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LEVEL FEASIBILITY MEDIA LEARNING SYSTEM AIR CONDITIONER (AC) TO INCREASE LEARNING RESULT

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Abstrak

This study aims to determine the feasibility level of learning media Air Conditioner system (AC) which has been developed through the research stages that adopted research development of Sugiyono. The subject of the research is the students of Automotive Engineering Study Program of Muhammadiyah University of Purworejo semester 4. From the development stage it can be seen that the validity by the material experts and the media expert reaches a score above 75% with valid category. Once applied, achievement outcomes increased 79.20 for the experimental class and 67.20 for the control class. So it can be concluded learning media AC system developed feasible to use and can improve learning outcomes.

Keywords: Learning Media AC System, Feasibility, Learning Outcomes

Introduction

UU no. 12 Year 2012 Article 5 states that the purpose of Higher Education, as, (1) the development of the potential of the Student to become a human being who believes and cautious to God Almighty and has noble, healthy, knowledgeable, proficient, creative, independent, skilled, competent, and (2) produce scholars who master the branch of the Science of Technology to meet the national interests and increase the competitiveness of the nation, (3) produce the scholars of Knowledge and Technology through Research which pay attention and apply the value of Humanities to benefit the progress of the nation, civilization and welfare of mankind, (4) the realization of Community-based Devotion of Rationale and research work that is useful in advancing the general welfare and the intellectual life of the nation.

To achieve the goals of higher education above need improvement in allside, especially the learning factor. Automotive Engineering Education (PTO) Muhammadiyah University Purworejo is one of the Study Program which is expected to produce professional teacher candidates. Professional in science and morals. PTO has some productive lecture which become the priority of AC system course. Many problems in the course of the AC system between the results of observation concluded that students are saturated there is a monotonous learning media and impact on learning achievement. From these problems researchers develop learning media AC system is expected to be feasible and can improve student achievement PTO UMP.

There are various forms of teaching media that teachers use in teaching such as instructional books, posters and pictures in the form of props, as well as media in the form of computers. However, students usually tend to be lazy in studying books and will be more interested in physical media such as visual aids, does not mean media props better than instructional media or books. Selection of learning media should be adjusted to the learning style of students so that students will better understand what he learned. Learning media will facilitate the interaction between teachers with students for learning will be more effective and efficient. The limitation of students lies in how students understand the subject matter, so the media is made more interesting so that students are more eager in following the lesson.

Gagne in Ratna Wilis (2011: 124) suggests eight phases in a learning act. They are external events that can be structured by the student (the learner) or the teacher. The learning events will be described as follows: (1) motivation phase, Students (learners) should be motivated to learn in the hope that learning will be rewarded, (2) the phase of reincarnation, students should pay attention to the essentials an instructional event will occur; (3) the acquisition phase, when the student takes the relevant information, is ready for the lesson, (4) the retention phase, the new information obtained must be transferred from the short-term memory to the memory of the long digit. This can happen through repetition, practice, elaboration, or others. (5) the calling phase, it may be that we may lose touch with information in long-term memory. an important part of learning is to learn to connect with what we have learned, to call up information that has been previously studied, (6) the phase of generalization, the information is of little value if it can not be applied outside the context in which the information is discouraged. Thus, generalization or transfer of information in new situations is a critical phase in learning. (7) the performance phase, students must show that they have learned something through visible appearances, (8) feedback phases, students should get feedback about their appearance that indicates whether they have or have not understood what they are talking about. This feedback can provide reinforcement on them for a successful performance.

According to Levie & Letz in Azhar Arsyad (2011: 16) suggests four functions of instructional media, especially visual media, namely (1) attention function, core visual media that attracts and directs the attention of the students to concentrate on learning content, (2) affective function, the visual media can be seen from the students' enjoyment level when learning from the pictorial text, (3) the cognitive function, the visual media facilitates the achievement of the objectives to understand and recall the information or messages contained in the picture, and (4) the

comprehensive function, that is to function in accommodating the students weak and slow to accept and understand the content of the lessons presented in verbal language.

Hujair Sanaky (2013: 5) suggests the purpose and benefits of instructional media are as follows: the purpose of instructional media as a learning tool, is to simplify the process of learning in the classroom, improve the efficiency of the learning process, maintain the relevance of the lesson with learning objectives, and assist the concentration of learners in learning process.

The benefits of instructional media as a tool in the learning process that is more interesting teaching the learner so that it can grow learning motivation, teaching materials will be more clear meaning so that 'can be better understood, learning method varies not solely just verbal communication through narrative words oral teachers , the learner is not bored and the teacher is not exhausted, the learners do more learning activities because not only listen to the explanation of the teacher but also other activities done such as: observing, performing, demonstrating, and others.

Development of instructional media needs to be done one of them the development of learning media AC system is needed because AC system is one of the main subject in automotive engineering, AC system including of many car components that must be studied by students. Of all automotive components in the delivery of lessons can not be separated from the module and also props, one of the AC system that requires modules and also props.

Hujair Sanaky (2013: 24), suggests that props are the tools used in teaching that are used to demonstrate or clarify taught material in the form of deeds and objects that facilitate the learning process from abstract learning (unformed) to learning is very concrete (real). The visual aids are divided into two, namely: (1) Direct visual aids, ie the teacher explains by showing the real objects in learning, and (2) Indirect props, ie the teacher replaces the actual objects in the lesson.

The main concern is about the props system AC in the form of a trainer either a live air conditioning system trainer or AC system trainer in the form of cutting or parts of the AC system components are cut. This media is expected to improve the understanding of learning and provide a new view of the competencies pursued by students, especially the AC system course.

According to Hor-Ward Kingsley in Nana Sudjana (2016: 22) divide the three kinds of learning outcomes, namely skills and habits, knowledge and understanding, attitudes and ideals. Each type of learning outcome can be filled with material that has been defined in the curriculum. Researchers reveal that learning outcomes are the successes achieved by learners resulting in changes in knowledge and understanding. While Gagne in Nana Sudjana (2016: 22) divide the five categories of learning outcomes, namely verbal information, intellectual skills, cognitive strategies, attitude, motor skills.

Research Methods

This research method is research development or Research and Development.

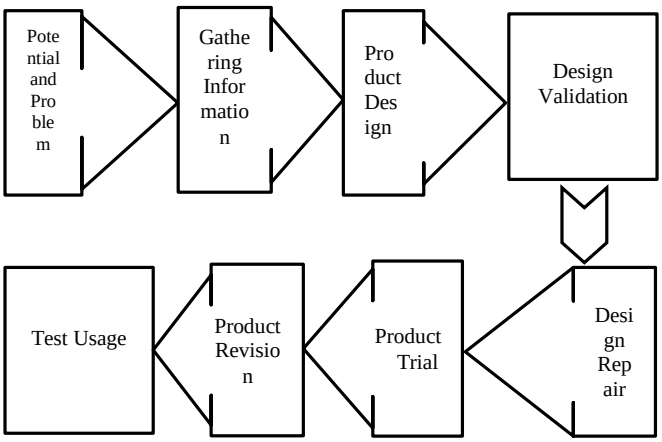

Fig. 1. Steps of Using Research and Development (R & D) Methods.

This research uses seven development steps: 1) Potential and problem, 2) Gathering information, 3) Product design, 4) Design validation, 5) Design improvement, 6) Product test, 7) Product revision.

This research was conducted in Study Program of Automotive Engineering of University of Muhammadiyah Purworejo, with address Jl. K.H.A Dahlan 3, Purworejo. The time of research is May until December 2017. The subject of this research is Fourth Semester

Student of Study Program of Automotive University of Muhammadiyah Purworejo.

The research instrument used in the research consisted of the questionnaire and test. Questionnaires are used to collect data on expert validation and student responses. Here's an instrument grid table for media experts:

Table 1. Grid for Media Experts

No	Aspek	Indikator
1	Desain	Wawasan tentang media
		Fungsi aplikatif
2	Teknis	Teknis pengoperasian media pembelajaran
3	Kemanfaatan	Manfaat bagi mahasiswa
		Manfaat bagi dosen

The questionnaire instrument for the material expert is given to the material expert to obtain an assessment and feedback on the content of the material in order to remain relevant to the developed learning medium. Here's a chart of the instrument lattice for the material expert:

Table 2. Grid for Material experts

No	Aspek	Indikator
1	Materi	Materi yang terkandung dalam Media *Cutting* Sistem AC
2	Kemanfaatan	Manfaat bagi dosen

While the test is used to determine the effectiveness of media in the learning process. The test is a multi-choice questionnaire with five alternative options (a, b, c, d, and e) containing the material problems of the AC system. Here's the test instrument grille.

Table 3. Grid Test Instruments

No	Indikator
1	The basic principle of AC system
2	How the AC system works
3	AC system components
4	Service / repair procedure

The scoring table of choice answers on the questionnaire consisted of strongly agree (SS), agree (S), disagree (TS) and strongly disagree (STS) Sukardi (2010: 136).

Table 4. Score of Likert Scale Statement

No	Jawaban	Skoring
1	SS (Strongly agree)	4
2	S (Agree))	3
3	TS (Disagree)	2
4	STS (Strongly Disagree)	1

To determine the conclusion of the result that has been achieved then set criteria as follows:

Table 5. Media Validation Criteria

Criteria	Percentage	Criteria
A	80% - 100%	Valid
B	60% - 79%	Quite valid
C	50% - 59%	Less valid / Revised
D	<50%	Invalid / Replaced

Research Result and Discussion

Analyzing Potentials and Problems

Starting from the observation and wawacara to the students and experience researchers found several problems namely the absence of learning media that can improve the understanding in detail such as showing the component parts of the AC system is quite detailed.

So far, there are available learning media in the form of but can not show in terms of component detail. From the existing problems then carried out the development of learning media is expected in the process of learning more effective and quality and the use of supporting facilities also more optimal infrastructure.

The Process of Collecting Information

The collection of information in research development of learning media of AC system is using interview and observation

method, interview to student is done to know about media usage in learning of AC system course and observation to laboratory to know availability of learning media facility in the course. Assessment of information that has been collected done for the development of poduk developed by researchers, so as to produce products produced by researchers in accordance with the needs of learning and students.

Product Making Process

In the process of making products there are two stages that are done first stage planning and the two stages of making the media. In this stage design design, AC components, and work tools need to be prepared then the steps of making this learning media can be done. There are three processes in this stage of manufacture of this product is the process of making the framework trainer, cutting AC components, and finishing or painting the product.

Fig. 2. Learning Media AC System Data Validation of Media Experts and Material Experts

Data Validation media obtained from media experts used to get an assessment of the aspects of display, technical, and the benefits of learning media developed, so that the learning media worthy of use.

The conclusions of validation of media and material experts can be seen in Table 6, Table 7 and figure 2 below

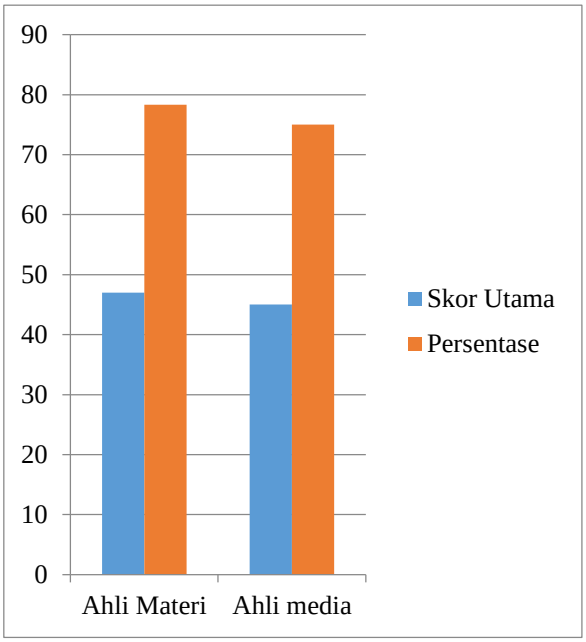

Fig. 3. Graphic Expert Validation of Materials and Media Experts

Table 6. Media Expert Validation Data

No	Aspek	No Item	%
1	Aspects of Design	1	75
		2	75
		3	75
		4	75
		5	75
2	Technical Aspects	6	75
		7	75
		8	75
		9	75
		10	75
2	Aspect of Utilization	11	75
		12	75
		13	75
		14	75
		15	75

Table 7. Material Expert Validation Data

No	Aspek	No Item	%
1	Material Aspects	1	75
		2	75
		3	75
		4	75
		5	100
		6	75
		7	75
		8	75
		9	75
		10	75
		11	75
		12	75
2	Aspect of Utilization	13	75
		14	100
		15	75

Based on the above graph the acquisition of test data validity of material experts obtained a total score of 47 with a percentage of 78.33% and the acquisition of expert media data obtained a total value of 45 with 75% percentage. The data obtained from both experts, learning media AC system get qualification "quite valid" and feasible in use.

While the results of experimental application of instructional media developed by researchers from the results of student responses get good results. The results of the application of instructional media can be summarized in Picture 3 below.

Based on the above graph the data obtained from the evaluation results of the experimental group using the media obtained an average score of 79.2 with 96% passing percentage, 24 graduated and 1 person did not pass. The data shows that there is a difference of evaluation result, with the difference of the average value of the two classes reaches 12.

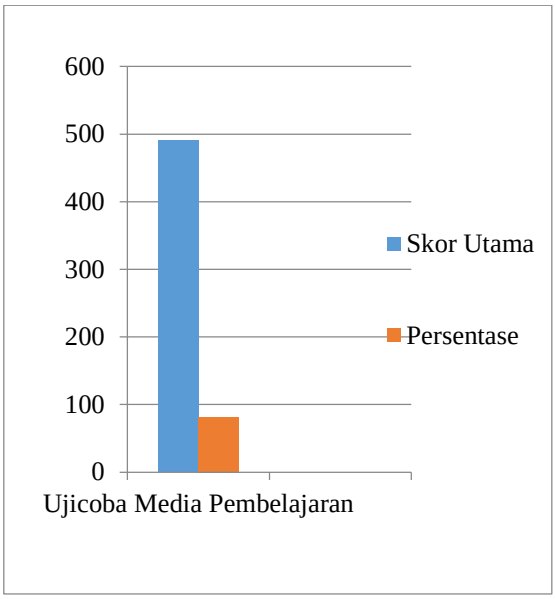

Fig. 4. Graphic Test

Conclusion

Based on the results of research and development can be summarized as follows: (1) Development of learning media developed by researchers in the form of learning media AC system is made with the aim to clarify each section and components and how to work in the AC system so that students can understand it easier.

(2) The level of validity of learning media AC system according to the assessment of media experts get a percentage score of 75% with the category "Valid enough". Level of validity of learning media AC system according to the expert assessment of the material get the percentage score of 78.33% with the category "Simply Valid". Level of media validity AC system in research use by respondents or students as users assessed in small groups and large groups scored 81.83% and 81.20% with the category "valid". So it can be concluded that the learning media is appropriate to be used in the learning of AC System course in Vocational Education Study Program of Automotive Technology of Muhammadiyah University of Purworejo.

(3) Achievement of the average score of students in the experimental group using learning media AC system obtained 79.2 then in the control group that did not use learning media AC system obtained 67.2. The difference in average scores of students

reached 12, it proves that the use of learning media AC system can improve students' learning comprehension.

Suggestions for the development of research related to learning media of AC System: (1) The addition of color description based on each piece of each component so as to clarify the function of the component, so that the media made easier to understand. (2) The need for the application of instructional media in the form of visual aids in each productive course that requires practice media, so that students not only focus on the material side but also need knowledge about real working system on each component studied. (3) Further research can focus on observing the effect of learning media of AC System on improving students' learning comprehension.

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