

Blended Learning Method Based on Quipper School to Improve Concepts Understanding and Independence Learning

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Abstract

The purpose of this research is to know the effectiveness of blended learning method based on quipper school media in order to improve students understanding of the concept and their independence learning in science learning. The research method used is quasi experiment with nonequivalent pretest-posttest control group design. The data collected using observation techniques and tests. The population in this research is all students of class VIII SMPN 1 Sumowono consists of 193 students. Samples were taken using purposive sampling technique. Class VIII D is selected as the experimental class, while class VIII F is selected as the control class. The results showed that: (1) classical accomplishment of experimental class increased by 28.13% and control class increased by 15.62%. This suggests that there is an increase in the students' understanding of the concept of experimental class on the medium criterion, while the control class on low criterion; (2) Learning independence of experimental class is 76.78% and is in self-supporting category. The conclusion of this research is that the blend learning method based on Quipper School is effective to improve the students' understanding of the concept and their learning independence of the students. Blend learning method based on Quipper School is expected to be a reference to be applied in learning.

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INTRODUCTION

Utilization of information technology and internet-based communication to support learning in Indonesia is still limited. According to a survey results conducted by Association of Indonesian Internet Service Providers on 2000 internet users in Indonesia in 2014, data obtained percentage of people who use the internet to access educational facilities is only 29.3%. If the use of internet technology for learning can be optimized, it will provide a better learning experience for students. Sriarunasmee, et al (2015) mentions that one of the advantages of using the internet in learning, is providing an opportunity for students to access knowledge in a broad and deeper manner than that provided by teachers during classroom learning.

One of the learning method which utilizing internet access that can be applied in school is blended learning method based on Quipper School media. Hubackova & Semradova (2016) states that "... Blended learning, that is a combination of the teaching and learning of a self-contained preparation of education." Blended learning supports the implementation of student centered learning (Husamah, 2014). The use of media Quipper School in learning to increase students' motivation (Bang, et al, 2016). Quipper School is an appropriate learning media used in the application of blended learning method. Budiharti (2014) stated that the implementation of blended learning method should be supported by the existence of learning management system, one of which is Quipper School.

SMPN 1 Sumowono is one of the secondary schools in Sumowono sub-district, Semarang, that has not maximized the use of internet to support learning activities. Students are allowed to access the Internet, somehow, the ICT learning in computer labs is limited to using e-mail and browsing only. In fact, SMPN 1 Sumowono facility is equipped with internet connection from Wi-Fi network that has been given a filter for certain sites that are not related to the field of education. Implementation of Quipper School based blended learning method is

expected to overcome the low use of the internet in supporting the teaching and learning process in SMPN 1 Sumowono.

In addition, the implementation of blended learning based on Quipper School is expected to also increase the understanding of the concept and students' learning independence in the school. Based on observations that researchers do in collaboration with teachers of grade VIII SMPN 1 Sumowono, obtained data that understanding concept and learning independence is still low. The low level of students' understanding of the concept is still low from the average daily scores of all students in grade VIII, which is 68 and is below the minimum value limit set by the school. In addition to understanding the concept of students who are still low, student learning independence was not good enough. Based on the interviews that researchers do to students and teachers, most students of grade VIII still do the task by hanging on other students, students' self-confidence in learning is still lacking, and awareness of students to learn independently is still low.

Therefore, learning with the blend learning method based on Quipper School media is expected to improve the students' understanding and concept of independence. Khlaisang, et al (2014) states that blended learning is an appropriate method to improve students' cognitive abilities, including the concept of understanding aspects. Isnaeni, et al (2015) mentions that digital learning with interactive media can improve student activities, one of them is student independence in learning.

Based on the explanation, this research was conducted to know the effectiveness of blended learning based on Quipper School in order to improve the understanding of the concept and independence learning of students in grade VIII SMPN 1 Sumowono. By applying the blend learning method based on Quipper School, internet expenditure in SMPN 1 Sumowono education is expected to increase and help to realize effective and efficient learning.

METHODS

The research is a quasi experimental research with nonequivalent pretest-posttest control group design. In this design there are two classes that are compared, that is the experimental class given the treatment of Quipper School based blended learning method and the control class which is given the method of discussion and question-answer. The population in this research is all students of class VIII SMPN 1 Sumowono consists of 193 students. Samples were taken using purposive sampling technique. Class VIII D is selected as the experimental class, while class VIII F is selected as the control class. The sample is selected for several reasons: (1) the sample class has the same number of students, (2) the sample class has almost the same level of achievement, and (3) there is no difference in the division of students in class VIII. The dependent variable in this research is the concept comprehension and student learning independence. The independent variable in this research is the application of blend learning method based on Quipper School media.

This research consists of four stages, namely the initial observation, research planning, implementation, and data analysis. Students independence learning were observed using observation sheet while their concept understanding were tested by using multiple choices test. Observation was chosen because the technique is appropriate when used to measure the independence of learning through observation of student activities. While multiple choice test is chosen because the technique is appropriate to know the achievement of student concept understanding. The instruments used are concept comprehension test and observation sheet of student learning independence. All instruments have been tested for validity and reliability. Data analysis techniques performed are: (1) analysis of repeat data as the initial data of students with normality test and homogeneity test; (2) analysis of instrument data with validity test and reliability test; (3) analysis of the effectiveness of blended learning based on Quipper School in order to improve students' comprehension and

independence by using proportion test of one population, independent t test, N-Gain test, and one sample t test.

RESULTS AND DISCUSSION

Analysis of student concept comprehension data can be obtained from pretest and posttest result of students of experimental class and control class (Abdillah, 2017). While to do the data analysis of learning independence can be obtained from the measurement of non-test instruments in the form of measurements of students' attitudes through observation activities (Hidayati, 2010). Translation of data analysis of conceptual understanding and student learning independence is described as follows.

The Analysis of Classic Accomplishment on Aspect of Understanding Concepts

The data of the pretest and posttest scores obtained by the experimental class were calculated by the proportion test formula to determine its classical accomplishment attainment. The result of the test of proportion in the experimental class shows that the calculated value obtained is 1.29. While the consulted ztable is 1.64. The value of z is $< z_{table}$. Thus the proportion test hypothesis is accepted, ie students who follow the learning with blend learning method based on Quipper School achieve classical accomplishment $> 75\%$ of all 32 students. The recapitulation of individual and classical accomplishment in the experimental class are presented in Table 1.

Table 1. Accomplishment of Experimental Class Students

	Pretest	Posttest
Number of accomplished students	18	27
Number of unaccomplished students	14	5
The average point	72.13	84.11
Percentage of classical accomplishment	56.25%	84.38%
Category	Unaccomplished	Accomplished

Based on Table 1, it can be seen that the class of experimental students did not fulfill the

classical accomplishment at the time of pretest because the percentage of students who completed are only 56.25%. Then after being treated (blended learning based on Quipper School) and following posttest, the total number of students of experimental class that is complete increased so as to reach the classical accomplishment with the percentage of 84.38%. According to the data, the percentage increase of classical accomplishment of experimental class is 28.13%.

As a comparison, there is presented a recapitulation of individual and classical accomplishment in the control class which can be seen in Table 2.

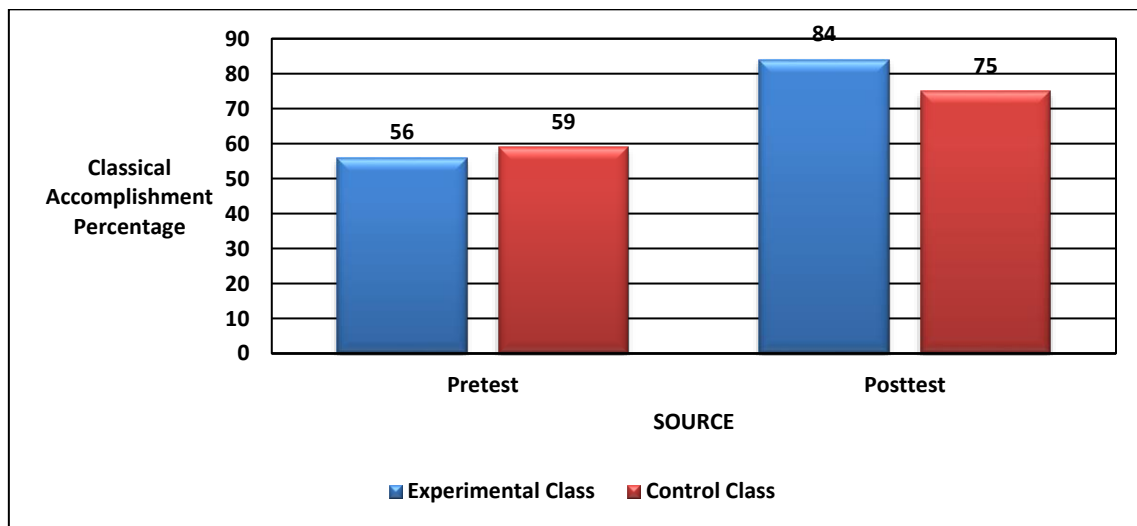
Table 2. Accomplishment of Control Class Students

	Pretest	Posttest
Number of accomplished students	19	24
Number of unaccomplished students	13	8
The average point	71.09	79.29
Percentage of classical accomplishment	59.38%	75%
Category	Unaccomplished	Accomplished

Based on Table 2, it can be seen that the control class students do not meet the classical accomplishment at the time of pretest because the percentage of students who completed only 59.38%. Then after being given treatment (learning by discussion method and question and answer) and following posttest, the total number of students of experimental class that is complete increased so as to achieve classical accomplishment with 75% percentage. According to the data, the percentage increase of classical accomplishment counted 15.62%.

The difference of classical accomplishment level between experimental class and control class is presented in Figure 1.

Based on the data presented in Graph 1, it can be seen that the classical accomplishment of the experimental class and the control class are equally increasing. However, the percentage increase of classical accomplishment of experimental class is higher compared with the increase of classical accomplishment of control class.



Graph 1. Percentage of Classical Exhaustiveness Classroom and Control Class

Differences Analysis of Concept Understanding Between Experimental Class and Control Class

Based on the result of independent t test analysis that has been done on posttest value of the students of both classes, obtained sig count 0.043 which is consulted with sig 0.05 value at α

5%. It can be seen that the sig count value is 0.043 < sig 0.05 so it can be concluded that the hypothesis for t test is accepted, i.e. there is a significant difference in understanding the concept of students between the experimental class and the control class..

Analysis of Improved Concepts Understanding Before and After Treatment

Increased understanding of student concepts in the experimental class and control classes was analyzed using the N-Gain formula. With this formula, it can be known to increase the

understanding of the students' concept of experimental class and control class after getting treatment. Below is presented a recapitulation of the acquisition of N-Gain experiment class in Table 3.

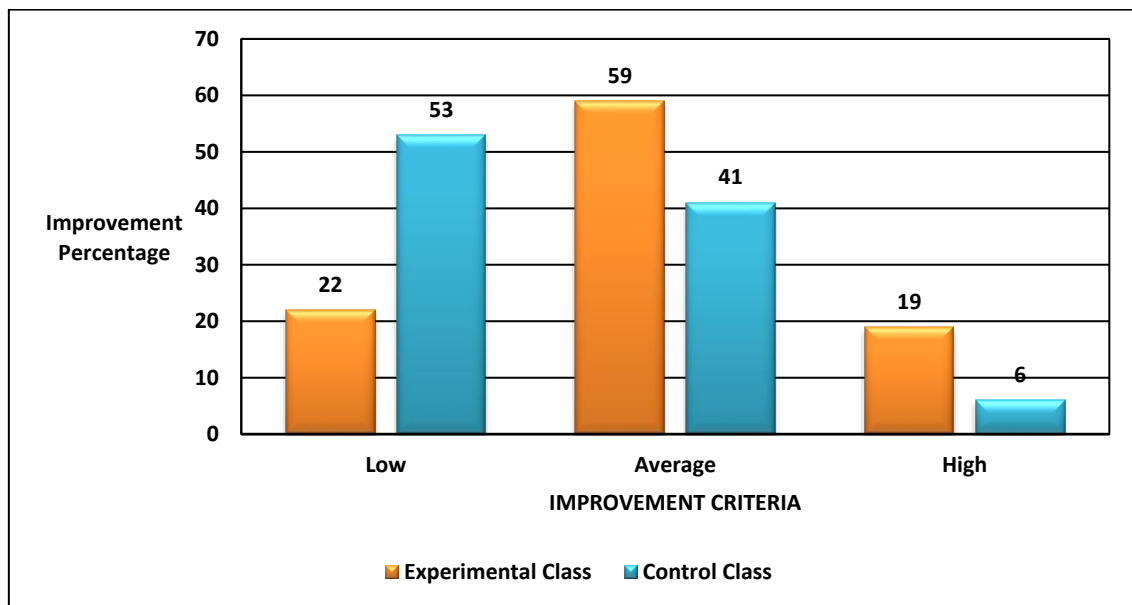
Table 3. Improved Understanding of Students' Concept of Experiment Class and Control Class

Score	Improvement criteria	Experimental class		Control class	
		Total	%	Total	%
$N\text{-gain} \geq 0.70$	High	6	19	2	6
$0.30 \leq N\text{-gain} < 0.70$	Average	19	59	13	41
$N\text{-gain} < 0.30$	Low	7	22	17	53
Total		32	100	32	100

Based on Table 3., it is known that the number of students who increased the understanding of the concept is on the high criterion is as much as 6 students from the experimental class and 2 students from the control class. Students who improved their conceptual understanding were in the medium criterion were as many as 19 students from the experimental class and 13 students from the

control class. While the students who increased the understanding of the concept were on the low criteria were as many as 7 students from the experimental class and 17 students from the control class.

The difference in concept comprehension improvements based on the criteria between experimental class and control class students is presented in Graph 2.



Graph 2. Improved Concepts Understanding of Experimental Class and Class Control based on the Criteria

Based on Graph 2. above, it can be seen that the improvement of conceptual understanding on medium and high criteria in the experimental class is superior to the control class. While the improvement of concept

comprehension on the low criterion is dominated by the control class students compared with the experimental class students.

Analysis of Achievement of Student Learning Independence

Student learning independence of experimental class is calculated by using one sample t test formula. Level of achievement of student learning independence get an average value of 76.78 and sig count value of 0.136. The value of 0.013 is then consulted with a sig value of 0.05. It is known that the value of sig count $0.013 > \text{sig value } 0.05$ which means that the hypothesis for this test is accepted, ie the average of student learning independence of more than 75%, that is 76.78% of which fall into the category independently.

Based on the results of the analysis that has been described, it is known that learning by applying the blend-based learning method based on Quipper School applied in VIII SMPN 1 Sumowono is superior to the discussion and question and answer method. Achievement of student concept understanding in experiment class is higher than control class. Indicators of understanding of the concepts specified in this study are: (1) exemplify the concept accordingly, (2) mentions the characteristics of the concept, (3) classify, (4) inference, and (5) compare. In order to achieve conceptualizing on the exemplary indicator and mention the characteristics of the concept, the teacher gives an explanation of the concepts according to the material that the student is learning. Furthermore, the teacher gives examples and characteristics of the concept. Students are given the opportunity to gain insight by opening Quipper School through their smartphone or other device. In order to achieve a conceptual understanding of classifying and comparing indicators, the teacher assigns assignments to students to groups and conducts discussions according to the topics being studied. The discussion was conducted by involving the Quipper School media. In the indicator of inference, teachers and students do question and answer and make conclusions based on the material that has been studied.

In the application of Quipper School media-based blended learning method in the experimental class, students play an active role in

learning activities. In the implementation of blended learning method, students play an active role in building concepts according to the material learned so that students gain meaningful learning (Anggraeni, 2013). By getting meaningful learning, students can understand the concept better. Blended learning method is a technology-based learning method. Suhandi (2009) states that technology-based learning can improve the effectiveness of learning and understanding of student concepts. Therefore, the application of Quipper School based blended learning method is effective to improve students' conceptual understanding.

In line with the opinion above, the implementation of learning by applying Quipper School media makes students more motivated to learn independently (Idin, 2016). Based on the result of the research, the students of experimental class at SMPN 1 Sumowono have been included in the self-supporting category. Indicator of learning independence in this study, namely: (1) confident, (2) finding relevant learning resources, (3) learning motivation, (4) responsibility. In order to foster students' self-confidence and learning motivation, learning is centered on student activities, giving opportunities for questions, discussions, and presentations. In order to trigger students in developing learning resources, the teacher provides students with a responsible freedom to look for the source of learning as much as possible through the available books, internet, and Quipper School media.

In the application of Quipper School's media-based blended learning method in the experimental class, it is evident that student learning independence is increasing at each meeting. Referring to the results of the study, the experimental class students have achieved self-learning categories. The results of this study are supported by a similar study conducted by Sutisna (2016) which shows that effective blended learning to improve student self-reliance. Sari (2013) also states that blended learning-aided learning management system effective to improve student self-reliance. Independent students have self-confidence, motivation, learning initiative,

discipline, and responsibility (Pramana, 2014). This is in line with the opinion of Supriani (2012), that the greater the role of students in learning activities, the higher the level of learning independence.

Based on the reviews above, it is known that Quipper School based blended learning method is effective to improve the understanding of the concept and self-reliance of class VIII students in SMPN 1 Sumowono. By applying blend learning method based on Quipper School, students can utilize internet technology for learning activities, understand well-learned material concepts, and foster self-reliance in learning. It is expected that this research can be utilized as a reference in implementing Quipper School based blended learning methods to improve students' conceptual understanding and independence, especially for high school students.

CONCLUSION

Classical accomplishment of experimental class increased by 28.13% and control class increased by 15.62%. This suggests that there is an increase in the students' understanding of the concept of experimental class on the medium criterion, while the control class on low criterion. Improved understanding of the concept in students who follow the learning of Quipper School based blended learning method is higher than the students who follow the learning in the discussion and question and answer. While, learning independence of experimental class is 76.78%. Achievement of learning independence from students who follow the learning with blended learning method based on Quipper School achieve self-supporting category.

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