The Effect of Utilizing Media Stand Power Steering Type Recirculating Ball on Interests and Learning Results on the Eye College System of Muhammadiyah Purworejo University

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Abstract. This study aims to reveal: find out the appropriateness of media for recirculating ball type power steering system props at the University of Muhammadiyah Purworejo, find out the increase in learning outcomes and find out the increase in student learning interest in the steering system courses at the University of Muhammadiyah Purworejo. This type of research uses the Reseach and Development (R & D). Test data analysis using the normality test, homogeneity test, t-test test, small group trials, product use trials showed that the material in the form of stand learning media was appropriate to use. T-test results indicate that there is an increase in learning outcomes and an interest in learning.

Keywords: Media, Interest in Learning, Learning Outcomes

1. Introduction

The government currently focuses on advancing the world of education through vocational education, both formal and informal education, from secondary education to tertiary education. This has encouraged various parties to have an interest in vocational education and from the demand of the industrial world for a workforce of graduates from vocational high schools who are ready to work. Vocational education is an appropriate means to prepare labor, prepare for the future and also form good citizens so that education develops a very important and broad function because it involves all aspects of human life. One of the functions of education is as a vehicle for human resource development to be realized. Education clearly can increase the absorption of humans to learn new knowledge and skills so they can obtain productive humans. The university is one of the educational institutions that are responsible for creating human resources who have the ability, skills, and expertise so that graduates can develop performance when they enter the workforce. The curriculum as a component of education also contains learning materials that are detailed in the form of subjects. The steering system is one of the competencies that must be taken in the Automotive Engineering Education Study Program.

Automotive Engineering Education Study Program (PTO), PTO is one of the educational levels which has the task of preparing students to become prospective teachers with automotive technology expertise. An institution that produces professional vocational teacher candidates in the teaching and learning process, and cannot be separated from practicum activities so that education cannot be separated from practicum activities, so it is mandatory to have vocational practicum competencies. As a prospective teacher, educational students will educate vocational students must have sufficient material and must master

seriously when practicum. One of them is practicum media which is a set of scientific material that consists of facts, concepts, principles, generalizations of a knowledge that is sourced from the curriculum and can support the achievement of learning objectives. According to (Azhar Arsyad 2011: 5) defining media is a component of learning resources or physical vehicles containing instructional material in the student environment that can stimulate students to learn. In this sense, the teacher, book, text, and school environment are the media. Interest has a very important role in the development of student learning. Students who are interested in a particular field then will try harder to pursue the field than students who do not put ask. According to Purwanto (2010: 66) said that interest is an important foundation for someone to do activities well, namely a person's encouragement to do. More specifically, the notion of media in the teaching and learning process tends to be interpreted as graphic, photographic, or electronic tools for capturing, processing, and rearranging visual or verbal information (messages).

The characteristics of a good media are interesting and easy to understand. It is interesting to mean that the media can optimize the attention of students in participating in teaching and learning activities. The media is easy to understand, that is, the media explains carefully, clearly and coherently so that students do not experience confusion in absorbing the information conveyed. In the development of instructional media, there are two prominent aspects namely teaching methods and instructional media as teaching aids.

Teaching media is a set of scientific material consisting of facts, concepts, principles, generalizations of science that are sourced from the curriculum and can support the achievement of learning objectives. Educational media will also make the method of educating more varied, not merely verbal communication through spoken words by lecturers, so students will not be bored and lecturers will not run out of energy. Students will do more learning activities, because they not only listen to lecturers' descriptions but also other activities, such as observing doing and demonstrating. At present, the use of vocational practicum media is very supportive of the successful delivery of teaching material by teachers. Besides that, the use of practicum media makes students more interested in learning the steering system material. Based on the description above, the problem is an interesting problem to study. Because mastering the steering system material is a skill that must be possessed by every student in the Department of Automotive Engineering Education.

The use of practicum media as a support for learning the steering system, so students are more interested in participating in learning. From the problems and descriptions above, it attracts the attention of researchers to research with the title "Utilization of Recirculating Ball Steering Power Stand Type for Interest and Student Learning Outcomes in the Steering System Course at Muhammadiyah University, Purworejo".

2. Research methods

This research method is research and development (RnD), because the research method used to produce certain products, and test the effectiveness of these products (Sugiyono, 2015: 407). There are 10 steps in the Research and Development procedure, 1) Potential and Problems, 2) Data Collection, 3) Product Design, 4) Design Validation, 5) Design Revision, 6) Product Trial, 7) Product Revision, 8) Trial usage, in research that is used by researchers only up to 8 steps, because the product is only used by researchers. The population used in the steering system courses, with the number of semester 4 25 students as the experimental class and 25 as the control class. This research is located at Muhammadiyah University Purworejo

and the implementation time is from September 2018 - August 2019. The population in this study is the Steering System course at Muhammadiyah University, Purworejo. In conducting research, the data collected will be used to solve existing problems so that the data is accurate. Data collection in this study was carried out using a questionnaire. Test/questionnaire, is a data collection technique that is done by giving a set of questions or written statements to the respondent and answered. Then, the prerequisite test for data analysis uses the normality, homogeneity, and t-test

3. Results and Discussion

In accordance with the framework of the implementation of control and experimental methods in the application of media props stand power steering system type recirculating ball steering system gets the following results:

1) Control class

Table 1. Table of control class learning outcomes

Value	Frequency	Percentage
50-59	8	25%
60-69	11	30%
70-79	2	15%
80-89	2	15%
90-100	2	15%
Total	25	100%

Based on the results of learning the control class shows that the value obtained is still lacking. This is evidenced by the large number of frequency of respondents who get grades below 80. Data in table 1 shows that without the use of media in learning affects learning outcomes.

2) Experimentation Class

Table 2. Table of control class Experimentation

Value	Frequency	Percentage
50-59	0	0%
60-69	0	0%
70-79	10	50%
80-89	7	30%
90-100	8	20%
Total	25	100%

From the learning outcomes the control class showed that the scores obtained were good. This is evidenced by the large number of frequency of respondents who get a value of 80 and above. Based on table 1 and table 2 shows that there are significant differences in learning outcomes, so the use of media in learning is very influential on learning outcome

3) Comparison of learning outcomes of the control class and the experimental class

Table 3. Comparison of learning outcomes of the control class and the experimental class

Statistical Indicator	Control Class	experimental class
Total	1570.00	2015.00
Average	62,80	80.60
Highest Scores	90.00	100.00
Lowest score	40.00	70.00
Standard Deviation	13,07	9,38
Mode	65.00	70.00
Median	65.00	80.00
N	25	25

Based on the results of the control class and experimental class studies show that there are significant differences in learning outcomes. This is reinforced by the t-test calculation in table 3. Data on learning outcomes from the control class and the experimental class show that the use of media in learning influences learning outcomes. The learning outcomes obtained by the control class tend to be less optimal because they do not use media in learning. Meanwhile, the experimental class learning outcomes get optimal results due to using media in learning

4) Comparison of Interest in Control and Experimentation Classes

Table 4. Comparison of Interest in Control and Experimentation Classes

Statistical Indicator	Control Class	Experimental Class
Total	1532	1746
Average	76,6	87,30
Highest Scores	83,75	96,25
Lowest score	67.5	75
Standard Deviation	4,88	5,3
Mode	71,25	88,75
Median	76,25	88,75
N	25	25

Based on the interest in learning the control class and the experimental class show that there are significant differences in learning interest. This is reinforced by the t-test calculation in table 4. Data on learning interest from the control class and the experimental class show that the use of media in learning influences learning interest. the learning interest gained by the control class tends to be less than optimal because it does not use media in learning. Meanwhile, interest in learning the experimental class gets optimal results because it uses media in learning.

5) Data analysis

This data analysis aims to determine the difference between the control class and the experimental class. Calculation of data analysis used in this research is homogeneity test, normality test, and T test.

Table 5. Learning Results Normality Test Table

Levene Statistic	experiment - control
Z	-3.727(a)
Asymp. Sig. (2-tailed)	.000

Based on table 5 shows that the p value of significance = 0,000, valid data if p significance <0.05. From these data shows the two groups are normally distributed. Tabel 6.
Table 6. Homogeneity Test Learning Outcomes

Levene Statistic	df1	df2	Sig.
1.033	1	48	.314

Based on table 6 shows that the significance value of table 0.314. Data can be said to be homogeneous if the calculated significance value is greater than the significance value of the table (0.05). The significance value of the calculation shows that the data is homogeneous.

Table 7. T-test Test Table

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Equal variances assumed	1.033	.314	5.528	48	.000	17.80000	3.21973	11.32630	24.27370
Equal variances not assumed			5.528	43.551	.000	17.80000	3.21973	11.30917	24.29083

Based on the results of the calculation of the T-test test shows that there are significant differences between the control and experimental classes. This is evidenced by the results of the T-test to get the results of 0.00 which show that the calculated significance number is smaller than the significant requirement of 0.05. Based on the results contained in table 7 shows that the experimental class was accepted.

Table 8. Learning Interest Normality Test Table

Levene Statistic	eksperimen – control
Z	-4.048(a)
Asymp. Sig. (2-tailed)	.000

Based on table 8 shows that the p value of significance = 0,000, valid data if p significance <0.05. From these data shows the two groups are normally distributed.

Table 9. Learning Interest Homogeneity Test Table

Levene Statistic	df1	df2	Sig.
.091	1	48	.764

Based on table 9 shows that the significance value of table 0.764. Data can be said to be homogeneous if the calculated significance value is greater than the significance value of the table (0.05). The significance value of the calculation shows that the data is homogeneous.

Table 10. T-test Test Table

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference		Std. Error Difference	95% Confidence Interval of the Difference
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Equal variances assumes	.091	.764	7.384	48	.000	8.56000	1.15931	6.22905	10.89095
Equal variances not assumed			7.384	47.617	.000	8.56000	1.15931	6.22857	10.89143

Based on the results of the calculation of the T-test test shows that there are significant differences between the control and experimental classes. This is evidenced by the results of the T-test to get 0.00 results which indicates that the calculated significance number is smaller than the significant requirement of 0.05. Based on the results contained in table 10 shows that the experimental class was accepted.

4. Conclusions

Based on the research results get the following results: The process of making learning media steering system in the form of a stand and based on the analysis of problems and needs generated learning media steering system that is ready to use. The development phase of steering system learning media for students in semester 4 A of Automotive Engineering Education at the University of Muhammadiyah Purworejo has included the search for potential problems, information gathering, product design, design validation, design improvement, product testing, product testing, product testing, and product revision. The results of product validation by material experts and media experts, small group trials and product use trials show that material in the form of instructional media is feasible to use. T-test results prove that the learning media created are effective for improving learning outcomes (t count = 5.528 and p = 0.000 <0.05) semester 4 A students of Automotive Engineering Education University of Muhammadiyah Purworejo. T-test results prove that the learning media made effective to increase learning interest (t count = 7.384 and p = 0.000 <0.05) semester 4 A students of Automotive Engineering Education, Muhammadiyah University, Purworejo.

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