

## Development of Website-Based Interactive E-Modules with Project Based Learning Learning Models to Increase Student Learning Interest in PKWU Subjects in Vocational High Schools

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### A B S T R A C T

There are several issues with this study, including the fact that the only learning resources used in schools are LKS (Student Worksheets) and limited LCD resources, the requirement for practice in the Creative Products and Entrepreneurship (C3) subjects, and the fact that schools use a moving class system, all of which make it necessary for students to access information using more efficient learning resources. The ADDIE-type development model was used to perform this research utilizing the research and development (RnD) methodology. There were variations in students' psychomotor skills before and after utilizing the web-based interactive e-module learning environment with a project-based learning paradigm, as shown by the statistical sig (2 tailed) = 0.00, where 0.00 0.05 (significant threshold). Class XI Multimedia 1 contributed 45.74% of the increase, and class XI Multimedia 2 contributed 46.78%. Additionally, it was mentioned that the experimental class had very high levels of student learning interest, with 88.33% of students showing interest in materials 1 and 90.

## **INTRODUCTION**

In the 21st century everything can be easier and faster. The internet in the digital era can be accessed in almost all parts of the world which allows many people to share data, especially in terms of education, for example, the results of research and learning theories that can be applied in various parts of the country. Because of this, the 21st-century generation must also be able to compete amidst the rapid development of technology and information. Because of this, the role of education is very much needed to improve the quality of the nation's generation who are required to be able to keep up with the times to be skilled in using technology, accessing information media, also the most important thing is to be able to follow and survive amid the rapid development of technology and information (Ao & Huang, 2020). Information Technology currently has many important contributions to human activities both in the sphere of politics, business, and economy, as well as in the world of education. Information technology is used in the world of education which has experienced many changes in systems and methods in the learning process (Fleaca et al., 2022).

Learning models in schools are also developing to adjust which models are more suitable and have a good effect on student learning. One way is to choose the Project Based Learning (PjBL) learning model (B Sujatmiko et al., 2021), which is a learning model where students become more active during the teaching and learning process and the teacher becomes a facilitator. The teacher will of course carry out initial planning such as selecting learning media before the teaching and learning process is carried out so that learning is successful and right on target (Sulistiyo & Wibawa, 2020).

Everything that can be used to convey information from the sender to the recipient is the meaning of learning media. Learning media must be able to arouse students' interests, feelings, concerns, and thoughts. Learning media is also a teaching tool for teachers in providing educational material because it can maximize student creativity and increase student attention in teaching and learning. Until now, schools have used visual aids such as LKS books, printed books, blackboards, and other teaching aids (Wibawa et al., 2018).

In the project-based learning model. E-module is a form of learning media that can be designed for project-based learning models. The module is a type of module that contains text, images, graphics, animations, and videos that can be used by a device. E-module comes from the word "electronic module" which is a module in digital format that is suitable for use in learning. E-modules are made web-based and can display student material and video tutorials for students to practice projects as learning outcomes (Bambang Sujatmiko et al., 2020).

Creative Product and Entrepreneurship Learning (PKWU) is one of the subjects taught in class XI Multimedia. The PKWU subject in K13 is a C3 subject (Vocational Specialization - Expertise Competence) taught in Vocational High Schools. PKWU subjects are subjects that are closely related to creativity (Weng et al., 2022), innovation, sportsmanship, and entrepreneurship so that learning that uses a project work model is needed. Specifically for the Multimedia expertise program, this subject mixes more graphic design with business or

entrepreneurship. Therefore, high student concentration and interest in learning are required for this subject.

After participating in the School Field Introduction (PLP) program for approximately 3.5 months and discussing with teachers in the Multimedia expertise program at SMK Negeri 10 Surabaya, researchers found that learning activities at SMK Negeri 10 Surabaya generally still used LKS (Student Work Sheets) (Harimurti et al., 2022) as a reference for material and assignments. Limited facilities such as LCDs also mean that teachers who want to display pictures, videos, as well as practical tutoring in front of the class have limited access. SMK Negeri 10 Surabaya also applies the Moving Class system because it has a large number of students, around 2500 people so the learning process is carried out moving or moving according to the subject matter. Moving Class is not only carried out between classrooms, but some of them carry out the learning process on the terraces of mosques, stage classes, floating classes, and under trees. This causes schools to give freedom to students to use mobile phones in learning in class.

Seeing these problems, the researcher intends to carry out research on the development of website-based interactive E-Modules with the PjBL learning model with the aim of seeing an increase in student learning interest in PKWU lessons. E-Modules are made interactive, especially involving students in practicing working on projects using websites where the use of these media is highly supported by the school. It is hoped that this research can help teachers at SMKN 10 Surabaya in practice using the website and also make it easier for students to access material in the midst of difficult facilities, so it is hoped that it can help increase student learning interest in PKWU subjects.

## LITERATURE REVIEW

### Media Development

Disclosed in (Sugiyono, 2017) there are three types of development models that exist in Research and Development (RnD) research, namely the 4D Development Model, the ADDIE Development Model, and the Borg and Gall. The development model implemented in this study is the ADDIE development model. Figure 2 shows the ADDIE development model divided into 5 processes including Analysis, Design, Development, Implementation, and Evaluation.

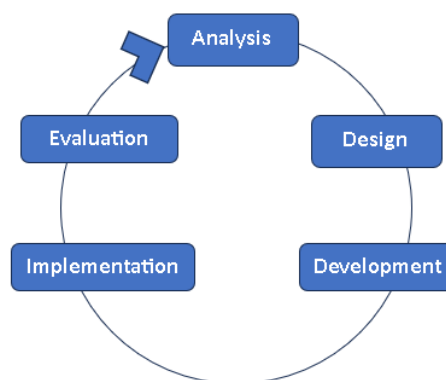


Figure 2. Stage development model ADDIE

## METHODOLOGY

A deep data analysis (Sugiyono, 2019) is a process of observing and collecting information systematically through observation, interviews, and other materials so that it can be easily understood as well as communicated with others. This study analyzed students' psychomotor results using the Pretest-Posttest Control Group. Pretest results are taken by enabling students to process pretest questions before being given a website-based interactive e-module and working on posttest questions after being given a website-based interactive e-module. Table 1 is the formula for the Pretest-Posttest Control Group.

Table 1. Pretest-Posttest Control Group Formula

Sampel	Pretest	Perlakuan	Posttest
R	O1	X	O3
R	O2	-	O4

Information:

R = Group taking

X = Treatment in the experimental class

O1 = Pretest to the experimental class

O2 = Pretest against the control class

O3 = Posttest to the experimental class

O4 = Posttest to the control class

After students work on the pretest and posttest questions, the scores from these tests will be analyzed and a hypothesis test will be carried out to see whether there are differences in the psychomotor ability of students before and after the experiment using the mediawebsite-based interactive e-module learning with a project-based learning model.

Before the website-based interactive e-module is tested on students, of course, there are instruments used and their feasibility must be assessed by several expert validators. The instruments assessed consisted of: 1) RPP Instruments, 2) Media Instruments, 3) Material Instruments, 4) Question Instruments, 5) Student Interest Questionnaire Instruments.

Tests and questionnaires are techniques applied to collect data on tests. Questionnaires were distributed to students after the implementation of a website-based interactive e-module teaching and learning process with a project-based learning model to find out students' interests. The test method is a technique used to obtain a score that shows the results of the learning that has been carried out whether students have succeeded in achieving lesson competencies using interactive website-based e-modules with the Project Based Learning learning model.

The validation carried out aims to determine the suitability of the instruments used in the study. While the pretest and posttest are used as indicators of the performance of students' psychomotor abilities before and after using the website-based interactive e-module. Questionnaires of student learning interest were also distributed to analyze student learning interest in the use of website-based interactive e-modules with the PjBL learning model

Below is the data analysis carried out to measure the feasibility of the instruments used in this study:

- 1) Analysis of the validation results of lesson plans, media, materials, questions, and student learning interest questionnaires
- 2) Analysis of the results of students' psychomotor abilities to determine whether differences were found in students' psychomotor abilities before and after the developed learning media was applied
- 3) Analysis of student interest in learning is in the good or bad category

## RESULTS AND DISCUSSION

### Learning Media Results

Website-based interactive e-module developed as a student learning media in PKWU subjects using the ADDIE method. The following is the stage of making a website-based interactive e-module

#### 1. Analysis

In the analysis stage, the researcher analyzes what needs are needed in developing a website-based interactive e-module. Some of them are the software used in designing the e-module, the programming language used in developing the website, the video concept, and the learning flow that will be presented in a website-based interactive e-module.

#### 2. Design

The second stage of the ADDIE development model is the design of the media display to be developed. In this research, design is the stage of making e-module designs and material maps. The next step after making a design plan from the media is preparing the material. In making e-modules researchers will include elements of images, animated videos and tutorials, audio, and also links. This stage produces designs in the form of flowcharts and storyboards that are tailored to development needs

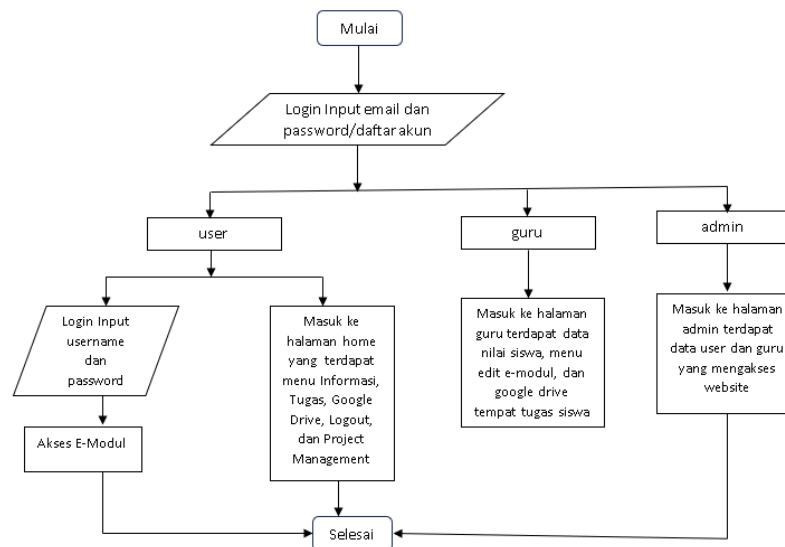


Figure 3. Website-Based Interactive E-Module Flowchart

Figure 3 shows the stages of designing learning media which are the reference for the stages of the activities carried out. The flowchart design is made as a step guide for designing media in a sequential and directed manner as stated in the flowchart from the beginning to the end.

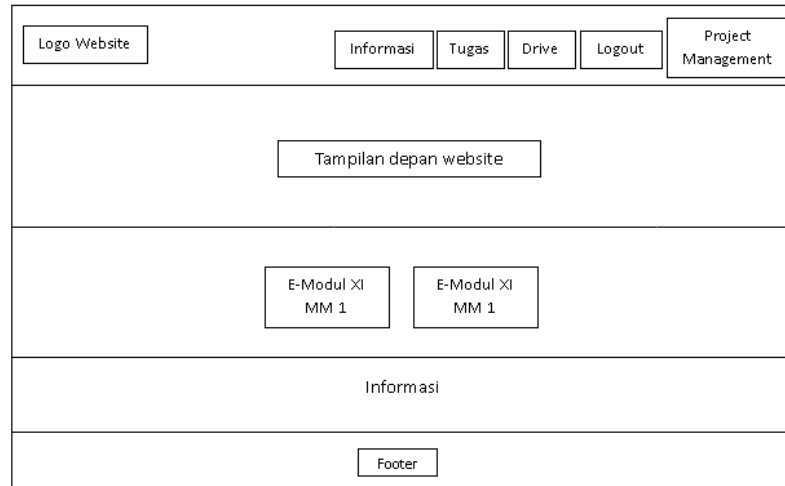


Figure 4. Website storyboards

Figure 4 is the website storyboard design stage. The entire content of the website-based interactive e-module from start to finish is described in the storyboard. This storyboard design will be an overview of website work.

Table 2. Website-Based Interactive E-Module Outline Section

Part	Information
<b>Information</b>	This section contains information about the website that will be provided to students
<b>E-Module</b>	This section contains the material to be taught. Video tutorials for students to practice
<b>Task</b>	This section contains questions that must be completed by students.
<b>Google Drive</b>	A place for students to upload project results
<b>Project Management</b>	A place to see student processes in completing projects with the PjBL model

At this stage, an outline or outline of the contents of the e-module is also made as shown in Table 2 which contains the Information, E-Module, Assignments, Google Drive, and Project Management sections.



Figure 5. E-Module Storyboard

In Figure 5 is the storyboard flipped book design flow. The entire contents of the flipped book from start to finish are described in this storyboard.

### 3. Development development

Development is the stage of developing the media and filling the media with the material to be taught

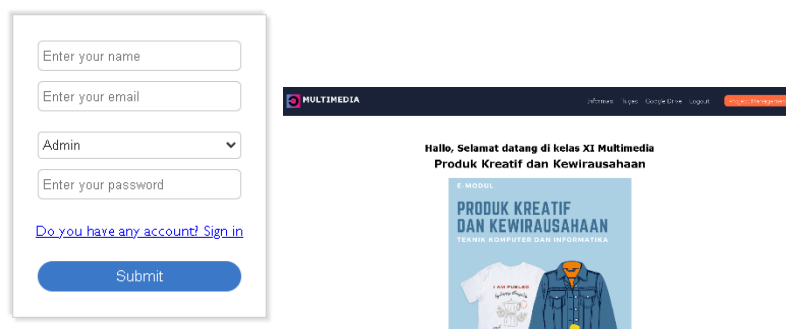


Figure 6. Login Page and Home Users

Before accessing the web, students are first asked to create an account as shown in Figure 6. An account is created by entering a name, or email, selecting to register as an admin, user, or teacher, as well as entering a password. The first appearance on the media is the "home" menu as shown in Figure 6 which is the home page after the user has successfully registered an account and logged in. There is a menu for Information, Tasks, Google Drive, Logout, and Project Management.

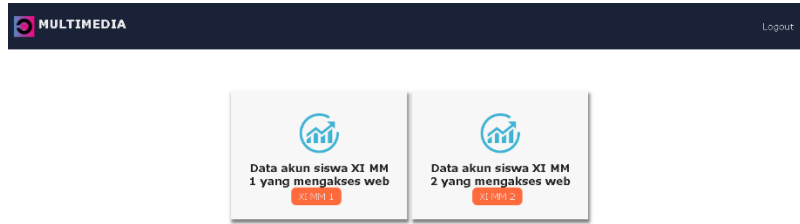


Figure 7. Display of the Admin Page

Figure 7 displays the home view for the admin when successfully registering an account and logging in. There are two things that can be accessed in the home admin view, the first is XI MM 1 student account data accessing the website and XI MM 2 student account data accessing the website.

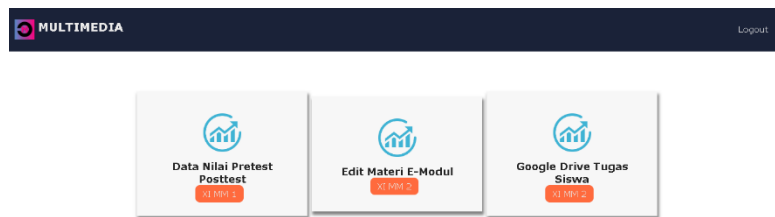


Figure 8. Display of Home Teacher

Figure 8 displays the home view for the teacher when successfully registering an account and logging in. There are three things that can be accessed on the home screen for teachers, the first is data on student pretest and posttest scores, buttons that go to where to edit the e-module, and Google Drive where students submit assignments.



Figure 9. Information Display

The information menu in Figure 9 is a place to display information about the website being created and what can be accessed on the website.



Figure 10. Display of the E-Module Cover and the contents of the module

Figure 10 is an interactive display of the e-module cover and the contents of the module in the form of a flipped book containing learning materials and videos. The contents of the E-Module include an explanation of the basic competencies to be achieved, instructions for using the e-module, videos explaining the theory, and video tutorials for practice.

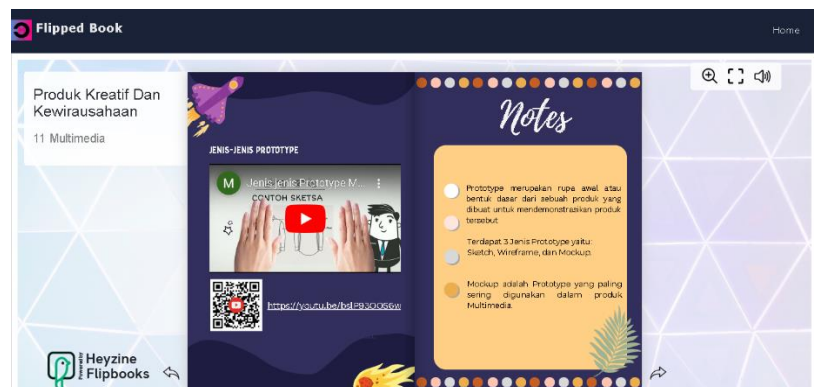


Figure 11. Display of Videos and Notes

Figure 11 shows the contents of the E-Module which shows a video explaining the theory and also important notes contained in the video.

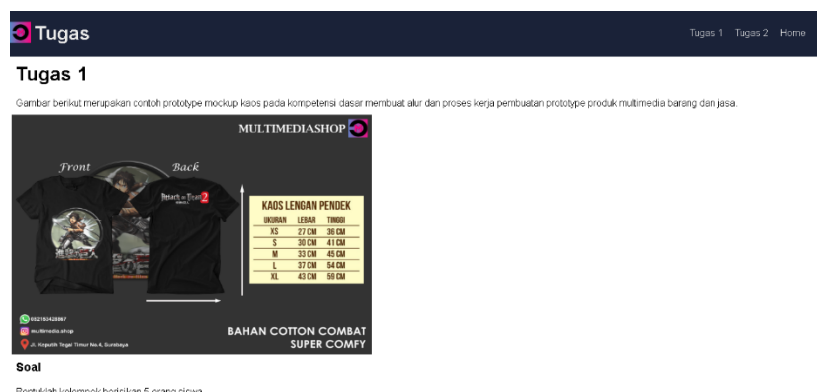


Figure 12. Task Page Display

Figure 12 is a display of tasks that contain instructions and questions that must be completed. There are 3 menus on the task page, namely Task 1, task 2, and how to return to the user's home page.

Task name	Status	Due	Description	Catatan Pelajaran
1. Penentuan Proyek	Done	29/05/2023	Penentuan kelompok proyek: Kelompok dibagi menjadi 6, kelompok 1 - kelompok 6. Anggota kelompok masing-masing 5 orang.	
Kelompok 1	Done		Anggota Kelompok: 1. Adul Aze Nurazky 2. Evri Niben Pratama 3. Dhany Ameliana 4. Nala Farah 5. Arianam Figo	Tema desain moduk kaos: Mockup kaos jurusan lengan pendek
Kelompok 2	Done		Anggota Kelompok: 1. Adhela Natasya 2. Farah Amalia Nurul 3. Nezza Rahmaria 4. Abyana Raksa 5. Ahmad Tashir	Tema: Mockup kaos jersey lengan pendek
Kelompok 3	Done		Anggota Kelompok: 1. Amanda Anas	Tema: Mockup kaos reglan lengan panjang

Figure 13. Display Project Management

Figure 13 is a display of the task menu which contains questions and examples of what kind of design students should make.

#### 4. Implementation

This stage is the part where the media is applied according to the set goals. The target of this research is students of class XI Multimedia at SMKN 10 Surabaya.

#### 5. Evaluation

This stage is the final step of the ADDIE development model where the product that has been implemented will be evaluated. In this study, the evaluation process was carried out by looking at the results of the assessment of students' psychomotor abilities and also analysis with a student interest questionnaire on website-based interactive e-module learning media with the PJBL learning model.

### Discussion of Validation Results

#### 1. Validation Analysis

Analysis of RPP validation sheets, Learning Media, Test Questions, and Response Questionnaires Students use the Scale Likert includes five variations the answer is Very Valid (SV), Valid (V), Enough Valid, No Valid (TV), and Strongly Invalid (STV). The four various answers are rated with the following score details:

- Very Valid (SV) = 5
- Valid (V) = 4
- Enough Valid (CV) = 3
- No Valid (TV) = 2
- Very No Valid (STV) = 1

Formula applied to calculate the total score for each answer as follows:

$$\text{Amount score} = \text{Total Respondent Score} \times \text{Answer}$$

Then the percentage of student learning interest is calculated by the formula, namely:

$$\text{Valid Percentage} = 100\% \frac{\text{Total score obtained}}{\text{Total Maximum Score}} \times \dots\dots\dots (1)$$

The results of calculating the percentage obtained can be interpreted in the following categories:

Table 3. Achievement and Quality of Eligibility (Sugiyono, 2019)

No	Achievement Level	Qualification	Information
1	81 - 100%	very good	Very decent, no revision needed
2	61 - 80%	good	Decent, no revision is needed
3	41 - 60%	Pretty good	Not feasible, needs revision
4	21 - 40%	not good	Not feasible, needs revision
5	<20%	Very Less Good	Very unfit, needs revision

Based on Table 3, the percentage is stated to be strong if the percentage obtained is > 61% with good and very good criteria categories.

Table 4. Instrument Validation Results

No	Instrumen	Hasil	Kategori
1	RPP	86,66%	Sangat Layak
2	Media Pembelajaran	93,33%	Sangat Layak
3	Soal Pretest Posttest	95,55%	Sangat Layak
4	Angket Minat Belajar	94,66%	Sangat Layak
5	Materi Pembelajaran	97,03%	Sangat Layak

From Table 4 it can be concluded that the validation results that have been carried out by experts are lesson plans at 86.66%, learning media at 93.33%, pretest-posttest questions at 95.55%, interest in learning questionnaires at 94.66%, and learning materials at 97.03% which are all instruments considered feasible to apply.

## 2. Analysis Interest Study Student

To measure students' interest in learning using a Likert Scale questionnaire. The statements contained in questionnaire have two types of statements, namely favorable and unfavorable statements with detailed scores in Table 5 as follows:

Table 5. Statement Score

a. Favorable Statement	b. Unfavorable Statement
4= Very Agree	4= Very not Agree
3= Agree	3= Not Agree
2= Not Agree	2= Agree
1= Very not Agree	1= Very Agree

The formula used to find out the total score for each answer is:

Assessment criteria:  $x = \frac{\text{total score}}{\text{Highest total score}} \times 100\% \dots\dots\dots (2)$

The percentage calculation results obtained can be interpreted with the criteria in Table 6 as follows:

Table 6. Criteria for Student Learning Interest

Total Score	Criteria
86-100	Very good
76-85	Good
51-75	Less
25-50	Bad

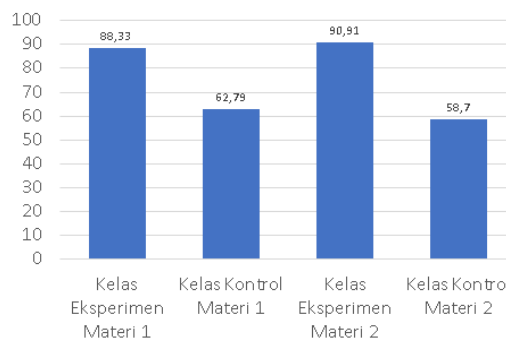


Figure 14. Display of Student Learning Interest Analysis Results

Through Figure 14 it can be seen that the results of the analysis of students' learning interest in the learning media developed can be concluded that students' interest in interactive e-module learning media based on the website with the PjBL learning model shows that the average results of students' interest in learning in the experimental class were at 88.33 for material 1 and 90.91 for material 2, which means in very good criteria compared to students' learning interest in the control class which got 62.79 for material 1 and 58.7 for material 2 in the poor category.

**DISCUSSION**

The research was conducted at SMKN 10 Surabaya with a total of 30 students in class XI Multimedia 1 and 30 students in class XI Multimedia 2. Media implementation was carried out twice with two materials. Material 1

class XI Multimedia 1 was chosen to be the experimental class and class XI Multimedia 2 was chosen to be the control class. For Material 2 class XI Multimedia 2 was chosen to be the experimental class and class XI Multimedia 1 was chosen to be the control class. To find out the results of the research that has been done, the researcher conducted an analysis of the normality test, homogeneity test and Independent Sample T-Test.

### Analysis of Students' Psychomotor Ability

#### a. Normality test

Table 7. Material Normality Test 1

Tests of Normality							
Kelas		Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Hasil Kemampuan Psikomotorik	Pretest Eksperimen	.141	30	.132	.945	30	.125
	Posttest Eksperimen	.151	30	.081	.943	30	.111
	Pretest Kontrol	.142	30	.128	.957	30	.263
	Posttest Kontrol	.129	30	.200 <sup>*</sup>	.941	30	.097

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 8. Material Normality Test 2

Tests of Normality							
Kelas		Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Hasil Kemampuan Psikomotrik	Pretest Eksperimen	.135	30	.174	.936	30	.073
	Posttest Eksperimen	.128	30	.200 <sup>*</sup>	.937	30	.077
	Pretest Kontrol	.124	30	.200 <sup>*</sup>	.943	30	.110
	Posttest Kontrol	.129	30	.200 <sup>*</sup>	.945	30	.122

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the results of Tables 7 and 8, the test technique applied is the Liliefors Shapiro Wilk Test with the criteria if the value is  $.sig > \alpha$  (0.05) then the sample data is normally distributed. The results of the analysis obtained show the value of .Sig Material 1, namely the pretest results of the experimental class yielded 0.125 and the posttest results were 0.111. While the results of the control class pretest 0.263 and control posttest 0.097. The test results clearly show that  $.sig > \alpha$  (0.05), which means that the data is normally distributed. For Material 2 the results of the analysis carried out showed the .Sig value that the pretest results for the experimental class produced was 0.073 and the posttest results were 0.077. Then the results of the control class pretest were 0.110 and the control posttest 0.122. These results state that  $sig > \alpha$  (0.05), which means that the data is normally distributed.

#### b. Homogeneity Test

After the homogeneity test is used to see whether the number of variants in the population is the same or not. This test needs to be carried out as a condition for continuing to the independent sample t-test analysis stage (Usmadi, 2020).

##### 1) Material Homogeneity Test 1

**Test of Homogeneity of Variance**

		Levene Statistic	df1	df2	Sig.
Hasil Kemampuan Psikomotorik	Based on Mean	.102	3	116	.959
	Based on Median	.085	3	116	.968
	Based on Median and with adjusted df	.085	3	113.794	.968
	Based on trimmed mean	.091	3	116	.965

Table 9. Material Homogeneity Test 1

From Table 9 it is shown that.Sig based on the Mean is 0.959, based on the Median 0.968, which states that.Sig.> 0.05 which means the data is homogeneous.

2) Material Homogeneity Test 2

**Test of Homogeneity of Variance**

		Levene Statistic	df1	df2	Sig.
Hasil Kemampuan Psikomotrik	Based on Mean	.151	3	116	.929
	Based on Median	.122	3	116	.947
	Based on Median and with adjusted df	.122	3	111.914	.947
	Based on trimmed mean	.146	3	116	.932

Table 10 Material Homogeneity Test 2

From Table 10 it is shown that the Sig based on the Mean is 0.929, based on the Median 0.47, which shows that Sig.> 0.05 which means the data is homogeneous.

c. *Test Independent Sample T-Test*

The independent sample T-test is a comparison test or difference test designed to test whether the means (means) of two independent or unpaired samples differ significantly. This independent t-test is a difference test of two unpaired samples. A pair of samples is the same target but treated differently (Ramdhani et al., 2020)

1) Test Independent Sample T-Test Material 1

**Independent Samples Test**

		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
Hasil	Equal variances assumed	.089	.767	13.465	58	.000	15.58333	1.15729	13.26677	17.89990
	Equal variances not assumed			13.465	57.740	.000	15.58333	1.15729	13.26654	17.90012

Table 11. Independent Sample T-Test Material 1

Table 11 is a picture of the output results from the independent t-test which shows whether or not there is an increase in the results of psychomotor abilities from the use of website-based interactive e-modules with the PjBL learning model between the experimental class and the control class using conventional learning media. The results of the output shows that the Significance value (2-Tailed) is 0.000 <0.05, then H0 is rejected and H1 is accepted. So that it can be concluded that there is an increase in the psychomotor ability of students after

implementing a website-based interactive e-module with the PjBL learning model in PKWU subjects in class XI Multimedia students at SMKN 10 Surabaya.

2) Test Independent T-Test Material 2

		Independent Samples Test				Test for Equality of Means				
		Levene's Test for Equality of Variances						95% Confidence Interval of the Difference		
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Hasil Kemampuan Psikomotor	Equal variances assumed	.003	.960	13.805	58	.000	16.00000	1.17607	13.64584	18.35416
	Equal variances not assumed			13.505	57.699	.000	16.00000	1.17607	13.64584	18.35416

Table 12. Independent Sample T-Test Material 2

Table 12 is a picture of the output results from the independent t-test which shows whether there is an increase in the results of psychomotor abilities from the use of website-based interactive e-modules using the PjBL learning model between the experimental class and the control class using conventional learning media. The results of the output shows that the value of .Sig(2-Tailed) is  $0.000 < 0.05$ , then  $H_0$  is rejected and  $H_1$  is accepted. So that it can be concluded that there is an increase in students' psychomotor abilities after using a website-based interactive e-module with the PjBL learning model in PKWU subjects in class XI Multimedia students at SMKN 10 Surabaya.

## **CONCLUSIONS AND RECOMMENDATIONS**

Based on the results of the research that has been done, it can be concluded that: (1) The development of website-based interactive e-module learning media has several stages carried out by researchers according to the ADDIE model which is divided into Analyze, Design, Development, Implementation, and Evaluation. At the implementation stage, there are expert validation stages and media use tests. Expert validation consists of media validation with 93.33% eligibility results, lesson plan validation with 86.66% eligibility results, validation of questions with eligibility 95.55%, student learning interest questionnaires with eligibility 94.66%, and validation of learning materials with eligibility 97.03%. Which means that all validation instruments are in the very feasible category to use. (2) The significance value is 0,000 obtained from hypothesis testing with independent sample T-test. The value obtained is smaller than the significance level  $\alpha = 0.05$ , so  $H_0$  is rejected and  $H_1$  is accepted. From the results of this analysis, researchers can draw conclusions that there are differences in students' psychomotor abilities before and after using web-based interactive e-modules with the PjBL learning model. (3) Through the results of calculating the analysis of student interest in the developed media, it can be concluded that student interest in website-based interactive e-module learning media with the PjBL learning model shows that the percentage of student interest in learning in the experimental class is at 88.33% for material 1 and 90.91% for material 2, which means that it is in the very good category. The value obtained is smaller than the significance level  $\alpha = 0.05$ , so  $H_0$  is rejected and  $H_1$  is accepted. From the results of this analysis, researchers can draw conclusions that there are differences in students' psychomotor abilities before and after using web-based interactive e-modules with the PjBL learning model. (3) Through the results of calculating the analysis of student interest in the developed media, it can be concluded that student interest in website-based interactive e-module learning media with the PjBL learning model shows that the percentage of student interest in learning in the experimental class is at 88.33% for material 1 and 90.91% for material 2, which means that it is in the very good category. The value obtained is smaller than the significance level  $\alpha = 0.05$ , so  $H_0$  is rejected and  $H_1$  is accepted. From the results of this analysis, researchers can draw conclusions that there are differences in students' psychomotor abilities before and after using web-based interactive e-modules with the PjBL learning model. (3) Through the results of calculating the analysis of student interest in the developed media, it can be concluded that student interest in website-based interactive e-module learning media with the PjBL learning model shows that the percentage of student interest in learning in the experimental class is at 88.33% for material 1 and 90.91% for material 2, which means that it is in the very good category. From the results of this analysis, researchers can draw conclusions that there are differences in students' psychomotor abilities before and after using web-based interactive e-modules with the PjBL learning model. (3) Through the results of calculating the analysis of student interest in the developed media, it can be concluded that student interest in website-based interactive e-module learning

media with the PjBL learning model shows that the percentage of student interest in learning in the experimental class is at 88.33% for material 1 and 90.91% for material 2, which means that it is in the very good category. From the results of this analysis, researchers can draw conclusions that there are differences in students' psychomotor abilities before and after using web-based interactive e-modules with the PjBL learning model. (3) Through the results of calculating the analysis of student interest in the developed media, it can be concluded that student interest in website-based interactive e-module learning media with the PjBL learning model shows that the percentage of student interest in learning in the experimental class is at 88.33% for material 1 and 90.91% for material 2, which means that it is in the very good category.

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