The Effect of Website Development Training for Handayani Vocational High School Students and Jeneponto Vocational Schools Using Paired T-test

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Abstract

Vocational students are expected to have competence in order to be accepted in the industrial world. Website is one of the means used in the industrial world not only to coordinate work, but more broadly for product marketing, complaints and customer service. This training aims to make vocational students who carry out Field Work Lecture activities at STMIK Professional have the competence to create a simple website. The students who took part in the training on making this website came from SMK Handayani and SMK Jeneponto majoring in computer and network engineering. The stages of website creation training consist of the preparation, implementation and evaluation stages. Preparation is done by providing questionnaires, learning modules. The implementation was carried out at STMIK Professional Makassar with material for website creation with PHP, Boostrap and MySql. The post-test and pre-test assessment methods were tested using the paired t-test. The results of the analysis of the effectiveness of training activities show that students have a difference in the average score before and after training with a t-count of -6.08375.

Keywords : Website, PHP, Bootstrap, Mysql, Paired Sample T-Test
1. Introduction

The COVID-19 pandemic seems to emphasize the importance of using technology for the industrial world. The website is used as a bridge between the company and the community. The company applies technology in company activities ranging from archives, sales, services and consumer complaints.

Vocational High School students are students from the secondary education level who are expected to be ready to use workers. Practical learning and training are the keys to the success of students from vocational high schools so that they can adapt to the industrial world [1].

According to open unemployment data from the Central Statistics Agency as of August 2021, Vocational Students or Vocational Schools are in second place with graduates contributing to unemployment in Indonesia with a total of 2,111,338 people[2].

Changes in the way the industrial world works are not accompanied by the number of workers who have competence in making websites [3]. Vocational High School students should have competencies that keep up with the times so that they can be absorbed in the world of work.

Therefore, we carry out website creation training for students of SMK Handayani Makassar and SMK Jeneponto. It is hoped that the training that we provide will be able to increase the competence of students so that they are ready to compete with other graduates from the same education level or from a higher level of education.

2. Research methods

2.1 PKM Implementation Method

The PKM activities for KKLP students of SMK Handayani and SMK Jeneponto were attended by seven students. In the implementation of the training we use three stages, namely preparation, implementation and evaluation. Preparation is done by making materials related to website creation. The website training method can be seen in table 1.1

| No | Theory | Activity |
|----|--------|---------|
| 1. | Pretest | Individual Test |
| 2. | Internet dan Website dan Web Scraping pada Market Place | Lectures and discussions |
|    | Web server installation and configuration | Lectures, tutorials and practice and questions and answers |
| 3. | Bootstrap 4 and templates | Lectures, tutorials and practice and questions and answers |
| 4. | Database with Mysql | Lectures, tutorials and practice and questions and answers |
| 5. | Connection to database with PHP | Lectures, tutorials and practice and questions and answers |
| 6. | Creating CRUD data | Lectures, tutorials and practice and questions and answers |
| 7. | Webhosting | Lectures, tutorials and practice and questions and answers |
| 8. | Material Review | Lectures, tutorials and practice and questions and answers |
| 9 | Independent task | Individual Practical Assignments |
| 10| Post Test | Individual Test |

Table 1.1 Material delivery method

To measure the success of implementing PKM activities for students of SMK Handayani and SMK Jeneponto, we conducted a pretest and post test as well as a partner satisfaction questionnaire as an assessment instrument. The effect of website creation training on partner's...
initial and final competence was measured by paired sample t-test. Meanwhile, the satisfaction of PkM participants was measured using a Likert scale.

2.2 Literature Review

Paired sample t-test (paired sample t-test) is a tool to measure the hypothesis in which the data used are not independent (pairs). In the paired sample T-test, one individual was given two different treatments, resulting in two data samples [4]. In this website creation training, students are given a pretest and post-test to measure the effect of training on increasing student competence.

The hypothesis of this case is written as follows:

\[ H_0 = \mu_1 - \mu_2 = 0 \]

\[ H_1 = \mu_1 - \mu_2 \neq 0 \]

\( H_a \) means that the actual difference between the two means is not zero.

The paired T-test formula is as follows:

\[ t_{\text{hitung}} = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} \]  \( \times \left( \frac{S_1}{\sqrt{n_1}} \right) \left( \frac{S_2}{\sqrt{n_2}} \right) \) \[ \ldots (1) \]

Accept Criteria \( H_a \) if \( -t_{\text{tabel}} < t_{\text{hitung}} < t_{\text{tabel}} \)

Likert scale is a scale used to measure attitudes, opinions and perceptions of a person and a group of people towards a phenomenon or symptom that occurs in society [5].

The Likert scale stage consists of:

a. The weights or liker scores are as follows:
   1. Very good rated 5
   2. Good rated 4
   3. Enough to be rated 3
   4. Not good given a score of 2
   5. Not good rated 1

b. Calculation of Criteria Value

\[ S_{\text{Kriterium}} = \text{nilai skala} \times \text{jumlah respon} \ldots (2) \]

c. Calculation of the percentage of approval to find out the number of answers from respondents through percentages

\[ p = \frac{L}{n} \times 100 \ldots (3) \]

2.3 PKM Activities

The Community Service Program (PKM) for students of SMK Handayani Makassar and SMK Jeneponto was attended by 11 students which was held at STMIK Professional Makassar. PKM activities began with a workshop related to Web Scraping for the marketplace.
The web scraping workshop for the marketplace was held on January 8, 2021. The speakers for this activity were Mr. Medy Wisnu Prihatmono and Mrs. Siti Arni.

The training stage for website creation using bootstrap, php and mysql was carried out in the professional stmik practicum. Activities will be held on 11, 13, 18 and 20 January 2021.

The material for making a website using bootstrap, php and mysql was done by Mrs. Siti Arni, Johar Nur Iin and Mr. Dikwan Moes. The material related to the creation of databases, tables and CRUD data results can be seen in the image below:
Figure 3. Database creation materials

```php
<?php
//Mendefinisikan Konstanta
define('HOST','localhost');
define('USER','root');
define('PASS','');
define('DB','datasekolah');

//membuat koneksi dengan database
$koneksi = mysqli_connect(HOST, USER, PASS, DB) or die('Unable to Connect');
?>
```

Figure 4. Database connection with PHP

Figure 5. Bootstrap Template
3. Results and Discussion

In this PKM activity, we made a list of questions to determine the initial understanding and understanding of partners after the PKM activity. The number of students who filled out the list of questions before the PKM activity was seven people. The questions and the results of student answers from the pre-test and post-test can be seen in table 2.

Tabel 2 Post and pretest questions

| No. | Questions                                           | PreTest | Post Test |
|-----|-----------------------------------------------------|---------|-----------|
| 1   | Website is ...                                      | 3 4 5 2 | 1 6 5 2   |
| 2   | Mysql is ...                                        | 1 6 5 2 | 1 6 5 2   |
| 3   | Bootstrap is ...                                     | 1 6 5 2 | 1 6 5 2   |
| 4   | Functions of the Webserver ...                      | 2 5 5 2 | 2 5 5 2   |
| 5   | The proper script to create a table with bootstrap is... | 2 5 5 2 | 2 5 5 2   |
| 6   | What applications are used to create a local server... | 1 6 6 1 | 1 6 6 1   |
| 7   | The proper PHP to mySql connection script is ...     | 1 6 5 2 | 1 6 5 2   |
| 8   | The proper mysql script to add data is ...           | 1 6 6 1 | 1 6 6 1   |
| 9   | The proper mysql script to delete data is ...        | 1 6 5 2 | 1 6 5 2   |
| 10  | The proper mysql script to edit data is ...          | 1 6 5 2 | 1 6 5 2   |
| 11  | The proper mysql script to display the data is ...   | 1 6 5 2 | 1 6 5 2   |
| 12  | Web hosting is ...                                  | 1 6 6 1 | 1 6 6 1   |
| 13  | The data type in database field creation is used for... | 1 6 5 2 | 1 6 5 2   |
| 14  | The proper script to create a button in bootstrap is... | 1 6 5 2 | 1 6 5 2   |
| 15  | The form script for proper data input in bootstrap is... | 1 6 5 2 | 1 6 5 2   |
| 16  | The functions of PHP in website development are ...  | 1 6 6 1 | 1 6 6 1   |
|     | Total                                               | 20 92 84 28 | 1 6 5 2   |
Figure 8. Increasing individual understanding before and after PkM

Based on Figure 8, it can be seen that all students experienced an increase in knowledge. However, two of the seven students did not experience a significant increase in understanding, namely the second and sixth students. The average score of students on the pretest is 17.85. The average post-test score is 75.

\[ H_0 : \text{There is no difference in the average score before and after training} \]
\[ H_1 : \text{There is a difference in the average score before and after training} \]

| Participant | Pre Test | Post Test |
|-------------|----------|-----------|
| 1           | 37.5     | 93.75     |
| 2           | 6.25     | 37.5      |
| 3           | 18.75    | 93.75     |
| 4           | 6.25     | 93.75     |
| 5           | 56.25    | 100       |
| 6           | 0        | 25        |
| 7           | 0        | 81.25     |
| Average     | 17.8514  | 75        |

Standard Deviation

| Varians | 461.3095 | 937.5 |

\[ Dk = n_1 - n_2 - 2 \]

Table 3. Average value

| Average difference | -57.1429 |
|---------------------|----------|
| Var 1/n_1           | 65.90136 |
| Var 2/n_2           | 133.9286 |
| Correlation coefficient | 0.593989 |
| 2 \text{* Correlation coefficient} | 1.187977 |
| Standard deviation/root n_1 | 8.117965 |
| Standard deviation/root n_2 | 11.57275 |
| t-Hitung             | -6.08375 |
| t-Tabel              | 2.178813 |

Table 4. Test Results – T Sample in pairs

Criteria \( H_0 \) accepted when \(-t \text{ tabel} < t \text{ hitung} < t \text{ tabel}\).

Meanwhile \(-2.178813 < -6.08375 < 2.178813\) then \( H_0 \) ditolak \( H_1 \) accepted, where the website creation training had an effect on increasing the competence of the Handayani Vocational High School and Jeneponto Vocational School students, which was marked by the difference in the average scores before and after the training.

In addition to the partner’s initial and final understanding questionnaire, we propose partner satisfaction regarding the content and delivery of the material. Seven students of SMK Handayani and SMK Jeneponto filled out the partner satisfaction questionnaire. Measurement of partner satisfaction is carried out using a Likert scale for website creation training with bootstrap, PHP and MySQL as follows:

Table 5. Criteria Score

| Scale   | Criteria Score |
|---------|----------------|
| Very good | 5 x 7 = 35   |
| Good    | 4 x 7 = 28    |

The Effect of Website Development …
The results of the frequency of answers to the student response questionnaire according to equation (1) can be seen in the following table:

| Rating Category | Frequency | Likert Scale |
|-----------------|-----------|--------------|
| Very good       | 5         | 25           |
| Good            | 2         | 8            |
| Fair            | 0         | 0            |
| Poor            | 0         | 0            |
| Very Poor       | 0         | 0            |
| Total           | 33        |              |

Table 7. The frequency of answers to the questionnaire related to the material is organized and easy to understand

| Rating Category | Frequency | Likert Scale |
|-----------------|-----------|--------------|
| Very good       | 4         | 20           |
| Good            | 3         | 12           |
| Fair            | 0         | 0            |
| Poor            | 0         | 0            |
| Very Poor       | 0         | 0            |
| Total           | 32        |              |

Table 8. The frequency of answers to questions related to the material is very relevant and has been in accordance with my expectations before participating in service activities

| Rating Category | Frequency | Likert Scale |
|-----------------|-----------|--------------|
| Very good       | 5         | 25           |
| Good            | 2         | 8            |
| Fair            | 0         | 0            |
| Poor            | 0         | 0            |
| Very Poor       | 0         | 0            |
| Total           | 32        |              |

Table 9. The frequency of answers to questions related to the material is enough for me to be able to create a website with boostrap, php and mysql
Table 10. Frequency of questionnaire answers related to understanding the material represented

| Rating Category | Frequency | Likert Scale |
|-----------------|-----------|--------------|
| Very good       | 4         | 20           |
| Good            | 3         | 12           |
| Fair            | 0         | 0            |
| Poor            | 0         | 0            |
| Very Poor       | 0         | 0            |
| Total           | 32        |              |

Table 11. Frequency of answers to questionnaires regarding assistant presenters assisting in training assistance

| Rating Category | Frequency | Likert Scale |
|-----------------|-----------|--------------|
| Very good       | 5         | 25           |
| Good            | 2         | 8            |
| Fair            | 0         | 0            |
| Poor            | 0         | 0            |
| Very Poor       | 0         | 0            |
| Total           | 33        |              |

Table 12. The frequency of answers to the questionnaire related to the allocation of time for delivering the material

| Rating Category | Frequency | Likert Scale |
|-----------------|-----------|--------------|
| Very good       | 5         | 25           |
| Good            | 2         | 8            |
| Fair            | 0         | 0            |
| Poor            | 0         | 0            |
| Very Poor       | 0         | 0            |
| Total           | 33        |              |

Table 13. The frequency of answers to the questionnaire related to the presenters represents the content of the material well, easy to understand and implement

| Isi Materi                                           | Likert Score | Approval Percentage |
|------------------------------------------------------|--------------|----------------------|
| The material is organized and easy to understand     | 33           | $p_1 = \frac{33}{35} \times 100 = 94\%$ |
| The material is very relevant and has met my expectations before participating in PkM activities | 32           | $p_1 = \frac{32}{35} \times 100 = 91.4\%$ |
| The material is enough for me to be able to make a website with bootstrap, php and mysql | 32           | $p_1 = \frac{32}{35} \times 100 = 91.4\%$ |

Submission or presentation of material
The presenter understands the material presented 33
  \[ p_1 = \frac{33}{35} \times 100 = 94\% \]

Assistant Speakers assist in training assistance 32
  \[ p_1 = \frac{32}{35} \times 100 = 91.4\% \]

Time allocation for material delivery 33
  \[ p_1 = \frac{33}{35} \times 100 = 94\% \]

The presenters represent the content of the material well, easy to understand and implement 33
  \[ p_1 = \frac{33}{35} \times 100 = 94\% \]

Table 13. Results of student response analysis

4. Conclusion
This website creation training with Boostrap, PHP and Mysql has contributed to increasing students’ understanding regarding website creation. The result of measuring the average score of students on the pretest is 17.85. Meanwhile, the average score of students in the post-test was 75. The post-test and pre-test assessment methods were tested using the paired t-test. The results of the analysis of the effectiveness of training activities show that students have a difference in the average score before and after training with a t-count of -6.08375.

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