistics[a]

	after implementation media – before implementation media
Z	-3,742[b]
Asymp. Sig. (2-tailed)	<,001

a) Wilcoxon Signed Ranks Test
b) Based on negative ranks.

Based on the output table of the Wilcoxon test results, the Sig value <0.001 is obtained, which means it is smaller than α 0.005. Thus, Ho is rejected and H1 is accepted. Which means that there is an influence of the development of the science practicum media box on the learning outcomes of MTs Nurul Islam students.

b. N-Gain

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Ngain_Score	18	,80	1,00	,9222	,07739
Ngain_Percent	18	80,00	100,00	92,2232	7,73911
Valid N (listwise)	18				

Table 3. Gain score distribution

N-Gain Value	Validity Criteria
G<0,7	Tall
$0,3 \leq g \leq 0,7$	Currently
g<0.3	Low

From the data results above, it can be seen that the N gain score mean/average value gets a result of 0.9222, this value is more than 0.7 so it can be categorized as "High" which can be interpreted that the effectiveness obtained is high. Furthermore, for the N gain percent, the mean/average value gets a result of 92%. So it can be concluded that the use of learning media for science practicum toolboxes in learning is effective in improving learning outcomes at 8 MTs Nurul Islam.

5. Evaluation

In the research on learning media for science practical demonstration tool boxes, after the media implementation process at MTs Nurul Islam, there were several things

that needed to be improved, such as the media which only had 1 box, which was not optimal for the number of students.

According to (Punaji, 2013) development means growth, gradual change and gradual development. There are many types of learning media to support the learning process to run well. In this study, a learning media was developed in the form of a science practicum demonstration tool box. The development of this science practicum demonstration tool box is intended to improve students' learning understanding. Based on the results of observations at the analysis stage that have been presented in the research results, it is known that students find it difficult to absorb the material presented, learning media are limited to books and texts, the appearance is not attractive so that students are bored of studying, therefore, researchers develop learning media that can facilitate students in learning.

Student analysis stage, it is known that students need learning media that can facilitate students in learning so that it is interesting and not boring to learn it. The selection of supporting teaching aids in learning can facilitate students to understand better so that students like the learning process. The science practicum teaching aid box can be used as a teaching aid because it is a media that has elements of movement that are adjusted to the practicum material in grade 8. The science practicum teaching aid box can attract students so that it can help in understanding learning which is more enjoyable for students. After the analysis of the problem was obtained, the researcher continued to select learning media in the form of teaching aids. After the analysis stage, the next stage is the design stage (design) at this stage the media planning format is carried out. Within the predetermined framework, the planning of the design, making teaching aids, adjusting the material from CP and TP, as well as the media usage guidebook.

After all is designed then continued with the evaluation stage of what are the needs required in this design stage which designs from several elements above. Next is the development stage, namely the media development stage starting from the design stage of making the science practicum media box starting from the media design to the finishing stage and then an evaluation is carried out by material and media experts called validation. The goal is to obtain suggestions to improve the learning media that is developed. Input from experts is edited as a reference for revision. In addition, filling out the validation questionnaire will determine the feasibility of the media to be tested on students. This revision is carried out as a step in making feasible learning media.

The developed product was then revised on several components that needed to be fixed in the media. Data validity check in this study used Triangulation. The first data validity check (Arif Widiyatmoko, 2012) in his research article Project-based learning to develop science teaching aids by utilizing used materials, The purpose of this study was to develop and produce science teaching aids through project-based learning by utilizing used materials. The lecturer's findings showed that students when given the assignment to produce/modify science teaching aids experienced difficulties. Most students collected assignment product designs not from their own or group work, but from internet searches. From the assessment of the assignment results, less than 25% of students got a score of 75. This study was conducted in the Science Education Study Program, FMIPA Unnes with a target of 30 semester V students, class 3. The results of the study indicate that by using project-based learning, students have been able to develop and produce science teaching aids well, as evidenced by the assessment of reports containing product design plans with a score range of 82 to 92 and from the assessment of products that have been made by students, more than 85% have received a good category. The conclusion of this study is that the application of project-based learning can develop science teaching aids by utilizing used materials.

Eligibility comes from the root word feasible. According to KBBI, the word eligibility means appropriate (fit, proper), appropriateness, and propriety. Learning media before being used in the learning process should be analyzed based on media selection criteria so that it is suitable for use. According to Mualdin & Edi, one of the criteria for media that is suitable for selection is that it is in harmony and in accordance with the needs of learning tasks and supports the content of the learning material. So that learning media is made based on the needs of students and educators. In addition, the content of appropriate learning media material will also be more meaningful for students (Fitria et al. 2017)

According to (Hamalik, 1994) appropriate learning media can be effective if the media provides opportunities for independent learning and extensive activities. Based on the description above, it can be concluded that the appropriateness of learning media is when the learning media used is in accordance with the needs, in accordance with the content of the learning material, and the media can provide learning opportunities for students. The appropriateness of learning media is seen from the percentage of validity by material and media experts, which in the results can be said whether or not a media is appropriate. The results of the study showed that the learning media for the science practicum demonstration tool box obtained a percentage of media validity by media expert validators 1 and 2 of 70% and 75% were said to be good or valid for use in learning. While the values from material experts 1 and 2 were 72% and 77.5% with the conclusion that the material in the learning media for the science practicum demonstration tool box was good or valid for use in learning.

In the context of learning media research, effectiveness refers to the extent to which learning media can achieve the stated educational goals, such as improving students' understanding or learning skills (Mayer, 2009). From the results of the research data, it is known that the N gain score mean/average value obtained a result of 0.9222, this value is more than 0.7 so that it can be categorized as "High" which can be interpreted that the effectiveness obtained is high. Furthermore, for the N gain percent mean/average value obtained a result of 92%. From the results of the test of increasing learning understanding that has been carried out, it is proven that there is an increase in learning understanding by using the science practicum tool box learning media, which means it is effective to be applied in learning at Mts Nurul Islam. So it can be concluded that there is a difference in learning understanding of students who use learning media with students who do not use learning media.

CONCLUSION

In the researcher's interview with the science teacher there, the learning model used is the lecture model in class. With practicums carried out each semester only 1 practicum or experiment. In addition, this school does not yet have science laboratory facilities, so the practicum is carried out in class with simple tools and materials. So that children seem less enthusiastic and less active in participating in learning. As a result, this has an impact on student learning outcomes, the mid-semester exam yesterday showed that 65% of students' scores were above the minimum completeness criteria and the remaining 35% were still below the minimum completeness criteria. The highest score obtained was 97 and the lowest score obtained by students was 38. The percentage of 35% of students whose scores were below the minimum completeness criteria is quite large. Based on the problems that researchers found at MTs Nurul Islam, the solution offered is the development of learning media in the form of teaching aids for practicums. This study uses the research and development (R&D) method with the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model. This science practicum teaching aid box can overcome the problem of lack of student learning outcomes at MTs Nurul Islam. By presenting lesson concepts in real form, students can be directly involved in the learning process. Practical teaching aids provide direct experience that

allows students to understand concepts more deeply, increasing the understanding of abstract concepts into concrete understanding.

After going through the feasibility test of learning media seen from the percentage of validity by material and media experts, which results can be said whether or not a media is feasible. The results of the study showed that the learning media of the science practicum demonstration tool box obtained a percentage of media validity by media expert validators 1 and 2 of 70% and 75% were said to be good or valid for use in learning. While the values from material experts 1 and 2 were 72% and 77.5% with the conclusion that the material in the learning media of the science practicum demonstration tool box was good or valid for use in learning. Also from the results of the research data it is known that the N gain score mean/average value obtained a result of 0.9222, this value is more than 0.7 so it can be categorized as "High" which can be interpreted that the effectiveness obtained is high. Furthermore, for the N gain percentage the mean/average value obtained a result of 92%. It is concluded that this science practicum demonstration tool box learning media is good and effective in improving student learning outcomes.

REFERENCE

Adi Wijayanto, Murtiyah, Andi Asrifan, *Pengaruh Media Pembelajaran Audio Visual Dan Alat Peraga Edukatif Terhadap Hasil Perkembangan Anak di Ra Al Khodijah Purworejo Kecamatan Ngunut Kabupaten Tulungagung,* (Tulungagung : OSF Preprints, 2021)

Ari Krisnawati, *Penggunaan Media Pembelajaran Tiga Dimensi Untuk Meningkatkan Hasil Belajar Di Sekolah Dasar dalam jurnal PGSD* Vol 1 nomor 02 tahun 2013.

Cetta Shandilia Latunusa Abwani, *"Peningkatan Hasil Belajar Sosiologi Materi Konflik Sosial melalui Model PBL dan Metode NHT bagi Peserta Didik Kelas XI IPS 4 SMA Negeri 6 Surakarta Tahun Pelajaran 2016/2017"*17.

Darimi, Ismail, *Teknologi Informasi dan Komuikasi sebagai Media Pembelajaran Pendidikan Agama Islam Efektif.* Jurnal Pendidikan Teknologi Informasi.

Darmawaty Tarigan dan Sahat Siagian *Pengembangan Media Pembelajaran Interaktif Pada Pembelajaran Ekonomi dalam Jurnal Teknologi Informasi & Komunikasi dalam Pendidikan,*Vol. 2, No. 2, Desember 2015, p-ISSn: 2355-4983; e-ISSN: 2407-7488

Daryanto, *Media Pembelajaran Peranannya Sangat Penting Dalam Mencapai Tujuan Pembelajaran* (Yogyakarta: Gava Media. 2010) h. 7 1(2):111-121. UIN ArRaniry. Tahun 2017

Gatot Muhstyo, *Pembelajaran Matematika SD,* (Jakarta : Universitas Terbuka, 2008) Hal 1

Heni mularsih, *Pembelajaran Individual Dengan Menggunakan Modul* dalam jurnal akademika Vol. 9. No.1, JUNI 2007

Iis Dewi Lestari., Halimatusha'diah., Fibria Anggraini Puji Lestari., P*enggunaan Media Audio, Visual, Dan Audiovisual Dalam Meningkatkan Pembelajaran Kepada Guru-Guru,* dalam jurnal PKM: Pengabdian kepada Masyarakat Vol. 01 No. 01, 2018 hal 55-60

Jenny Gichara, *Kumpulan Artikel Pendidikan Pilihan* (Bandung: Viola Publishing, 2021), 203.

Made Wena, *Strategi Pembelajaran Inovatif Kontemporer* : Suatu Tinjauan Konseptual Operasional, (Jakarta : Bumi Akasara,2013), Hal 11

Mayer, R. E. (2009). *Multimedia Learning*. Cambridge University Press

Muhammad Minan Chusni dkk, *Strategi Belajar Inovati*f(Pradina,2021), 7-8.

Nana Syaodih Sukmadinata, *Metode Penelitian Pendidikan* (Bandung: PT Remaja Rosdakarya, 2008) hlm. 164

Nuridayanti, Mengembangkan Motivasi dan Hasil Belajar dengan Pendekatan *Problem Posing*(2022), 29.

Punaji Setyosari, *Metode Penelitian Pendidikan dan Pengembangan*, (Jakarta : Kencana Prenadamedia,2013) hlm. 222.

Risya Budi Suprapto, *"Peningkatan Keterampilan Presentasi dan Hasil Belajar TIK Materi Mengoperasikan Aplikasi Pengolah Angka melalui Penerapan Layanan Bimbingan dengan Strategi Active Knowledge Sharing bagi Siswa Kelas XI IPS 4 Semester Genap SMA Negeri 4 Surakarta Tahun 2017/2018*" Jurnal Pendidikan Empirisme (2018), 68.

Rusman, *Belajar dan Pembelajaran Berbasis Komputer*,…, hal. 1674

Sulastri, Imran, Arif Firmansyah, *"Meningkatkan Hasil Belajar Siswa melalui Strategi Pembelajaran Berbasis Masalah pada Mata Pelajaran IPS di Kelas V SDN 2 Limbo Makmur Kecamatan Bumi Raya"* Vo.3 No. 1 Jurnal Kreatif Tadulako Online, 92.

Yenny Suzana, *Teori Belajar dan Pembelajaran*(Batu:Literasi Nusantara, 2018), 1-2.