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APPLICATION DEVELOPMENT MEDIA INTERACTIVE LEARNING MECHANICAL WORK SYSTEM ON THE SUBJECT MECHANICAL TECHNOLOGY AT SMK TARUNA MANDIRI

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ABSTRACT

Media education in general is a tool of the learning process. Everything that can be used to stimulate thoughts, feelings, attention and ability or skill learners so as to encourage the learning process. This limitation is quite extensive and includes in-depth understanding of resources, the environment, human and methods used for the purpose of learning dan training. In a study conducted at SMK Taruna Mandiri, concluded that the absence of media learning aids make the students understand the subjects less mechanical technology and no comprehension indicator practicum students in using the tool correctly and appropriately and no comprehension indicator practicum students in using tool properly and appropriately.

For that it is necessary developments of alternative means of lJearning media that can facilitate students in comprehension subject matter use of tools. Based on these problems then made a computer -based interactive learning media.

Concluded that with the computer-based learning media can help learning system mechanical work of class X SMK Taruna Mandiri in other words media alternative learning by utilizing information technology and help students understand the practical procedures for the use of mechanical systems work properly and appropriately.

Keywords : Media Interactive Learning, Work System Mechanic, Simulation.

1. PRELIMINARY

SMK Taruna Mandiri with a major in mechanical engineering has the disadvantage that the pattern of teaching that is only set to a process of delivering material and practicum. The absence of media learning aids make the students understand the subjects less mechanical technology and in no indicator comprehension practicum students in using the tools properly and appropriately. For that it is necessary developments of alternative means of learning media that can facilitate students in understanding meteri use of tools. Based on these problems then made a computer -based interactive learning media. Media applications have created an interactive learning lab activities by simulating the tools that are tailored to their original state. This application builded with computer-based because students are still many who do not have smartphones.

1.1 Mechanical Technology

Mechanical engineering or mechanical technology is the application of engineering science on physical principles for analysis, design, manufacturing and maintenance of a mechanical system. This science requires in-depth understanding on the key concepts of the branch of mechanics, kinematics, materials engineering, thermodynamics and energy. Expert or experts from mechanical engineering are usually referred to as an engineer (mechanical engineering), which utilizes an understanding of the science of this technique in designing and analyzing manufacturing of vehicles, aircraft, industrial plants, equipment and industrial machinery and others. Typically consists of mechanical engineering[1]:

1. Mechanical Design and ConstructionProses Manufaktur dan Production System.
2. Converting Energy
3. Materials Science / Metallurgy

1.2 Instructional Media

Learning media is anything that can be used to convey the message or information in the learning process so as to stimulate the attention and interest of the students in learning. In a learning process there are two very important elements of the method of teaching and learning media. Both of these aspects are interrelated. Selection of one particular teaching method will affect the type of media that suit, although there are many other aspects that must be considered in choosing the media, among others, learning objectives, types of tasks, and the response will be owned by the students to master certain subjects. Nevertheless, it can be concluded that one of the functions of media are learning as teaching

aids that also affect the climate, the conditions, and the learning environment organized and created by teachers. The use of instructional media in teaching and learning can generate desire and new interest, generate motivation and stimulation of learning activities, and even bring psychological influences on student[2].

1.3 Computer Based Interactive Multimedia

The use of computer -based interactive multimedia can enhance self-expression, creating an atmosphere that is active so that students can get involved directly and multimedia students can bridge communication with teachers. Multimedia -based computer can also be used as a means of doing simulations to train certain skills and competencies. Media in learning has a function as a tool to clarify the message delivered teacher. The media also serves to individual learning where media position fully serve the learning needs of students. Some forms of use as a multimedia computer that can be used in the study include :

a. Drill and Practice
   Types of exercises and practices used in the classroom. Exercise programs and practices should be combined / adjusted to the level of students' abilities and learning needs. Certain degree of difficulty demanding exercise anyway. The program also provides both visual and auditory reinforcement, so that the interest and attention of students kept maintained throughout the exercise and practice. If the student answers incorrectly, the need to be assisted in accordance with the order of the lesson.
b. Tutorial
   Tutorial program, introducing new subject matter to the students and then followed up with training and practice. These programs generally provide the initial test and final test with respect to material submitted. The program is also used for enrichment lessons or help students who are not present in certain subjects. Tutorial program is also used as a review of lessons delivered prior to check comprehension and retention of concepts.
c. Simulation
   Real life situations presented to students, compiling an outline of the conditions that are interrelated. Then the students make decisions and determine the consequences of the decisions he made. Interactive multimedia computer-based individualized learning (individual learning), and mastery learning (mastery learning).
d. Computer Manajemen Instruction
   This program provides cross - referencing with other programs in the framework of the expansion of training and aid, and is also used as a teaching aide functioning istratif teachers increased, as a recapitulation of student achievement data, database book / e -library, school activities such as recording istratif teachers payments, receipts and so on.

Multimedia is defined by Haffost Feldmans cited by Rusman as a computer system consisting of hardware and software that makes it easy to combine images, video, photography, graphics and animation with voice, text, and data is controlled by a computer program[3].

Based on these definitions appear to have in common that encapsulates multimedia technologies in a variety of media interactive learning software. Multimedia presentation can be interpreted as the role of computer technology that optimizes the display text, sound, graphics, video, animation in an integrated and interactive display.

According to Luther as quoted by Sutopo development of interactive learning multimedia - based computer aided includes several stages as follows [4]:

1. Concept
   At this stage, identification of the estimated needs resulting from observations in the early research stage .
2. Design
   At this stage the display screen made visual design , interface , script or story , story board and the navigation structure .
3. Collecting Material Content
4. Assembly
5. Testing
6. Distribution

1.4 Simulation

According Indonesian dictionarym Simulation is a training method that is demonstrated in the form of mock something similar to the real situation. Simulation is a method that aims to predict or learn something that has not happened in a way mimic or create a model of the system being studied and further experimenting with using computers or the like .

In the simulation method can estimate the impact of a decision taken, but it must be known where and when this simulation can be applied. So the simulation is the act of using the model. Then designed scenarios in order to get the results of simulation experiments were later processed into the system answers in fact. Simulation can predict the impact of a decision taken. Although the simulation method is very promising, but it must be known where and when this simulation can be applied .

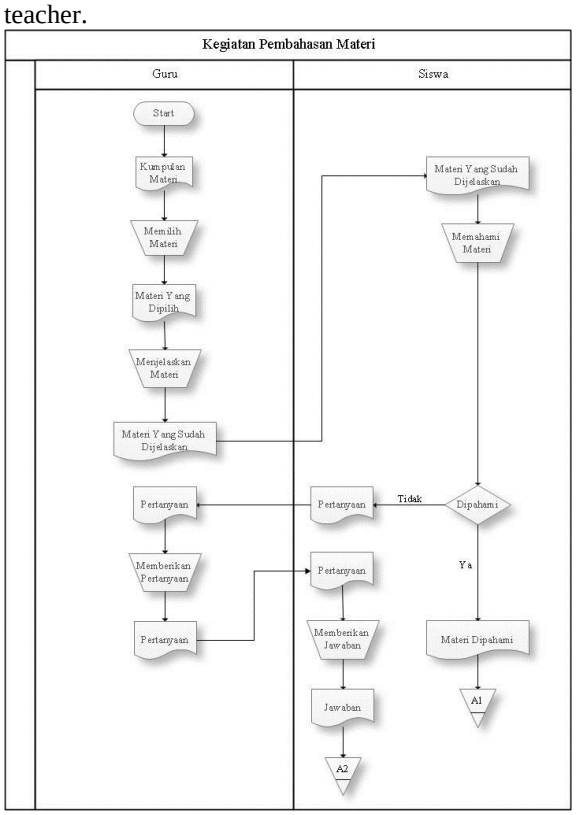
2. Reasearch Content

2.1 The procedure Ongoing

teaching and learning as in general in other schools, but the only difference being the way the teacher to explain the material to be taught. Learning process begins when teachers and students are already in class and mechanical engineering lab, in general, the teachers prepare materials to be delivered. Students receive the materials if the student is considered still do not understand the students were allowed to ask questions, but the students are reluctant to ask. In the practical process mechanical technology subjects students will learn to use a tool - a tool lab practicum in mechanical engineering. Students are taught how to use the tool - practical tools such as Long Sorong, Micrometer, Saws, vise, Shearing, Tap and Snei, Stingy, Drill , Angle Grinder.

2.2 Procedures Events Discussion Materials

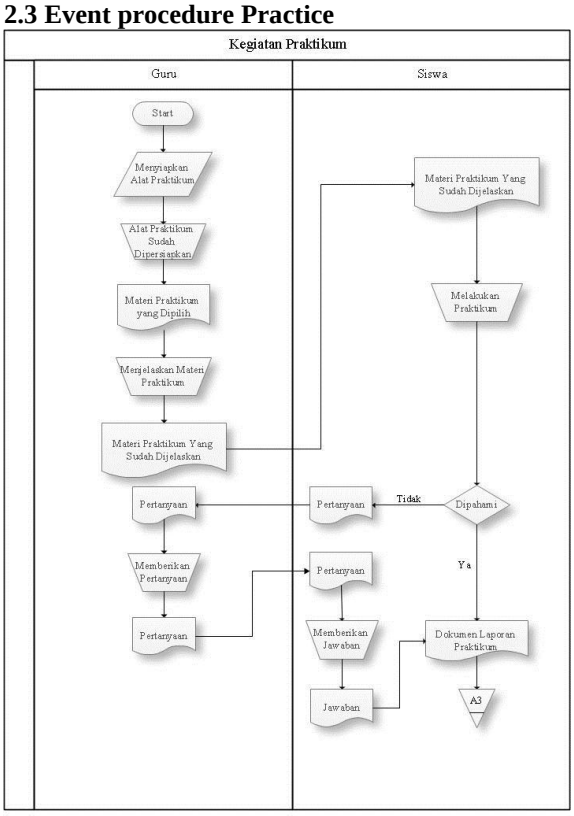
Chronology of activities ongoing discussion of SMK Taruna Mandiri is material that has been prepared by the teacher and then delivered to students, and students receive the materials submitted by the teacher, if there is material that is not understood by the students, then students will immediately ask the teacher.



Keterangan: A1 = Arsip materi yang dipahami
A2 = Arsip jawaban

Figure 1 Procedure Events Discussion Materials

2.3 Event procedure Practice



Keterangan: A3 = Dokumen Laporan Praktikum

Figure 2 Procedure Activity Practicum

2.4 Material Analysis

1. The use of a measuring tool caliper:
Students choose the object to be measured, namely: hexagon nut, plate steel, iron pipe. Students take measurements to objects selected. Objects chosen by the student measured.
2. The use of drill tools:
Students select objects to be perforated. Students choose a drill bit in accordance with the density of the object to be perforated. Students perform perforation. Selected objects perforated students.
3. The use of tools saws tools:
Students take the wooden beams are provided teacher. Students sawing. Sawed wooden beams truncated.
4. The use of tools gurinda:

Students take an iron plate. Students do use gurinda. Iron plate smooth rough area.
5. Use scissors utensil tool:
Students take zinc to cut. Students do the shearing. cut truncated.
6. Use of tools chisel tools:
Students take a block of wood that will be chiseled. Students do sculpting. Finely carved wooden beams.
7. The use of tools and tooling tap snei:
Students take an iron plate and wooden beams that have been dilubangin by drill. Students perform the manufacturing screw (threaded) or taping. Iron plate and wooden beams has a screw (threaded).
8. The use of tools and utensils vise:
Students take on the object to be clamped is a metal plate. Students perform clamping. Sandwiched metal plate.
9. The use of a measuring tool micrometer:
Students choose the object to be measured, namely: hexagon nut, plate steel, iron pipe. Students perform measurements on selected objects. Objects chosen by the student measured.
10. The use of tools and utensils miser:
Students pick up objects that will be filed, namely steel beams and wooden beams. Students do the filing. Steel beams and wooden beams were filed smooth and desired size.

2.5 Analysis Evaluasi

Analysis Evaluation of the learning media system mechanical work will be described as a whole due to the lack of material evaluation. Evaluation only in the end of the lesson. Lab tools based on the description that has been determined. Doing practicum is based on job description sheet. Understanding students are assessed based practicum in accordance with the job description sheet.

2.6 Questionnaire Relusts

Results from beta testing that is performed by using a questionnaire to students of class X SMK Taruna Mandiri
Question : When you first look at the application of the system of learning this mechanical work, if you are interested to use it?

Table 1 Questionnaire Question Number 1

Description	Score	Respondents	Total Score
Strongly Agree	5	80	400
Agree	4	15	60
Undecided	3	5	15
Disagree	2	-	0
Stongly Disagree	1	-	0
Total		**100**	**475**

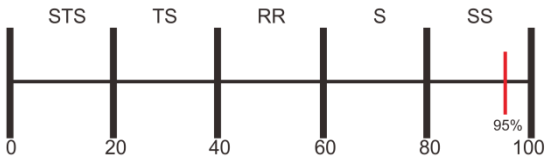


Figure 3 Scale Assessment Number 1

Question : With the application of this learning, make learning more fun you ?

Table 1 Questionnaire Question Number 2

Description	Score	Respondents	Total Score
Strongly Agree	5	80	400
Agree	4	10	40
Undecided	3	3	9
Disagree	2	5	10
Strongly Disagree	1	2	2
Total		**100**	**461**

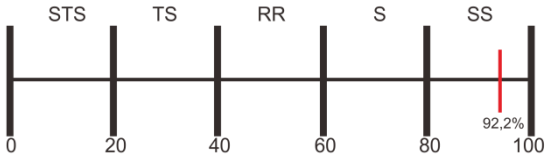


Figure 3 Scale Assessment Number 2

Question : This learning application easy to use?

Table 1 Questionnaire Question Number 3

Description	Score	Respondents	Total Score
Strongly Agree	5	70	350
Agree	4	25	100
Undecided	3	5	15
Disagree	2	-	0
Strongly Disagree	1	-	0
Total		**100**	**465**

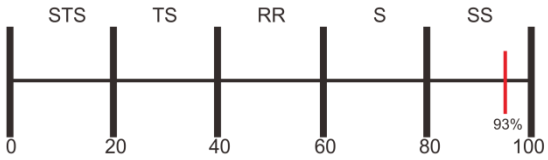


Figure 3 Scale Assessment Number 3

Question : Does this application help you in learning the subjects mechanical systems work ?

Table 1 Questionnaire Question Number 4

Description	Score	Respondents	Total Score
Strongly	5	75	375

Agree			
Agree	4	16	64
Undecided	3	5	15
Disagree	2	3	6
Strongly Disagree	1	1	1
Total		**100**	**461**

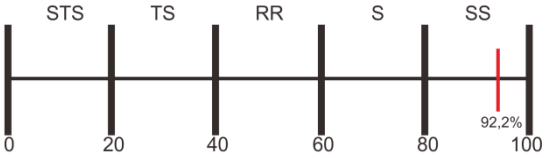


Figure 3 Scale Assessment Number 4

Question : Does the application is in conformity with the actual learning material ?

Table 1 Questionnaire Question Number 5

Description	Score	Respondents	Total Score
Strongly Agree	5	60	300
Agree	4	25	100
Undecided	3	8	24
Strongly Agree	2	1	2
Strongly Agree	1	1	1
Total		**100**	**427**

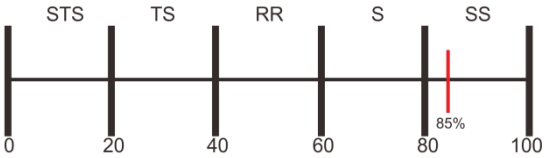


Figure 3 Scale Assessment Number 5

Question : Does this application allows you to understand the subjects of mechanical systems work ?

Table 1 Questionnaire Question Number 6

Keterangan	Skor	Responden	Jumlah Skor
Sangat Setuju	5	50	250
Setuju	4	45	180
Ragu-ragu	3	2	6
Tidak Setuju	2	2	2
Sangat Tidak Setuju	1	1	1
Jumlah		**100**	**439**

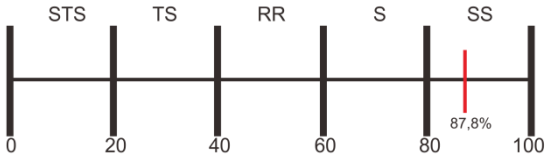


Figure 3 Scale Assessment Number 6

5. CONCLUSION

Based on the results of the implementation and testing has been done on a thesis titled " Application Development Media Interactive Learning System Mechanic Working On Mechanical Technology Subjects In SMK Taruna Mandiri ", it is concluded that the learning system to help the mechanical work of class X SMK Taruna Mandiri with computer media contained in a computer lab in other words media alternative learning by utilizing information technology and help students understand the procedures for the use of practical tools mechanical systems work properly and appropriately.

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