Effectiveness android-based learning media on basic competence of service company financial statements class X AKL at SMK Negeri Darul Ulum Muncar Banyuwangi

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Abstract. This research aimed to use Android-based learning media on the basic competency of service company financial statements class X AKL at SMK Negeri Darul Ulum Muncar Banyuwangi. This research applied quasi-experiment research. The participants of this research 34 students of class X AKL 1 and 35 students of class X AKL 2. Class X AKL 1 as an experimental class and X AKL 2 as a control. The data analysis method used in this research was the level of effectiveness using t-test. The results on the large-scale test's effectiveness level were indicated by the significance level of 0.000 < 0.050, which showed a significant difference from the experimental class to the control class. The effectiveness stated that the Android-based learning media was effective in the basic competency of service company financial statements. The suggestion for further development is that Android-based learning media is used in the basic competency of service company financial statements and can be developed in other basic competencies with the same characteristic.

1. Introduction

The development of information and communications technology (ICT) now has been implemented in the education field. It is indicated by the more straightforward learning process by utilizing ICT as the learning media. Learning media that use ICT can make learning exciting and positively impact students’ learning outcomes [1]. Implementing ICT in learning media usually requires a computer or laptop. Along with the development of ICT, computers and laptops are no longer the only resources; the smartphone now is another option.

Smartphones are provided in various operating systems such as Android, iOS, Windows Phone, and others [2] However, teachers and students’ most common operating system in Indonesia is Android [3]. Android is also the most practical and affordable operating system [4]. Therefore, Android-based smartphones as learning promote students’ comprehension of the material more easily [5].

Android-based learning media can be applied in basic accounting subjects for basic competency of service company financial statements. The basic competency of the financial statements of service company contains quite complex materials. The financial statement is a report that shows the company's financial position in a certain period [6]. The materials of the basic competency of financial statements consist of types of financial statements, which contain income statements, changes in working capital, and balance sheets [7].

The use of android-based learning media must have effectiveness because it can help the learning process and delivery of lesson content following the curriculum's demands [8]. The effectiveness of learning media can be seen from the increase in students' understanding of the material during the learning process [9].
Android-based learning media should be useful, as well. Effective learning media are expected to support the students in achieving learning goals [10]. In this context, the use of PowerPoint presentation as the learning media in class is considered still lacking in the implementation. This can be perceived from the teachers’ documents regarding the results of students' formative test results on the basic competency of a service company's financial statements in class X AKL, which are still considered not optimal, indicated by the average class score that is not meeting the specified standard.

The explanation of the problem above shows that the teacher's learning media is still not adequate. Therefore, it is necessary to have a trial using the teacher's media, namely, PowerPoint presentation with Android-based learning media to see the effectiveness of instructional media.

Android-based learning media has an attractive appearance so that it makes students focus during the learning process [11]. The appearance of learning media based on Android KD-based financial reports is attractive because the media displays the following menus: (1) instructions for use; (2) basic competence; (3) material; (4) learning video; (5) practice questions; (6) submission of tasks; (7) quiz. The menu display makes students understand the material during the learning process to help students achieve learning objectives which can be seen from improving learning outcomes [12].

According to the background of the problem explained above, the researchers have accomplished this research entitled "Effectiveness Android-Based Learning Media on Basic Competence of Service Company Financial Statements Class X AKL at SMK Negeri Darul Ulum Muncar Banyuwangi."

2. Methods
This research is quasi-experimental [13]. In the quasi-experiment, there was an experimental class and a control class. The experimental class is a class that uses Android-based learning media, while the control class is a class that does not use Android-based learning media. This quasi-experiment requires that both classes have homogeneity. The research subjects were students of class X AKL SMK Negeri Darul Ulum Muncar Banyuwangi. Class X AKL 1 with 34 students became the experimental class while class X AKL 2 with 35 students became the control class.

The instrument used in this research was 20 multiple-choice questions. The data collection technique used is the test technique. Technique tests are carried out to see student learning outcomes. Then the student learning outcomes were analyzed by independent sample t-test.

3. Results and Discussion
The level of effectiveness of learning media based on Android is seen from comparing students' learning outcomes in class X AKL 1 class with class X AKL 2. The following is the distribution of student learning outcomes for class X AKL 1 and class X AKL 2.

![Distribution of Students’ Score](image)

The figure above indicated the differences in students’ learning outcome scores from the experimental and control classes. The experimental class showed 66-70 as the minimum score range, the highest degree of score of 96-100, and the average score of 82.5. Meanwhile, the control class had
60-65 as the minimum score range, 91-95 as the highest score range, and an average score of 73. The score gap between experimental and control class indicated a significant difference. Based on the distribution of students’ scores, the class with android-based learning media achieves a higher score than the class that does not use android-based learning media. It showed that Android-based learning media was effectively applied in basic service company financial statements' basic competency.

Statistical tests were carried out with the help of SPSS. First of all, researcher carried out the normality test and homogeneity test between class X AKL 1 and class X AKL 2. The results are as follows:

The data tested is the value of student learning outcomes of the previous basic competence of class X AKL 1 and X AKL 2. The results of the normality test can be found out in the table below:

Table 1. Test of Normality

|                      | Kolmogorov-Smirnov | Shapiro-Wilk |
|----------------------|--------------------|--------------|
|                      | Statistic | df | Sig. | Statistic | df | Sig. |
| Experimental Class   | .141       | 34 | .085 | .943       | 34 | .077 |
| Control Class        | .154       | 35 | .040 | .969       | 35 | .437 |

a. Lilliefors Significance Correction

Based on the Shapiro-Wilk above, the Sig. > 0.05 can mean that the value data distribution for the experimental and control class is expected. After carrying out the normality test, the data was then tested for the level of homogeneity.

The homogeneity test was carried out to determine whether there was a variance difference between the experimental and control class. The homogeneity test shows the following results:

Table 2. Test of Homogeneity of Variances

| Students Learning Outcomes | Levene Statistic | df1 | df2 | Sig. |
|----------------------------|------------------|-----|-----|------|
|                            | 1.673            | 1   | 67  | .200 |

Based on the homogeneity test above, the Sig. 0.2> 0.05, so it can be means that the variance of the experimental and the control class is homogeneous. Thus, class X AKL 1 and class X AKL 2 can be compared to determine Android-based learning media's effectiveness.

The test of the effectiveness of Android-based learning media uses the t-test, namely the independent sample t-test. The t-test is used to determine whether there are differences in the two classes with different treatments. These two classes, namely the experimental class that uses android-based learning media and the control class that does not use android-based learning media. The results of the independent sample t-test to determine the level of effectiveness can be found out in the table below:
Table 3. 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 |
| Students       |       |      |       |     |                |                 |                     |                                       |
| Learning       |       |      |       |     |                |                 |                     |                                       |
| Outcomes       |       |      |       |     |                |                 |                     |                                       |
| Equal variances assumed | 1.942 | .168 | 4.135 | 67  | .000            | 9.35714          | 2.26285              | 4.84047                                | 13.87382                                |
| Equal variances not assumed | 4.128 | 65.588 | .000 | 9.35714 | 2.26677 | 4.83086 | 13.88343 |

The independent sample t-test of experimental and control classes based on their learning outcome score difference was Sig. (2-tailed) = 0.00 < 0.05. According to the test result, it can be concluded that there was a significant difference between the experimental and control classes in the matter of their obtained scores.

Android-based learning media's effectiveness was shown by the achievement of learning objectives [14]. Meanwhile, it was obtained from the result of the independent sample t-test. Based on the work, there was a significant difference between students who used the Android-based learning media compared to those who did not, figured in their learning outcomes. Following the research results conducted by [15], Android-based learning media can effectively improve student understanding so that learning objectives can be achieved.

Students who used Android-based learning media obtained a higher average of learning outcomes than those who did not use it. It shows that Android-based learning media is sufficient to be applied in a service company's basic competency of financial statements. Warsita [10] stated that Android-based learning media effectively helps students understand the material more straightforward to achieve the learning objective. Android-based learning can improve the learning outcomes because through android-based learning can access lessons and assignments anywhere and anytime [16].

Android-based learning media's advantages make students more interested so that it is easy to understand the material. The benefits of Android-based learning media include: (1) Android-based learning media can be used by students anywhere and anytime; (2) students can learn independently through the display menu contained in Android-based learning media; (3) the appearance of Android-based learning media is attractive so that it can increase student motivation; (4) makes it easier for teachers to deliver material to students [17].

The explanation above proves that Android-based learning media on the basic competence of financial statements service company class X AKL at SMK Negeri Darul Ulum Muncar Banyuwangi is an effective learning media.

4. Conclusions
Based on the result and discussion of this research, it can be concluded that the average student learning outcomes of class X AKL 1 are higher than class X AKL 2. Class X AKL 1 is the experimental class using Android-based learning media, while class X AKL 2 is the control class does not use Android-based learning media. The independent sample t-test stated a significant difference between class X AKL 1 and X AKL 2. So, Android-based learning media is an effective media to use in the basic competence of financial statement service company X AKL at SMK Negeri Darul Ulum Muncar Banyuwangi.

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