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Development of Learning Media 'Electric Circuit Teaching Aid' as an Effort to Increase Learning Motivation of Class V and VI Students of Wasur I State Elementary School

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Abstract

This research is to find out development of learning media 'electric circuit teaching aid' as an effort to increase learning motivation of class V and VI students of Wasur I State Elementary School. This research method uses analysis, design, development, implementation, and evaluation (ADDIE) procedures. The teaching aids developed are a series of series and parallel circuit boards, which have been validated by 2 expert validators and 2 user validators, namely teachers. The teaching aids were then demonstrated in natural science learning with the theme of electric circuits for class V and VI students of Wasur I State Elementary School, Wasur Village, Merauke District, Papua, in August to December 2021. From the research results obtained an average value of 4.33 validation is in the range of scores of 4.22 and 5, included in the very feasible criteria, with the average percentage result is 86.66%. The results of observations and interviews showed that students were motivated during the learning process using the media.

Keywords
learning media; teaching; learning motivation

I. Introduction

Education is very important for every individual to be able to grow and develop optimally. Education is very necessary for the next generation of the nation, good and correct and quality education will provide positive impact values that have many benefits for students. Education in the eastern edge of the indonesian archipelago, has developed a lot but the biggest challenge for teachers in remote areas is very complex problems (Silubun, 2019). Environmental problems where students live Silubun et al. (2020), starting from distance which is far from the city center, the lack of supporting facilities at schools, to the problems for students who come from families with lower middle-income economies so that in meeting their family's daily needs, these school-age children often leave class and attend classes. Their parents when gardening or fishing in the sea during school hours, this habit makes students often miss subjects at school. This problem is a challenge for educators, so elementary school teachers in suburban areas are very focused on pursuing so that students can read and count. Read and count is the main focus in learning in schools, even at the sixth grade level of elementary school, while learning natural sciences is also a very important science to be learned and applied from an early age, therefore it is necessary to have a support system Silubun and Tembang (2022) which helps and facilitates teachers in providing natural science learning. The use of appropriate learning media can increase students' learning motivation, including teaching aids or teaching aids.

Teachers are also called educators and teachers, but we know that not all educators are teachers, because the teacher is a professional position which essentially requires the requirements of technical skills and certain personality attitudes, all of which can be obtained through the teaching and learning process and training. The teacher is a profession that is responsible for the education of students. This can be understood from the following meanings:

1.Teacher is a position or profession that requires special skills as a teacher.

2.A teacher is a person who is able to carry out educational actions in an educational situation to achieve educational goals or an adult who is honest, physically and mentally healthy, virtuous, expert, skilled, open, fair, and compassionate.

3.The teacher is one of the human components in the teaching and learning process, which plays a role in efforts to establish potential human resources in the field of development.

The main task and responsibility of a teacher is to manage teaching more effectively, dynamically, efficiently, and positively which is characterized by awareness and active involvement between two teaching subjects, the teacher as the initial initiator and director and mentor, while the students are experienced and involved active to gain self-change in teaching. How important is the role of teachers and the severity of their duties and responsibilities, especially in developing human potential (students). The work of a teacher is a type of work that cannot be seen, a teacher will feel proud, satisfied and feel successful in his duty to educate and teach if among his students can become a pioneer or be useful for his nation. Given that education is always related to human development efforts, the success of education is very dependent on the human element. Educate children to become true muslims who have strong faith, do good deeds and have good character so that they can become members of society who are able to live on their own feet, serve Allah and serve the nation and homeland. Teachers and educators are the prints of development in all areas of life in society. The role of the teacher has an important and main position in the entire educational process, the teacher or educator is the main driving factor for the progress of an educational institution. In addition, teachers as educators in determining teaching and learning strategies really need special knowledge and skills in the field of teaching methodologies. Because it is the teacher who will help students to achieve good results. The teaching method is a way that is done or applied by the teacher in delivering subject matter to students in the teaching and learning process.

The work of teachers can be seen as a profession that as a whole must have a good personality and mental toughness, because they can be an example for their students and the surrounding community.

Teaching aids are one of the learning media that can maximize a learning process, in addition to helping teachers in conveying a material concept, they can also be impulses that motivate students to understand the material presented by the teacher more quickly.

Growing student motivation is one technique in developing the ability and willingness to learn. One logical way to motivate students in learning is to link learning experiences with student motivation (Suprihatin, 2015). Student engagement and interest in class are important conditions for active learning. For this they must be highly motivated. In other words, students who have high motivation make an effort to be engaged in class. Thus, knowing students' motivation level is important for active engagement in class.

Through research conducted by researchers on the development of a mini natural sciences laboratory, in this article the author presents the results of the development of series and parallel circuit teaching aids, for electrical circuit material in elementary schools.

This research is to find out development of learning media 'electric circuit teaching aid' as an effort to increase learning motivation of class V and VI students of Wasur I State Elementary School.

II. Research Method

This research method uses analysis, design, development, implementation, and evaluation (ADDIE) procedures. Where the results of this study are a product, as well as testing the effectiveness of the product until it is marketable (Pandia et al., 2018; Pandiangan, 2015). The ADDIE model relies on each stage being done in the given order but with a focus on reflection and iteration (Asyraini et al., 2022; Octiva et al., 2018). The ADDIE learning model is a learning model that can foster students' learning enthusiasm, improve scientific attitudes, learning motivation, critical thinking skills, cooperation, mutual learning, familiarity, mutual respect, and student participation. The ADDIE model requires an evaluation process in each phase but is only summative and will usually be final when you want to move on to the next phase. The ADDIE model has several advantages and disadvantages. The advantage of the ADDIE model lies in the implementation stage because it is carried out systematically and systemically, while the drawback lies in the design stage because the ADDIE model does not say how to divide the main objectives into practical goals.

The teaching aids developed are a series of series and parallel circuit boards, which have been validated by 2 expert validators and 2 user validators, namely teachers.

The teaching aids were then demonstrated in natural science learning with the theme of electric circuits for class V and VI students of Wasur I State Elementary School, Wasur Village, Merauke District, Papua, in August to December 2021.

The instruments in this study consisted of interview and questionnaire. Interview is a question and answer activity orally to obtain information. The form of information obtained is stated in writing, or recorded in audio, visual, or audio visual form. Interviews are the main activity in observational studies (Octiva, 2018; Pandiangan, 2018; Pandiangan, 2022). Questionnaire is a technique of collecting data by asking written questions to be answered in writing by the respondents. Questionnaire is a collection of written questions that are used to obtain information from respondents about themselves or things they know (Octiva et al., 2021).

Types of data obtained from the results of the validation of the media that has been developed in the form of quantitative and qualitative data. Quantitative data are data about numeric variables (Pandiangan et al., 2018; Pandiangan et al., 2021). Qualitative data are measures of 'types' and may be represented by a name, symbol, or a number code. Qualitative data are data about categorical variables (Pandiangan et al., 2022; Tobing et al., 2018).

The data analysis technique used to analyze the validation results is the technique of calculating the average value, with the following equation:

$$P = \frac{\Sigma x}{n} \qquad \text{……..…(1)}$$

And the eligibility equation based on the percentage is as follows:

$$P = \frac{\Sigma x}{\Sigma x_i} x100\% \qquad \text{…….(2)}$$

Information: P = Appropriateness

ΣX = Number of Rating Answers

$\sum X_i$ = Highest Number of Answers
n = Amount of Data

Table 1. Qualification Eligibility Level Based on Score Interval

Criteria	Score Interval
Very Not Good	1 – 1.79
Not Good	1.89 – 2.60
Pretty Good	2.61 – 3.40
Good	3.41 – 4.21
Very Good	4.22 – 5

Table 2. Qualification Eligibility Level Based on Percentage

Percentage (%)	Validity Level
80 - 100	Valid (No Revision)
60 - 79	Quite Valid (No Revision)
40 - 59	Not Valid (Partial Revision)
0 - 39	Invalid (Revision)

III. Results and Discussion

Results of the needs analysis at Wasur I State Elementary School, Wasur Village, as described in the background of this research, in the natural science learning process, teachers need facilities and infrastructure that can maximize classroom learning, one way is to prepare appropriate learning media. The development of natural science learning media that has been designed and tested in this study in the form of series and parallel circuit boards for electrical circuit materials can be seen in Figure 1 and Figure 2.

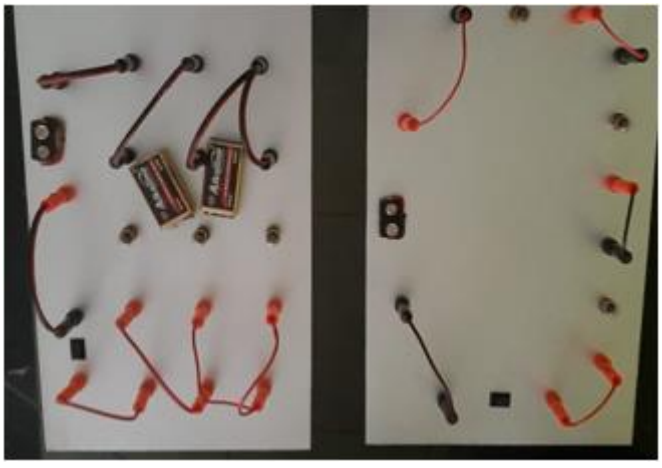


Figure 1. *Series and Parallel Circuit Boards*

Figure 2. *Practical Guide Module Book*
Electrical Circuit (a) Module Cover, (b) Module Content

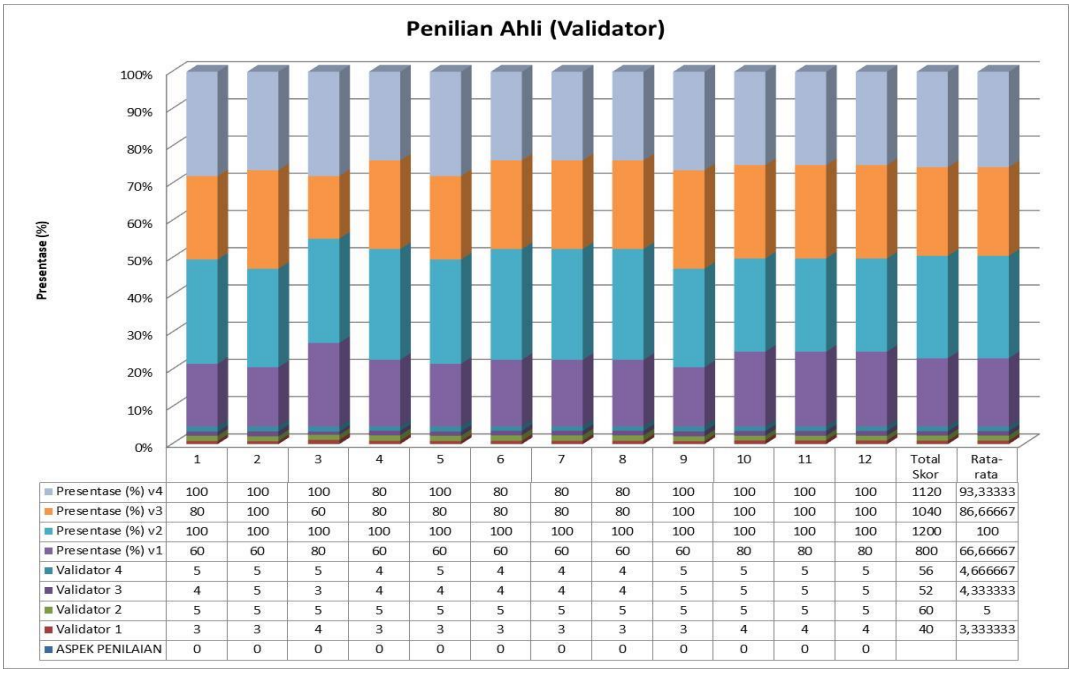
This electrical circuit board display media is designed to be easy to use for natural science material with the theme electric circuits and electrical energy sources, in class V and VI. The companion Book that has been prepared is for an experiment in class V practical material.

A limited trial on students can be seen in Figure 3 is a documentation image of the implementation of the use of electric circuit boards in Wasur I State Elementary School. Observations and interviews showed that students were motivated during the learning process using the media. Students' learning motivation during testing is limited in learning natural science with the theme of electric circuits, the use of series and parallel electrical circuit boards, from observations and interviews, on average students have encouragement and enthusiasm during learning, and students understand the material more quickly what is conveyed when the teacher is practicing props and is followed by students in practical activities.

Figure 3. *Documentation of Usage Trial*
Activities Series and Parallel Electrical Circuits

The data from the validation of media and material experts in the development of this media consist of 2 lecturers and 2 teachers as material and media experts and are active as implementers of learning in the field of natural science studies in elementary schools. The validated aspects of the series and parallel electric circuit media include: (1)the potential to support the achievement of learning objectives, (2)the media functions properly, (3)teaching aids are equipped with instructions for use, (4)the concepts outlined in the teaching aids are correct, (5)teaching aids can make it easier for students to understand electrical circuit material, (6)electric circuit props can motivate students to be actively involved in learning, (7)teaching aids can be used easily by teachers and students, (8)the size of the props is proportional, (9)the materials used are strong, durable and can be used repeatedly, (10)the color selection of the Electrical Circuit props is very attractive, (11)the materials on the media are neatly arranged, (12)the circuit media electricity is safe for use by teachers and students.

The results of the assessment by each validator using equation (1) and equation (2), can be seen in Figure 4. The average score of each validator can be seen from the graph in Figure 3. Validator score 1, totaling 40 with an average of 3,33, and a percentage is 66.7%. Validator score 2 is 60 with an average of 5, and a percentage is 100%. Validator score 3 is 52 with an average of 4.33, and a percentage is 86.7%. Validator score 4 is 56 with an average of 4.67, and a percentage is 93.3%.



	1	2	3	4	5	6	7	8	9	10	11	12	Total Skor	Rata-rata
Presentase (%) v4	100	100	100	80	100	80	80	80	100	100	100	100	1120	93,33333
Presentase (%) v3	80	100	60	80	80	80	80	80	100	100	100	100	1040	86,66667
Presentase (%) v2	100	100	100	100	100	100	100	100	100	100	100	100	1200	100
Presentase (%) v1	60	60	80	60	60	60	60	60	60	80	80	80	800	66,66667
Validator 4	5	5	5	4	5	4	4	4	5	5	5	5	56	4,666667
Validator 3	4	5	3	4	4	4	4	4	5	5	5	5	52	4,333333
Validator 2	5	5	5	5	5	5	5	5	5	5	5	5	60	5
Validator 1	3	3	4	3	3	3	3	3	3	4	4	4	40	3,333333
ASPEK PENILAIAN	0	0	0	0	0	0	0	0	0	0	0	0		

Figure 4. *Graphs and Data Tables of Validator Assessment Results on Media (Electric Circuit Teaching Aids)*

Based on the eligibility qualifications in Table 1 and Table 2, the average score and percentage of eligibility of each validator obtained a very good score. The value of validator 1, which is in the range of 2.61-3.40 is in the fairly good category with a percentage of 66.7% (quite valid), the value of validator 2 is in the range of 4.22 and 5 is in the very good category with a percentage of 100% (valid), the value of validator 3 is in the range of 4.22 and 5 is in the very good category with a percentage of 86.6% (valid), the value of validator 3 an average value of 4.33 validation is in the range of scores of 4.22 and 5, included in the very feasible criteria, with the average percentage result is 86.66%.

IV. Conclusion

From the research results obtained an average value of 4.33 validation is in the range of scores of 4.22 and 5, included in the very feasible criteria, with the average percentage result is 86.66%. The results of observations and interviews showed that students were motivated during the learning process using the media.

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