The Effectiveness and Efficiency of Blended Learning at Sport Schools in Indonesia

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Students in sport schools find face-to-face learning in class with their teacher difficult to attend. This is because students in sport schools are athletes who often leave the classroom to do training camps or to take part in competitions outside the city for a long time. Blended-learning-based learning can be a solution because this learning can be done anywhere and anytime. The purpose of this study was to look at the effectiveness and efficiency of blended learning-based learning in sport schools. The research method used was an experiment with The One Group Pre-test Post-test design. The data showed that after the blended-learning-based learning, the students' learning outcomes increased, and the students were able to understand the material in a relatively short time. Thus, blended-learning-based learning was effective and efficient in sport schools.

Key words: *Effectiveness and Efficiency, Blended Learning, Sport Schools.*

Introduction

A Sport School is a school that educates athletic students. Sport Schools are different from regular schools (Rosenthal, Foraker, Collins, & Comstock, 2014). The learning system in sport school adapts to the character of students, namely students who are also a sports athlete (Piebes, Gourley, & McLeod, 2009; Thein-Nissenbaum & Carr, 2011). The intended character is that when learning takes place in class, not all students can participate directly in class. It is because when learning takes place, there are some students outside the city, who take part in competitions or participate in training centres (Sugimoto et al., 2017).

Considering the condition of athletic students, they will not take part in the learning process effectively if they are educated in regular schools because need to maximize their achievements in sports. Although sports coaching can be done in extracurricular activities of regular schools, it will not be enough to foster local or national level athletes (Taylor & Sanner, 2017). Sport

coaching in regular schools or public schools is only intended to achieve school-level performance. Often the interests of achieving sports achievements are outweighed by the interests of formal education. Sports facilities available in public schools are also not suitable for fostering local or national level athletes (Marar, McIlvain, Fields, & Comstock, 2012). Therefore, sport schools were established to facilitate athletic students, who in their education, could also focus on sports achievements. That is why athletic students should not study in regular schools (Register-Mihalik et al., 2013).

The problem reappears in sport schools, however, due to the implementation of education for students as student athletes. The demand for high sports achievement from student athletes requires students to practice harder in sports (Broglio, Eckner, & Kutcher, 2012). Students often attend special exercises or take part in competitions outside the city for long periods (Meehan, D'Hemecourt, Collins, & Comstock, 2011). Therefore, it makes students miss lessons in general subjects.

The lack of priorities for learning general subjects in the environment of sport schools is natural. The main objective of the establishment of sport school is to facilitate sports achievements for athletic students (McGrath, 2010). So, it is natural that learning general subjects becomes the second priority (Hendrianto, 2014). However, the knowledge contained in these general subjects is very important for students as a provision of life skills when students have graduated from formal education and are in the community (Everard, Morris, & Wilson, 2004).

A solution is needed to this problem in order to achieve a balanced goal. The balanced goal in question is that students can still excel in the field of sports achievements and also gain general subject knowledge as a provision for life after graduating school. A system is needed to be established in order to meet these two student needs ("Academy of Management," 2008; Leithwood, Harris, & Hopkins, 2008).

Nowadays, there are many developing blended-learning-based learnings (Staker & Horn, 2012). Blended Learning is one kind of learning that collaborates face-to-face learning, offline learning, online learning and mobile learning (Stacey & Gerbic, 2008). Blended-learning-based learning is possible in Sport School environments, considering that the characteristics of Blended Learning can facilitate learning for students without having a meeting with the teacher directly when they are not able to attend the class (Tyley, 2012a). Students can take advantage of offline learning, online learning and mobile learning wherever and whenever (Department of Education, Office of Planning, Evaluation, and Policy, 2010).

In blended-learning-based learning, students are not only able to take the advantage of online learning, offline learning and mobile learning, but also to take part in face-to-face learning if

the condition supports them to do it. In addition, when they are not at school to undergo training activities or competitions outside the city, they are able to do learning by utilizing various types of learning components based on Blended Learning. So, blended-learning-based learning system is appropriate for implementation in sport schools.

In implementing blended-learning-based learning, attention needs to be payed to several things, namely the facilities to use the media and teaching materials for students. In addition, the ability of teachers to develop and use the media and teaching materials is also needed to be considered (Kahu, 2013). In blended-learning-based learning, students will use the media and teaching materials including learning videos, electronic books, interactive multimedia, and online quizzes (Rovai & Jordan, 2004). For this reason, teachers are expected to be able to develop media and teaching materials that will later be used by students in learning when they do centralized training and competition outside the city (Pintrich, 2004).

The researchers concluded that blended-learning-based learning had to be done at the sport schools located in various regions of Indonesia. Even though it seems to be hard, it has to be slowly pioneered (Owston, York, & Murtha, 2013). For this reason, researchers pioneered it through research. The research carried out was a gradual study conducted over three years. The first year was an analysis of learning needs based on Blended Learning in the sport schools (Bowen, 2009; Valenzuela & Shrivastava, 2002). From the needs analysis, it would be seen whether the sport schools need blended-learning-based learning and whether the facilities and abilities of the teachers support blended-learning-based learning (Ghofar & Islam, 2015; Tight, Symonds, & Symonds, 2016). If later, there is indeed a trial of blended-learning-based learning, it would be conducted at the sport schools (Schell & Yin, 2006; Yeasmin & Rahman, 2012).

The results of the data obtained from the needs analysis are as follows: 94.5% of teachers had developed learning resources, and 82.1% of teachers stated that they provided special treatment for students who would do competition. From the responses of 53 teachers, it showed that the specific types of services were provided: 84.9% of teachers gave independent assignments, 52.8% gave student worksheets, 22.6% gave printed modules, 1.9% gave electronic modules, 15.1% gave services through online classes, 5.7% gave services with interactive multimedia learning resources, 17% gave power points, 13.2% gave learning videos, 3.8% gave learning audio, 3.8% gave mobile learning, 1.9% through LMS, 1.9% via the Internet, 1 , and 9% provided private treatments.

The researchers then obtained the data related to the ability of teachers to use various computer software that support learning. The data shows that most were able, a few were proficient and even less were unable to operate Microsoft Word. In the use of Microsoft Power point, most were able, a few were proficient and fewer than that were not able to operate it. In the use of interactive e-book creation software, most were not able, few were able and fewer than that

were proficient enough to operate it. In the use of screencastOmatic based presentation video creation software, most were not able, few were able and less were proficient enough to operate it. In the use of interactive multimedia creation software based on autoplay, most were not able, few were able and less than that were proficient enough to use it. In the use of mind manager software, most were not able, few were able, and no one was proficient enough to use it. In the use of sigil-based mobile learning resource maker software, most were not able, few were able and even less were proficient enough to operate it.

In addition to the data obtained from the teacher, the researchers also obtained the data from students. It was done to ensure accuracy of the information obtained. The following are the results of the questionnaire for students at the sport schools. Based on the data obtained from 290 students: 99% had smartphones, 1.7% had PC computers, 2.8% had tablets, 15.2% had laptops, 0.7% had projectors, 3.1% had printers, and 0.3% had a scanner.

While the teaching characteristics of the teacher from the student's perspective are as follows. Based on information from students, most of the teachers still used face-to-face learning and offline learning using printed books. For distance learning, 80% of students stated that they were given books as the facility.

Data on students' ability to operate software for various learning resources also needed to be retrieved. The result showed that most students were able to operate computer-based online applications, and Android applications. However, the software which students were not able to operate the most was a computer-based online application (online class).

Considering the data analysis of the actual needs of school facilities, there is sufficient support for blended learning. The private facilities of students also support blended learning. As well as the system and the provision of teacher service facilities for students who were doing training camps or participating in competitions that are already done. But, there is still a weakness, which is the ability of teachers to develop teaching materials using media that support blended learning. For this reason, providing training to teachers on how to develop teaching materials that are packaged in media supporting blended learning is needed. It was expected that blended learning carried out in sport schools can provide solutions to the problems faced at school.

Literature Review

Sports School is a school whose students are athletic students. Athletic student means an athlete who is still in the age of learning (Kaylani, 2015). To make it easier for these students to excel in sports without missing the learning in public school, Sports schools were established to be a place of learning for athletes who are still at school age (Amanchukwu, Stanley, & Ololube, 2015).

However, there are still some problems in students' learning process. Some students often leave the learning at school because they have to attend training or take part in a competition outside the city for a month or more. It makes students unable to participate in the learning process at school (Caldwell, 2015).

Blended learning is a style of learning that combines several learning models. It covers face-to-face learning, online learning, offline learning and mobile learning. It maximizes electronic learning media to support student's learning process (Idaho Digital Learning, 2014). This learning media is very supportive for face-to-face learning, online learning, offline learning and mobile learning (Tyley, 2012b).

From the characteristics of Blended Learning that can be done anywhere and anytime, it is very suitable for the learning system in Sports Schools because the students have different activities that enable them to meet together at School. So, the students who are studying at school can use face-to-face learning, while those who are outside the city can use online learning, offline learning and mobile learning.

Methodology/Materials

This research had been conducted for 3 years. In the first year, the researchers conducted the needs analysis to identify the characteristics of the research subjects and the suitability of problem solving faced by the research subjects. In the second year, there was a training for teachers who worked at the sport school. Then, in the third year, the results presented in this article were gathered by conducting experiments on blended learning in the sport schools.

Experiments were conducted using the design of The One Group Pre-test Post-test where they were carried out in one group without a comparison group. The stages of the experiment were conducting the pre-test, treatment and post-test. The pre-test stage was done by measuring students' learning outcomes that intended to see students' initial abilities. The test was done by having the students work on questions related to the learning material given at school. In addition, the time used by the students to answer all questions given was also calculated. The Treatment Phase was done by providing blended learning to students with all of the natural conditions that occur in the sport schools. Blended learning was considered to be the dependent variable in this study. The post-test stage was conducted, as in the pre-test stage, by measuring students' learning outcomes after being given treatment and also taking the data related to the time used by the students to answer all questions.

The location of the experiment was the sport schools in various regions of Indonesia, including Sriwijaya Palembang State Sports School in South Sumatra Province, South Sulawesi Sports

High School, East Java Provincial Sports High School, Jakarta Ragunan Sports High School, and East Kalimantan Sports School.

After conducting the experiments, statistical analysis on the data obtained. The statistical analysis used was the difference test of two paired samples and the Wilcoxon test. From this analysis, the data obtained was related to the effectiveness of blended learning based on the students' learning outcomes through the test results, and the efficiency of blended learning based on how students understand the learning material according to the time needed by students to answer the test questions. The reason for this is that the hypothesis of this study focused on increasing of the effectiveness and efficiency of learning by using blended learning in the sport schools.

Results and Findings

Difference Test of Two Paired Samples

Before conducting the test to determine differences in learning outcomes before and after the implementation of blended learning, testing on the assumptions of normality was conducted on the data being analysed. The following are the results of the normality test on the data using the Kolmogorov-Smirnov One Sample method, and the histogram as a comparison.

From the basis of the decision making, if the Asymp value Sig (2-tailed) is above 0.05, then the data distribution is stated to meet the normality assumption, and if the value is below 0.05 then it is interpreted that the data does not meet the normality assumption (abnormal data). Based on the results of the SPSS program, it was known that the value of sig. for all types of data values was less than 0.05, so it was concluded that for all the four types of data which had the same results, the data obtained did not meet the assumption of normality.
Because the data was not normally distributed, the method used was a nonparametric method. In this case, it used the Wilcoxon test to determine the effect of the score and time before and after the application of Blended Learning.

Wilcoxon Test

Interpretation of Wilcoxon Test Output (Pre – Test Score vs Post – Test Score). First Output (Tabel Ranks): (1) Negative Ranks (negative) or the difference between learning outcomes from Pre-Test and Post-Test is 0, on the value of N, Mean Rank, or Sum Rank. The value of 0 indicates that there is no decrease on the score of the test (reduction) from the Pre-Test to the Post-Test, (2) Positive Ranks or differences (positive) between learning outcomes for Pre-Test and Post-Test. In this study, there were 87 positive data (N) which means that the 87 respondents experienced an increase in test results from the Pre-Test to the Post-Test score.

The Mean Rank or average increase was 44.00, while the number of positive rankings or Sum of Ranks was 3828.00, (3) Ties are the similarity of Pre-Test and Post-Test values. In this study, the Ties value is 0, so it can be said that there is no similar score between Pre-Test and Post-Test.

Wilcoxon Hypothesis Test (Statistics Test Table). In the hypothesis test, the researchers used the second SPSS output that is the "Test Statistics" output. But, before the data of the analysis of the output results above obtained, the researchers first needed to identify the basic decision-making used in the Wilcoxon test to be used as a guide or guideline. The Basis of Decision Making in the Wilcoxon Test: (1) If the Asymp.Sig value. (2-tailed) is smaller than 0.05, there are differences in the Pre-Test and Post-Test results, (2) In reverse, if the Asymp.Sig value. (2-tailed) is greater than 0.05, there is no difference in the Pre-Test and Post-Test results.

Decision and Conclusion Making. Based on the "Test Statistics" output above, it was known that Asymp.Sig. (2-tailed) worth 0,000. Because the value of 0,000 is smaller than 0.05, it was concluded that there were differences in the results of the Pre-Test and Post-Test scores. So, it was concluded that there was an influence when using blended learning methods on learning outcomes and that there was an increase in the score of the results in the Post - Test to Pre – Test, which can be seen from the Positive Rank which shows that all respondents experienced an increase in test scores.

Interpretation of Wilcoxon Test Output (Pre-Test Time vs. Post-Test Time). First Output (Ranks Table): (1) Negative Ranks or the difference (negative) between the time of pre-test and post-test. In this study, there was 87 negative data (N) points, which means that the 87 respondents experienced a decrease in the test time from Pre-Test to Post-Test. The Mean Rank or average increase was 44.00, while the number of positive rankings or Sum of Ranks was 3828.00, (2) Positive Rank or the difference (positive) between the time of the test for the Pre-Test and Post-Test is 0, in the value of N, Mean Rank, or Sum Rank. This value of 0 indicates that there is no increase in the test run time from Pre-Test to Post-Test, (3) Ties are the similarity of time spent on pre-test and post-test. In this study, the value of Ties was 0, so it was said that there was no equal time between pre-test and post-test.

Wilcoxon Hypothesis Test (Statistics Test Table). In the hypothesis test, the researchers used the second SPSS output, the "Test Statistics" output. But, before the analysis of the output results above obtained, the researchers first needed to identify the basic decision-making used in the Wilcoxon test to be used as a guide or guideline.

The Basis of Decision Making in the Wilcoxon Test: (1) If the Asymp.Sig value. (2-tailed) is smaller than 0.05, there is a difference in the processing time between the Pre-Test and Post-

Test, (2) Conversely, if the Asymp.Sig value. (2-tailed) is greater than 0.05, there is no difference in processing time in the Pre-Test and Post-Test.

Decision and Conclusion Making. Based on the "Test Statistics" output above, it was known that Asymp.Sig. (2-tailed) was worth 0,000. Because the value of 0,000 is smaller than 0.05, it was concluded that there was a difference in the processing time on the Pre-Test and Post-Test. So, it was concluded that there was an influence of the use of blended learning methods on test execution time and that there was a decrease in processing time on the Post-Test to Pre-Test, which can be seen from the Negative Rank. This shows that all respondents experienced a decrease in test execution time.

Discussion

The data obtained showed good results. It was ensured that blended learning facilitates learning in sport schools and increases the effectiveness and efficiency of learning. It was because the facilities and systems contained in the sport schools support blended learning. In addition, the ability of teachers after given training in the development of teaching materials packaged in learning media became the foundation to conduct blended learning. It can be done by the teacher. The students' personal facilities were suitable to be used in blended learning.

It can be seen that the data on students' learning outcomes obtained through the pre-test and post-test had significant differences. Students' scores at the post-test stage were higher than at the pre-test stage. That was because the dependent variable was influenced by the application of blended learning (Sung, Chang, & Liu, 2016). Then, the time spent by students during pre-test and post-test also had a significant difference that students need less time to answer questions at the post-test stage than at the pre-test stage. Therefore, blended learning is appropriate, effective and efficient in improving students' learning outcomes.

Given these conditions, it was proven that blended learning is appropriate for sport schools. This is because, with blended learning, students are still able to do the learning even though they are not at school due to something like undergoing a training camp or being at a competition (Bullock & De Jong, 2013). Students are able to take advantage of online, offline and mobile learning when they are not at school, while those who are in school, attend face-to-face learning with the teacher.

Based on the data, there are many considerations regarding how to solve learning problems in sport schools. These problems can be solved if the strengths and weaknesses that exist in schools are identified (Story & Tait, 2019). Teacher's personal facilities can be used to maximize online and offline learning (Blei et al., 2014; Moore, Dickson-Deane, & Galyen, 2011). The data obtained stated that most of the teachers had laptops, smartphones, scanners

and some of them had computers. So, the facility can be used to develop learning resources that are packaged into media that attract students' attention. The media was also developed by looking at aspects of the effectiveness and efficiency of use (Duchi, Hazan, & Singer, 2011; Perry & Pilati, 2011).

In addition, most students had personal facilities such as smartphones. Considering this condition, the teacher can see the potential and ability of students. So, the teachers can later develop instructional materials, which may be implemented using students' smartphones (Sharples & Pea, 2014). This is very beneficial for students, if the students' personal facilities can be utilized for the learning process (Gikas & Grant, 2013).

The research results that have been reviewed are expected to have implications for schools that have the same characteristics as the Sports Schools. This research also provides a helpful overview of the positive effects of Blended Learning on Sports Schools, in which most students cannot attend school learning activities. Thus, if there are educational activists who experience the same thing in their schools, Blended Learning can be a solution for these schools.

Conclusion

Blended-learning-based learning can support learning in sport schools. This is due the presence of students who have to frequent various cities, so it is very difficult to conduct face-to-face learning. Blended-learning-based learning occurs by providing learning facilities that can be done anywhere and anytime. The suitability of blended learning used in the sport school is also proven by the good students' learning outcomes and also the speed of students in understanding and receiving learning materials. All of those are proven by the results of experiments that had been conducted.

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