The Effectiveness of SAC in Learning Physics to Improve Student Learning Outcomes in Pandemic Covid-19 at Vocational Middle School 1 Baktiya, North Aceh

Qusthalani*

*Teacher of Vocational Middle School 1 Baktiya, North Aceh Regency-Indonesia

*Corresponding email: qu.s.fs04@gmail.com

(Received: Jan 15, 2021; Accepted: Feb 8, 2021; Published: Apr 12, 2021)

ABSTRACT

This study aims to identify the effectiveness of using SAC in distance learning physics. To see its effectiveness based on the value of creativity and student learning outcomes. This study uses quasi-experimental, there were two groups that were randomly selected, then given a pretest and after the next treatment was given a postest to find out whether there was a difference between the experimental group and the control group. The participants were all class X TKJ SMKN 1 Baktiya students in the first semester, totaling 37 students. The first treatment is using power point media as a learning resource. For the second treatment using SAC media in designing Android-based learning media. Data obtained from the learning outcomes of students who are taught using instructional media are designed with an SAC of 70.55 and a standard deviation of 7.83. Meanwhile, using power point media the average student learning outcomes were 73.15 and a standard deviation was 7.49. Also obtained a sign price of 0.15 > 0.05 means that Ho is accepted. So it can be concluded that the use of SAC-based learning media is effective in increasing learning outcomes and student learning creativity during the Covid-19 pandemic.

Keywords: effectiveness, smart apps creator, student learning outcomes

INTRODUCTION

Towards 2020, education in Indonesia is faced with difficult choices. Learning must all start from home, this is an effort to break the chain of spreading the covid-19 virus, then teachers are required to always make various improvements and adjustments to their professional abilities (Aji, R. H. S., 2020). Therefore teachers must be more dynamic and creative in developing the learning process for students. Teachers are no longer the only source of information for various information and knowledge that are growing, developing, interacting with humans in this universe. Lestari (2018) states that in the future, teachers are not the only people who are smarter among their students. If the teacher does not change the mindset, understand the mechanisms and patterns of such rapid information dissemination.

In developing the creativity of students, it requires supporting terms or conditions, namely creative teachers which include creative learning (creative teaching), creative principals (creative leadership) and a creative environment (Lestari, 2018). Therefore, the development of learning creativity is very important to prepare the nation's citizens to face a
very competitive (global) life. According to Suprihatiningsih (2016), in the context of the world of schools, the development of creativity is intended as an effort to improve the quality or quality of education. However, in the field, learning creativity always faces obstacles, one of the problems faced is fostering creativity and motivating students to learn (Sambada D, 2012).

The distance learning method that is not boring is highly expected by students. Therefore teachers must always be creative and innovative to design instructional media, as well as suitable models for distance learning. The main characteristics of distance education which is marked by physical separation between teachers and students is one of the reasons for the emergence of the consequences of demands for independence in learning. According to Astuti, D. (2016) the term independent learning is a term that develops in adult education, where independent learning has emerged since the time of Socrates and even before. They stated that "the term independent learning is a term that has developed in the field of education, teaching and research in adults, where the concept is used to differentiate it from the concept of learning which is generally teacher-guided learning".

Furthermore, Knowles (in Damayanti, 2014) explains that "The term independent learning has several label terms in various literatures, including, self-planed learning, inquiry method, independent learning, self-education, self instruction, self teaching self study and autonomous learning. And there are more terms used such as teaching yourself and learn to manage”. Azriah (2018) defines independent learning "Independent learning is an active learning activity, which is driven by an intention or motive to master a competency in order to overcome a problem that is built with the knowledge or competencies already possessed. Determination as learning objectives, learning rhythm, learning tempo, learning methods of learning resources, and evaluation of learning outcomes that are done by the learners themselves.

Therefore, in independent learning during the Covid-19 pandemic, teachers must be able to design attractive learning media. Media designed to suit the children's learning character. This is an effort to prevent boredom and can increase children's learning creativity. One application that can be used is SAC. Smart Apps Creator is an application for designing Android-based learning media. The advantage of this application is that a teacher does not need to learn coding in the design of learning media later. Teachers when designing instructional media also do not need an internet network, SAC can be run offline. In addition, SAC can make students not bored with the same way of learning. This application also makes learning more interesting and teachers more creative. This application is a program to help teachers in learning during the Covid-19 pandemic.

Someone who is carrying out independent learning is more marked and determined by the motives that encourage learning, including in planning, implementing and evaluating learning outcomes. So these students can physically study alone, study groups with peers using teaching materials in the form of android-based media and guided by the teacher. However, the reality in the field is that not all students can meet the required learning demands. They have relatively low abilities, lack of motivation to learn, so that if they learn independently, they experience many difficulties, especially in understanding concepts that are considered difficult.
This statement has been supported by several studies, among others, conducted by Sugilar, H (2019) which states that "Long distance higher education students tend to have average and below average independent learning readiness". Susilawati (2015) states that "The readiness of independent learning for students from distance is still relatively low. It is proven that students who have high independent study readiness are only 25.5%, 44.7% moderate independent study readiness and 29.8% have low independent study readiness.”

The students in distance education do not have the same background. The students come from various social, cultural, economic and family characters. Therefore, developing learning media that is suitable for children's learning must be done by the teacher. In addition, students can feel restless during the study period due to a lack of face-to-face communication (Erdogan, 2009).

Problem of Research

Students tend to get bored when learning distance during the Covid-19 pandemic. The identification results also show that the teacher has not been creative in developing learning media in accordance with the children's learning character. Some other problems are the economic constraints of students when they have to use paid education portals and have to study online all the time. One of the ways to overcome these problems is to develop learning media that is suitable for the child's condition, namely by using the Smart Apps Creator (SAC) application.

Research Focus

This study focuses on the effectiveness of using SAC in distance learning physics. To see its effectiveness based on the value of student learning outcomes.

METHODOLOGY OF RESEARCH

General Background of Research

This research was conducted at Vocational Middle School 1 Baktiya, for six months from July to December 2020. This type of research is quasi-experimental using the Control Group Design design. In this design, there were two groups that were randomly selected, then given a pretest and after the next treatment was given a posttest to find out whether there was a difference between the experimental group and the control group.

Subject of Research

The participants were all class X TKJ SMKN 1 Baktiya students in semester 1, totaling 37 students. The first treatment is using power point media as a learning resource. For the second treatment using SAC media in designing Android-based learning media.
Instrument and Procedures

The techniques used to collect data in this study are as follows:

1. Observation

Observation is a way of collecting information (data) which is carried out by systematically observing and recording the phenomena that are being the target of observation. Observations made by researchers in this study are observations of student and teacher activities in the teaching and learning process.

2. Test

A test is a tool or procedure that is used for measurement and assessment.

   a. Homogeneity Test

   Homogeneity test was given before the research was carried out. This test was conducted to see the similarity of basic abilities between the two classes, and the questions given were 25 multiple choice questions on the prerequisite material, namely motion material.

   b. Hypothesis testing

      1) Pre test is the provision of learning outcomes tests at the time before the newton law material meeting. The result of the pre test is used as the pre test value.

      Post test is a test of learning outcomes after the research is completed to obtain student learning outcomes after implementing the SAC application to design instructional media. The results of the post test are used as the post test scores. The questions given are the same questions at the time of the pre test.

Data Analysis

Data analysis used statistical analysis, especially using SPSS programming. In addition, hypothesis testing is an indicator of research success.

RESULTS AND DISCUSSION

In the discussion of the results of this study, efforts will be made to interpret the research findings obtained at SMKN 1 Baktiya, Aceh Utara District, Aceh Province. This is based on the perception that the main objective of quantitative research is to obtain meaning for existing research results. Before carrying out the t-test, a normality and homogeneity analysis was carried out first.

Normality Test Results

| Normal Parameters | Pretest_kel_SAC | Pretest_kel_PPT |
|-------------------|----------------|-----------------|
| N                 | 18             | 19              |
| Mean              | 30.0000        | 28.4211         |
| Std.              | 9.07485        | 8.82746         |
| Deviation         | .265           | .150            |
| Most Extreme Absolute Differences | .265 | .095 |
From table 1 above, it can be seen that the pretest scores for the SAC class and the pretest for the Power point class are 0.160 and 0.787, the pretest value for the pretest is > 0.05, meaning that the pretest scores for the two experimental classes are normally distributed.

**Table 2.** The results of the posttest normality test were carried out by the Kolmogorov-Smirnov test.

|              | Pretest_kel_SAC | Pretest_kel_PPT |
|--------------|-----------------|-----------------|
| N            | 18              | 19              |
| Normal Parameters |          |                  |
| Mean         | 70.5556         | 73.1579         |
| Std.         | 7.83823         | 7.49269         |
| Deviation    | .195            | .192            |
| Most Extreme Differences | .195 | .192 |
| Positive     | -.138           | -.179           |
| Negative     | .827            | .839            |
| Kolmogorov-Smirnov Z | .501 | .483 |
| Asymp. Sig. (2-tailed) |        |                  |

From table 2 above, it can be seen that the posttest scores of the SAC class and the posttest scores of the PPT class are 0.501 and 0.483, the posttest sig values are > 0.05, meaning that the posttest scores of the two experimental classes are normally distributed.

**Homogeneity Test Results**

**Table 3.** Homogeneity test results with the levene's test

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| .006             | 1   | 35  | .938 |

From table 3 above, in the homogeneous test with the Levene's test the sign price. 0.938 > 0.05, in the sense that the two experimental classes, namely the design of learning media using SAC and the experimental class with the design of learning media using power points are homogeneous or the same. The ability of the experimental class using learning media design using SAC is the same as the ability of the experimental class learning media design using power points.

**Hypothesis Test Results**

H_{a} : There is a significant difference between instructional media and student learning outcomes.
Ho : There is no significant difference between instructional media and learning outcomes students.

The results of hypothesis testing on differences in learning media on student learning outcomes were analyzed using the T test.

### Table 4. The average student learning outcomes of both experimental classes used the t-test

| Media Pembelajaran | N   | Mean   | Std. Deviation | Std. Error Mean |
|-------------------|-----|--------|----------------|-----------------|
| Hasil Belajar     |     |        |                |                 |
| PPT               | 18  | 70.556 | 7.83823        | 1.84749         |
| SAC               | 19  | 73.157 | 7.49269        | 1.71894         |

From the table above, it can be seen that the average learning outcomes of students taught using learning media designed with SAC are 70.55 and a standard deviation is 7.83, while using power point media the average student learning outcomes are 73.15 and a standard deviation is 7.49. This means that descriptively the learning outcomes of students taught by using the design of the SAC (smart apps creator) application are higher than the learning outcomes of students taught using media designed with Microsoft Power Point (PPT).

Judging from the average student learning outcomes that the learning media designed with SAC is superior to learning media designed with PPT, but the difference is not that big. Of the two experimental classes, namely the experimental class 1 using the SAC application and the experimental class 2 using PPT media

### Table 5. The effectiveness of student learning outcomes in both experimental classes using the t-test

| t-test for Equality of Means | t   | Df  | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference |
|------------------------------|-----|-----|-----------------|-----------------|-----------------------|------------------------------------------|
| Hasil Belajar                |     |     |                 |                 |                       |                                          |
| Equal variances assumed      | -1.033 | 35  | .309            | -2.60234        | 2.52033               | -7.71887 2.51419                         |
| Equal variances not assumed  | -1.033 | 34.649 | .310          | -2.60234        | 2.52348               | -7.72714 2.52246                         |

From the table above in the equal variance assumed sign price (2 tailed) = 0.309 / 2 = 0.15. Sign price 0.15> 0.05 means that Ho is accepted. Thus it can be concluded that there is no significant difference from the instructional media designed by SAC on student learning
outcomes. In the sense that students who are taught using learning media designed with SAC and students who are taught with media designed with PPT, there is no significant difference to student learning outcomes. This indicates that these two learning media can improve student learning outcomes.

From the research results that have been described above, in the normality test of the two experimental classes, namely the SAC media class and the PPT media class, they are normally distributed, it can be seen from the significance value obtained above 0.05. In the homogeneity test of the two experimental classes, it is homogeneous, in the sense that the two experimental classes have the same or homogeneous intellectual abilities, this can be seen from the significance value of the two experimental classes above 0.05. The average learning outcomes of students taught using SAC media were higher than the average learning outcomes of students taught using PPT media. The difference in the average learning outcomes of the two experimental classes was not that large, namely 70.55 and 73.15.

Of the two applied learning media, SAC media and PPT media are effective learning media in increasing student motivation and learning outcomes during the pandemic, namely distance learning. This is in accordance with Arsyad (2017) that besides being able to arouse student motivation and interest in learning, learning media can also help students improve understanding, present data in an attractive and reliable manner, facilitate data interpretation and condense information. Setiawardhani, R. T. (2013) states that distance learning should make it easier for students to interact with lecturers / teachers / instructors as well as among students. Besides that, it also makes it easier for students to learn various things regarding lessons.

Thus the use of innovative learning media at the teaching orientation stage will greatly assist the effectiveness of the distance learning process in delivering messages and lesson content at that time. The effectiveness of using SAC media in designing instructional media can be seen from the enthusiasm of students in playing learning materials in their hands. All students in both the experimental class using SAC media and the experimental class using PPT media are very serious in studying Newton's law material independently at home. All students in the SAC class are very active and eager to find the right answers to solve Newton's legal problems. In this class, it is also seen that all students work together in finding answers to be able to fill in the questions correctly and correctly.

By using SAC media, students are engrossed in playing alone. They feel happy and joyful because the learning process is done by playing. The two media are equally effective in the learning process, this can be seen clearly from the significance value obtained above 0.05, which means that there is no difference between the two media on student learning outcomes.

Student learning outcomes increase because students are very happy and motivated to follow the distance learning process on Newton's law material by learning while playing. The distance learning habit provides only practice questions. By playing using their respective devices, all students were very enthusiastic about the materials and answer cards available on SAC-based media. This is in accordance with Rahmawati (2012), namely the application of game media can be used as an alternative to increase student motivation. Because the game
media can make the atmosphere in learning fun, lively, happy, and relaxed but still in a conducive learning atmosphere.

CONCLUSIONS

From the results of the research that has been done, it can be concluded that the average learning outcomes of students taught using Smart Apps Creator (SAC) based media are higher than the average learning outcomes of students taught using Microsoft Power Point (PPT) based media. The use of SAC-based learning media was effective in increasing student learning outcomes and learning creativity during the Covid-19 pandemic. This can be seen from the enthusiasm and enthusiasm of students looking for answers in solving various physics problems, especially Newton's law material.

References

Aji, R. H. S. (2020). Dampak COVID-19 pada pendidikan di indonesia: Sekolah, keterampilan, dan proses pembelajaran. Salam: Jurnal Sosial dan Budaya Syar-i.(7), 5, 395-402.

Arsyad, A. (2017). Media Pembelajaran. Jakarta: PT Raja Grafindo Persada.

Astuti, D. (2016). Meningkatkan Kemampuan Pemecahan Masalah Matematis Melalui Model Pembelajaran Student Teams Achievement Development (STAD). AlphaMath: Journal of Mathematics Education, 2(1).

Azriah, A. (2018). Peranan Media Pembelajaran Berbasis Multimedia Interaktif Berbantuan Macromedia Flash Sebagai Sumber Belajar Mandiri Untuk Meningkatkan Daya Ingat Dan Minat Belajar Peserta Didik Pada Materi Jarak Dalam Ruang Untuk Sma Kelas XII. Jurnal Pendidikan Tambusai, 2(2), 865-869.

Erdogan, T., Akkaya, R., & Celebi Akkaya, S. (2009). The Effect of the Van Hiele Model Based Instruction on the Creative Thinking Levels of 6th Grade Primary School Students. Educational sciences: theory and practice, 9(1), 181-194.

Lestari, S. (2018). Peran teknologi dalam pendidikan di era globalisasi. EDURELIGIA: Jurnal Pendidikan Agama Islam, 2(2), 94-100.

Rahmawati, I. (2012). Media Permainan Meningkatkan Motivasi Belajar Siswa. Diakses tanggal, 19.

Setiawardhani, R. T. (2013). Pembelajaran Elektronik (E-Learning) Dan Internet Dalam Rangka Mengoptimalkan Kreativitas Belajar Siswa. Edunomic Jurnal Pendidikan Ekonomi, 1(2).

Sambada, D. (2012). Peranan kreativitas siswa terhadap kemampuan memecahkan masalah fisika dalam pembelajaran kontekstual. Jurnal Penelitian Fisika dan Aplikasinya (JPFA), 2(2), 37-47.
Sugilar, H. (2013). Meningkatkan kemampuan berpikir kreatif dan disposisi matematik siswa madrasah tsanawiyah melalui pembelajaran generatif. *Infinity Journal, 2*(2), 156-168.

Suprihatiningsih. (2016). *Perspektif Manajemen Pembelajaran Program Keterampilan*. Yogyakarta: Deepublish.

Susilawati, S., Ristanto, S., & Khoiri, N. (2015). Pembelajaran Real Laboratory Dan Tugas Mandiri Fisika Pada Siswa Smk Sesuai Dengan Keterampilan Abad 21. *Jurnal Pendidikan Fisika Indonesia, 11*(1), 73-83.