

## STARTER SYSTEM LEARNING MEDIA TO IMPROVE LEARNING OUTCOMES IN VOCATIONAL SCHOOL

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### Abstract

This study aimed to develop the starter system's learning media on a motorcycle and analyze the effect on students' learning outcomes. This developmental research used the 4D model. Experts, teachers, and students were involved in validating the product's content and feasibility. Quasi-experimental was applied to test the effect of using media on 14 students of the eleventh grade of automotive engineering expertise as an experimental class and 14 students as a control class. The data were collected using questionnaires and tests, then analyzed using an independent *t*-test. The results show that the learning media for the starter system stand on a motorcycle is feasible for learning. Based on the expert judgment, media have been declared good media, and students showed their interest in using the media. There was a significant difference in students' learning outcomes that use and without media use.

*Keywords:* learning media, starter system, vocational school

### INTRODUCTION

Factors that affect learning can be classified into two groups, internal and external factors. Internal factors are the factors that exist in individuals who are learning. Internal factors can be grouped into three factors. They are physical, psychological, and fatigue factors (Jafari & Asgari, 2020; Nurtanto *et al.*, 2020). While external factors are the factors that exist outside of the individual and external factors that are grouped into three factors: family factors, school factors, and community factors (Altabtabae & Shakir, 2020; Nurfitriyanti, 2016; Suyitno, 2019).

Learning theory was developed based on behavioristic, cognitivistic, humanistic, and cybernetic psychology. Learning theory in general can be grouped into four schools, namely behavioristic flow, cognitivistic flow, humanistic flow, and cybernetic flow. According to behavioristic flow, learning is

a way to change behavior based on stimulus-response. While the cognitivistic flow says that learning is a change in perception and understanding so that it merely makes behavior change through thinking. In comparison, the humanistic flow tends to be more concerned with humanizing humans' learning process. The cybernetic flow of learning focuses on information processing (Salamah & Astuti, 2020; Margot & Kettler, 2019; Suprpto, 2019).

Media is one of the communication components as a messenger from the communicator to the communicant. Based on this definition, it can be said that the learning process is a process of communication (Handoyono *et al.*, 2020; Asy'ari *et al.*, 2019; Pardimin *et al.*, 2019).

Interest is related to the power of motion that encourages us to feel attracted to people, objects, activities, or even a practical experience stimulated by the

activity related to the interesting topic (Kartanagara, 2021). Interest is a fixed tendency to show and reminisce about some activities (Setiyanto & Suyitno, 2018). Activities that a person is interested in will be noticed continuously and accompanied by pleasure. The feeling of pleasure that exists boils down to satisfaction (Pratama, 2020).

Learning outcomes can be explained by understanding the two words that make them up, namely “results” and “learning.” The notion of results (product) refers to acquisition due to the conduct of an activity or process that results in functional input changes (Jdaitawi, 2019; Muslim *et al.*, 2018). The result of production is the acquisition obtained due to converting materials (raw materials) into finished goods (finished goods). The same applies to providing limits to crop, sales, development results, and learning outcomes.

Stand stater system on motorcycles in learning the electric maintenance of motorcycles to improve students' learning ability should be maximized (Suyitno *et al.*, 2019).

Questions from this study include: How is the feasibility of Stand System Starter Learning Media on Motorcycles and how is student learning outcomes improved after using the learning media stand starter system on motorcycles in the vocational school.

## METHOD

This developmental research used 4-D (Four-D) models, namely define, design, develop, and disseminate (Sugiyono, 2015; Suyitno, 2018). The time of implementation is April-June 2021. The define and design stages were carried out to analyze the media's significance and create the media's initial design. The development stage began with creating the Stand Starter System on

motorcycles learning media, and reviewing the media's feasibility. The feasibility review was carried out by media experts and material experts and limited student response analysis to the ease of using the media. Furthermore, the developed media was implemented in classroom learning for students majoring in automotive engineering.

The implementation subjects were students of eleventh grade, as many as 14 students in an experiment class, while other of 14 students were in the control class. Experimental class applied scientific approach supporting by the use of stand stater props on motorcycles media. Meanwhile, the control class applied the lecturer method.

The data were obtained through questionnaires and tests. The questionnaires were used to see the validity of the media. The test was used to examine the effectiveness of the media in developing students' learning outcomes.

Questionnaires include media and material validation sheets that developed aspects based on the relevant theory. Table 1 shows the media validation sheet and Table 2 for the material validation sheet. Multiple choice test consists of 25 items. The questions were related to the working principle and the construction of a motorcycle electric starter system, the function and the workings of the components of a motorcycle electric starter system, and procedures for checking, maintaining, and repairing a motorcycle electric starter system.

Student involved in the study has assessed the demonstrated media by filling out a questionnaire of 10 points. The data from the expert validation were analyzed descriptively with percentages to determine the feasibility of the media. The student learning outcome data were analyzed by

Table 1  
*Media Validation Sheet*

No	Aspect of Media Validity
1	The suitability of the media with the material
2	Ease of students in understanding the material
3	Time efficiency of media playback
4	The suitability of the material with the Basic Competence
5	The suitability of the media with the material

Table 2  
*Material Validation*

No	Aspect of material validity
1	The suitability of the material to be displayed in the form of animation
2	Narrative fit with pictures
3	Overall media view
4	Clarity of material, language and letters used
5	Media composition

independent t-test with prerequisite tests including normality and homogeneity tests.

### FINDINGS AND DISCUSSION

Figure 1 shows that the learning media is made with a media board with an explanation of the starter components given. In addition, the media is given attractive colors to clarify student learning (Mayefis

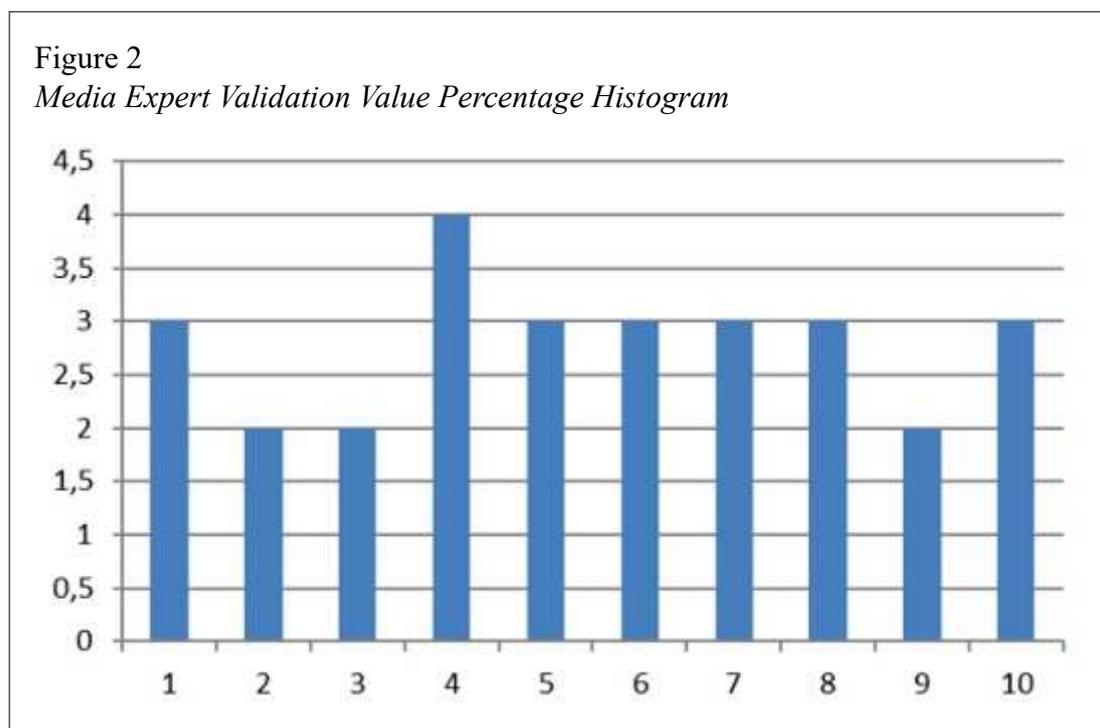
& Barat, 2020; Nabawi & Prasetya, 2020).

The validators of this research are two expert lecturers in the automotive field, especially in the field of starter system media and electrical systems.

Based on the analysis of data on the 10 aspects validated by media experts (Figure 2), the assessment criteria are as follows, the total number of scores obtained

Figure 1  
*Starter System Learning Media*





from the validation of media experts is 28 of the maximum score of 40. With the score, the percentage of the data is 70% and is included in the classification “quite valid. The media expert’s note regarding the media is “a learning media instrument to be immediately piloted as a data retrieval tool”, in the sense that the stater system media on motorcycles is worth using as a means or research tool.

Based on the analysis of data on the 10 aspects validated by material experts (Figure 3), the assessment criteria are as follows, the total number of scores obtained from the validation of material experts is 32 of the maximum score of 40. With this score, the percentage of the data is 80% and is included in the “valid” classification. Note from material experts about the material is “an instrument about learning to be immediately piloted as a data retrieval tool”, validator also provides a written statement that the material is “ready to be piloted” in the sense that

the material is suitable for use as a data retrieval tool.

Before the media was implemented, small group trials are conducted to obtain responses to the quality of media either props or media, as well as in terms of material or theory. Small group trials were conducted on class XI students as many as 5 students. To obtain responses regarding the learning media of the motorcycle stater system, students fill out the questionnaire according to the statement in the student response sheet. The analysis results show that the percentage of usability is 89.5 at the small group trial stage.

In the learning process (Figure 4), the media created must be brought in front of the class. Students should try direct practicum to clarify the learning process. When directly practicing, students will feel firsthand how to operate a tool during practicum (Darmaji *et al.*, 2019; Jasril, 2020). After the learning process, students gave their responses to the media, obtaining a score of 90.89. Students’

Figure 3  
*Material Expert Validation Values Percentage Histogram*

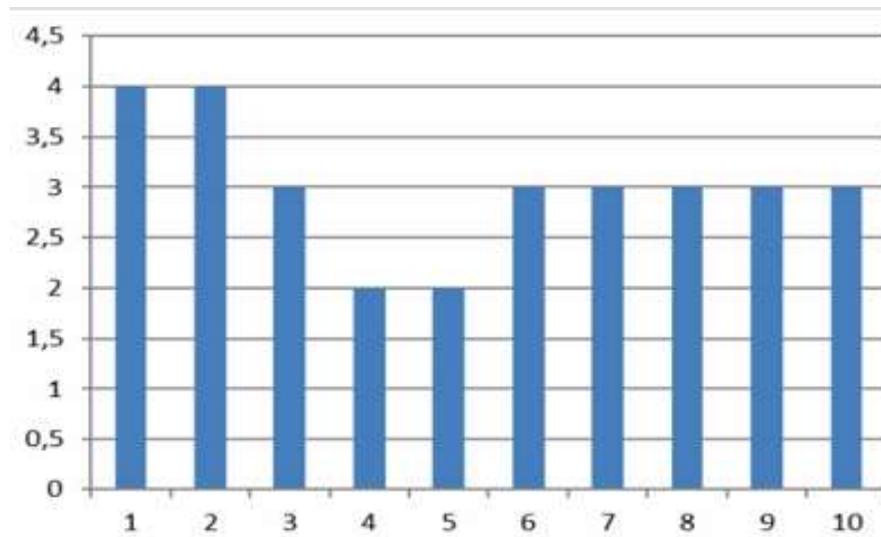


Figure 4  
*The Learning Process using The Starter System Media that Was Made*



interest in learning shows the learning outcomes of students who do not use the starter system media stand on a motorcycle and those who use the starter system media stand on a motorcycle

This study shows the difference in the influence of stater system learning media on

motorcycles on improving students' learning outcomes of class XI TBSM. This difference can be seen in that using visual media is more effective than other media (Nabawi & Prasetya, 2020; Seto & Suyitno, 2018).

Based on Table 3, it is known that the average learning outcome of the control

Table 3  
*Comparison of Control Class Learning Outcomes and Experimental Classes*

Statistical Indicators	Control Class	Experiment Class
Sum	1044	1148
Average	74.57	82.00
Highest Score	96.00	92.00
Lowest Score	20.00	60.00
Standard Deviation	25.23	8,98
Mood	80.00	80.00
Median	82.00	80.00
N	14	14

Table 4  
*The Comparison of Student Learning Outcomes*

Class	Total Students	Average Score
Experiment	14	82,0
Control	14	74,5

class is 74.5, and the average experimental class learning outcome is 82. To test the difference in average learning outcomes of experimental classes and control classes.

Table 4 shows that the number of students in the experimental class and control class is the same, namely 14 students. Meanwhile, the experimental class students' average result was 82, 0 while the control class was 74.5.

The output of the SPSS program on the independent sample *t*-test in the homogeneity test section of the variant obtained *F* calculated = 3.081 with  $p = 0.091$  because  $p > 0.05$  indicates both groups have homogeneous variants. The results of the *t*-test using the paired-samples *t*-test technique obtained *t* counted at 21.304 with  $p = 0.000 < 0.05$  showed a difference in the results of experimental class learning and control classes, meaning

that the average study outcome of the experimental class was significantly higher than the control class. The experimental class in this study is a class that uses a starter system learning media, while the control class is a class that uses conventional media. After the test, it turned out that the experimental class had better results than the control class, which means that the starter system learning media contributed better than conventional media. (Jasril, 2020; Nurtanto *et al.*, 2020; Pardimin *et al.*, 2019)

The results of this study align with what is done by (Maulana & Suyitno, 2019; Suartama *et al.*, 2019) that using practical learning media is more effective than using conventional media and PowerPoint. In the future, this media can be used for other classes learning the starter system, both in this school and in other schools.

## CONCLUSION

The procedure for developing learning media for the starter system stand on a motorcycle includes the search for the definition stage, the planning stage, the development stage, and the deployment stage. The learning media for the Starter system stand on a motorcycle developed is suitable for use as a learning medium in the subject of Motorcycle Electrical Maintenance. It can be proven from the validation results carried out by media expert lecturers who showed the results of 80.00% of the scores obtained indicating good criteria, validation by material expert lecturers which showed 70.00% of the scores obtained showed quite good criteria. 3) the results of the t-test prove that the learning media made is effective in improving learning outcomes (tcount = 21.304 and  $p = 0.000$ ). It is shown through student responses, including small group trials obtaining 89.5%, which includes 5 students, and large group trials obtaining a score of 90.89%, including 14 students. Students' interest in learning shows the learning outcomes of students who do not use the starter system media stand on a motorcycle and those who use the starter system media stand on a motorcycle. The normality test obtained  $p = 0.144$  because  $p > 0.05$  indicated that the two groups were usually distributed. The homogeneity test obtained that F count = 3.081 with  $p = 0.091$  because  $p > 0.05$ , both groups had homogeneous variances. Thus the learning media stand starter system has improved student learning outcomes.

There are several suggestions given, as follows: For students, students with less than optimal learning outcomes, especially motorcycle electric maintenance subjects, are advised to be more active in looking for references related to subjects, also not to be ashamed to ask teachers or friends who

already understand. More maintaining tools/ media or learning support facilities in the class or workshop to always be used properly. For teachers, it is expected to convey motorcycle electrical maintenance subject matter more attractively and pleasantly so that students have a higher interest so that it impacts students' understanding of the subject is getting bigger and of course can improve learning outcomes. For schools, the need for facilities and infrastructure in learning with the medium of learning stand/ props for the productive subject matter is generalized when assembling to improve the quality and success of learning that all school parties can feel.

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