

Student's Self Efficacy Differences Review From The Use of Android-Based Media and Powerpoint to Overcome Anxiety in Online Learning

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Abstract:

Online learning that is not accompanied by innovation in teaching causes anxiety in students. This anxiety can be overcome by increasing self efficacy. Developing learning media can be an effort to increase student self efficacy. So, this Study was intended to find out: (1) whether there was a significant difference between the use of android-based learning and powerpoint on students's self efficacy in Computer and This study used post-test only control design method and t-test to compare 1st experimental group (teaching with powerpoint) and 2nd experimental group (teaching with android media). A total of 71 students of 1st grade RPL at one of vocational school in Karanganyar were randomly selected as samples. The results of self-efficacy were measured by a questionnaire that was validated by 4 expert judgments. Based on statistical results, shows a significant difference between 1st experimental group (teaching with powerpoint) and 2nd experimental group (teaching with android media) on their self-efficacy questionnaire. The 1st experimental group got a lower score than the 2nd experimental group with a gap score of 9.71. The t-test value for $df = 69$ is 3,439 which is higher than $t_{table} = 1,994$. The effectiveness of android media is relatively high based on d Cohen's calculations with a score of 0.945. The results of this study indicate that there is a significant difference between the use of android-based learning and powerpoint on students self-efficacy in basic computer network subjects, moreover android-based learning might be an effective medium to increase students self-efficacy in overcoming online learning anxiety.

Keywords: android-based learning, online learning, powerpoint, self efficacy.

Introduction

Online learning during the pandemic has many impacts on the learning process. Dr. H. Nizamuddin et al. (2021: 68) explain that the grand tour of a study can be done by examining 3 objects in order to sharpen the study's direction. The object could be reviewed by interview and observation. This observations and interviews showed that students were less active in class and less independent in completing their assignments. This is proven by infrequent questions from students during lessons and similar answers between students on assignments. Even in providing online teaching, teachers unable to maximize the application of learning media and internet as learning resource. The presentation of Computer and Basic Networking subject matter is less attractive without utilizing technology in teaching induces students difficult to understand the subject matter. Especially for 1st grade students who still need attention in understanding the basic material to prepare them for next 2nd and 3rd grade.

These problems indicates that effective ways are needed to promote students self-efficacy. Because high self-efficacy can improve students achievement and self-welfare (Kristiyani, 2016: 83). By increasing these aspects, it will boost their self-confidence and abilities, so consequently they will be more enthusiastic to achieve target. On the other hand, students with low self-efficacy will have difficulty in learning. Innovation in teaching is one of the efforts to overcome low self-efficacy of students (Triswanto & Laksmiwati, 2020). One of innovations in teaching is application of android-based learning media.

Research by Sugiyarto et al. (2020) showed that android media with educational games support learning process and are able to increase students' attention, present an interactive teaching process as well as provide innovation in teaching. Android-based learning media is also able to improve self-confidence in their abilities because android learning media can be a source of independent learning for students. Permana et al. (2016: 9) argued that the more attractive the appearance and the ease of accessing media will foster student interest in learning. Thus, it will increase students self-efficacy and learning process becomes more varied.

The objective of this study was to determine: (1) whether there was a significant difference between the use of learning media based on android and powerpoint towards students self-efficacy in Computer and Basic Network subjects; (2) which learning media was more effective between android-based and powerpoint-based learning media.

Research Method

This study applied quantitative method with experimental research design and t-test. In this study, certain treatments are given to determine their effect on something in uncontrolled conditions (Sugiyono, 2018: 72). The application of android-based learning media and powerpoint media as independent variables, while students self-efficacy as dependent variable. The experimental design used in this study was true-experimental with the posttest-only control design method. The posttest-only control design paradigm is shown in Figure 1 below:

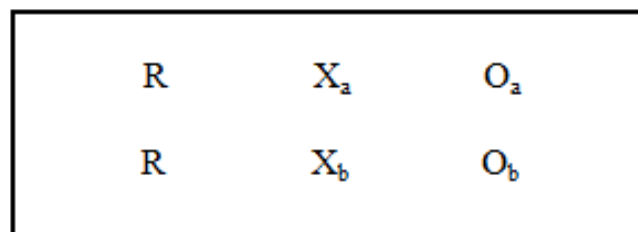


Figure 1. Posttest-only control design

The design in this experimental study requires two groups of experimental classes selected randomly. The 1st experimental group was given teaching treatment with powerpoint media while the 2nd experimental group was given teaching treatment with android-based media.

This study was carried out at SMK N 2 Karanganyar from April 5 to May 3, 2021 using simple random sampling technique to determine the research sample in 1st grade students majoring in RPL. A total of 71 students of 1st grade RPL were randomly selected as sample. Questionnaires, interviews and observations were used for data collection. The validity of instrument was obtained through consultation with four expert judgments: Basori, S.Pd., M.Pd, Dr. Agus Efendi, M.Pd., Yusufia Hafid Arisyagama, S.T.,

M.T. and Arief Kurniawan, ST. The classification of instrument validity is as follows: (1) the instrument can be used directly without changes; (2) the instrument needs to be repaired; (3) all instruments must be changed (Sugiyono, 2018: 125). The self-efficacy questionnaire was tested once outside the experimental class and then tested for validity and reliability. The independent sample t-test was used as data analysis in this study with the conditions of normality and homogeneity tests (Santoso, 2020: 298).

Result and Analysis

The result of the self efficacy's trial questionnaire by testing the validity of the *Correlation Between Items and Total* using SPSS 26 for windows showed 5 items were invalid from the 42 items tested.

Table 1. Summary of Validity and Reliability Testing Result of Self Efficacy Questionnaire Trial

Conclusion	Item number	Amount
Invalid	3,6,15,28,29	5
Valid	1,2,4,5,7,9,10,11,12,13,14,16,17,18,19,20,21,22,23,24,25,26,27,28,30,31,32,33,34,35,36,37,38,39,40,41,42	37
Total		42

This invalid item questionnaires were then dropped because the self-efficacy indicator was sufficiently described with 37 valid questionnaire items. Results of reliability test using Cronbach's Alpha showed the reliability of 37 items with an Alpha value of 0.938. After the validity and reliability of instrument was proven, the following research data were obtained:

Differences in self efficacy between android-based learning and learning with powerpoint

After the treatment was carried out for two weeks, self-efficacy questionnaires were distributed and the following results were obtained:

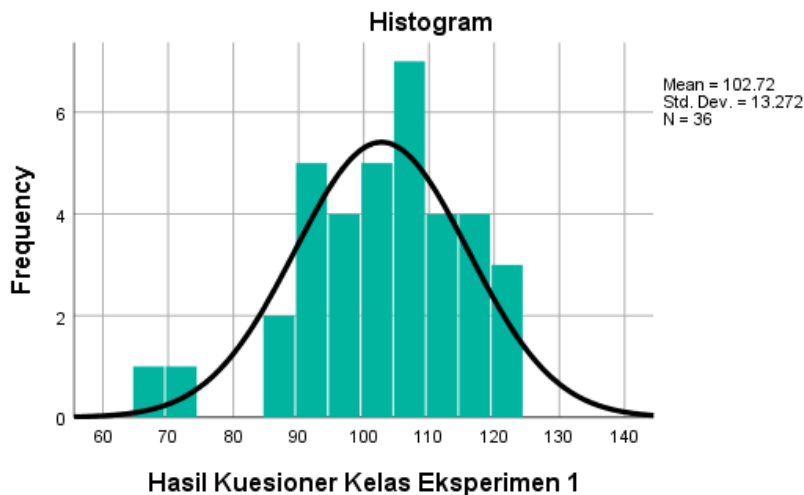


Figure 2. Histogram Frequency Distribution of Self Efficacy Questionnaire Data for 1st Experimental Group

The graph in Figure 2 shows that the highest frequency is 11 in the interval class 105-114 with class limits of 104,5 (lower edge) and 114,5 (upper edge). While the lowest frequency is 0 in the interval class 75-84 with class limits of 74,5 (lower edge) and 84,5 (upper edge). Thus, from the description of 1st experimental group (learning with powerpoint) shows that students in XRB class have varied assessments of the statements on the self efficacy's questionnaire.

Various assessments of statements on self-efficacy questionnaire can also be seen in the 2nd experimental group. From the graph in Figure 3, it is shown that the highest frequency is 10 in the interval class 106-112 with class limits of 105.5 (lower edge) and 112.5 (top edge). While the lowest frequency is 4 in the interval class 92-98 with class limits of 91.5 (lower edge) and 98.5 (upper edge), interval class 99-105 with class limits of 98.5 (lower edge) and 105.5 (top edge), interval class 120-126 with class boundaries 119.5 (lower edge) and 126.5 (upper edge) and interval class 127-133 with class boundaries 126.5 (lower edge) and 133.5 (bottom edge).

The average results of self-efficacy questionnaire in two experimental groups have a difference in score of 9.71 as shown in Table 2 below:

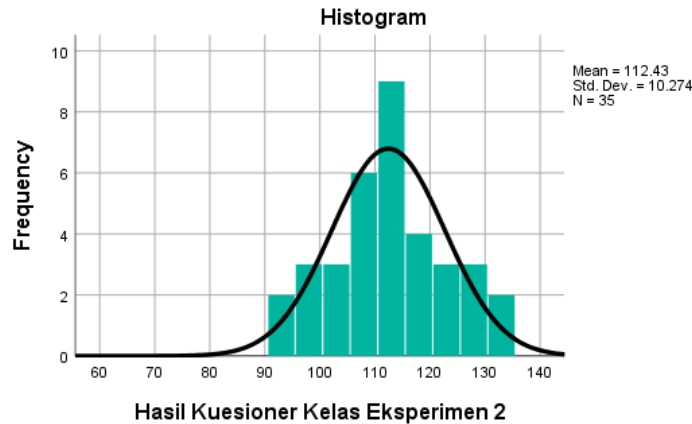


Figure 3. Histogram Frequency Distribution of Self Efficacy Questionnaire Data for 2nd Experimental Group

Table 2. Results of Statistical Analysis of Self Efficacy's Questionnaire Data

Statistical Analysis	1 st Experimental Group (XRA)	2 nd Experimental Group (XRB)
<i>N</i>	36	35
<i>Mean</i>	102,72	112,43

The result above show that the 2nd experimental group has better score than 1st experimental group. The mean difference of two experimental group then tested using the t-test hypothesis as follows:

H₁ ; There is a significant difference in self-efficacy between students who learn subjects of local network installation (LAN) by using android-based learning media and powerpoint media.

H₀ ; There is no significant difference in self-efficacy between students who learn subjects of local network installation (LAN) by using android-based learning media and powerpoint media.

Table 3. Results of Student's Self Efficacy T-test

Student Self Efficacy Questionnaire Results	Levene's Test for Equality of Variances		T-test for Equality of Means		
<i>Equal variances assumed</i>	1,654	0,203	-3,439	69	0,001
<i>Equal variances not assumed</i>			-3,451	65,733	0,001

The result of independent sample t-test hypothesis test show that the $t_{value} = 3,439$ is higher than $t_{table} = 1,994$ which means H₁ is accepted and H₀ is rejected. The calculation above answers the 1st hypothesis in this study with statement "there is a significant difference in self efficacy between students who learn with

android-based learning media and students who learn with powerpoint media on local network installation (LAN) subject matter” as conclusion.

Android-based learning vs powerpoint : which one is effective

After observing the significant difference in self-efficacy between two experimental groups, then measured effect size from android-based media. This measurement was carried out using d Cohen calculation described by (Morissan, 2016: 183).

$$d \text{ Cohen} = \frac{\text{The average difference of 2 experimental class}}{\text{Standard deviation}}$$

There are three categories for classify the effect sizes: (1) categorized as large effect if value of d Cohen is greater than 0.8; (2) moderate effect if value of d Cohen is between 0.2 to 0.8; (3) has low effect if value of d Cohen is less than 0.2. The following is the result of effect size calculation:

Table 4. Results of Effect Size Calculation

d Cohen Score	Classification
0,945	High

From the above result, d Cohen value = 0,945 higher than 0,8 also can be classified as high effect. The conclusion based on these calculations is learning process using android-based media could give large effect in improving student’s self efficacy in local network installation (LAN) subject matter. The calculation above answers the 2nd hypothesis in this study with statement “android media is more effective than powerpoint in improving student’s self efficacy”.

Changes that occur after the experiment is carried out

The differences in students self-efficacy in two experimental groups is caused by several conditions. Based on the results of interviews with several students in 2nd experimental group, android-based media is considered to have a dynamic and attractive display, therefore students are easily understand the concept of local network installation (LAN) subject matter.



Figure 4. Android-based media appearance

From observations, it also shows that there was enthusiasm and active interaction between teachers and students in responding to or answering questions. This condition is similar with the characteristics of someone with high self-efficacy proposed by Permana et al. (2016: 9), which is someone who has an active tendency and directly involved in an activity.

Learning media with this new innovation can also trigger more enthusiasm and motivation. This app also allows students to access their classrooms on Microsoft Teams. Indirectly, this android media presents

subject matter in creative and innovative way. This condition strengthens the opinion of (McQuiggan, McQuiggan et al. (2015) mentioned that mobile learning-based development has an impact on students, namely getting an extraordinarily worthwhile experience in their education.

Android-based media also be an alternative to overcome student anxiety or stress during online learning because it can increase students self-efficacy. This supports the opinion of Debora (2020) where self-efficacy is one of the factors that can affect student anxiety and an important factor in the implementation of online learning.

Conclusion

Referring to the results of this Study and discussion, the use of android-based learning media on local network installation (LAN) subject matter increases student's self efficacy much better than the use of powerpoint media. The android based media also assessed as an effective media in improving student's self efficacy. The enthusiasm and activeness of studens in class such as answering questions from teacher, motivation in studying and exploring the subject matter, daring to express opinions are the response after experimental teaching is done using android media. Thus, it can be concluded that the application of android-based media can provide a stimulus for students to increase their self-efficacy. As a result, anxiety in online learning activities can be minimized.

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