The different google classroom and edulogy platform e-learning on HOTS problem for elementary students in the corona pandemic period

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Abstract. This research was motivated by the variation of e-learning in 21st-century education used in elementary schools during the corona pandemic. The study aimed to determine the differences in the effectiveness of e-learning variations based on Google Classroom and Edulogy in elementary school students about Higher Order Thinking Skills (HOTS) in the corona pandemic. This type of research was quantitative, with quasi-experiment the Posttest-Only Control-Group design. The subjects in this study were 38 students of grade V elementary school in the even semester of the academic year 2019/2020. Data was collected using interviews and test instruments in the form of problem descriptions to test the ability to do HOTS questions. The results showed that the value of Sig. (2-tailed) = 0.011 was smaller than $\alpha = 0.05$ which indicates that $H_0$ is rejected and $H_a$ is accepted. It was implied that there were differences in posttest results between e-learning based on Google Classroom and e-learning based on Edulogy that affect the effectiveness of e variations -learning. The features of Google Classroom such as assignment, grading, communication, time-cost, archive course, privacy, and mobile application facilitate the learning process of blended learning methods.

1. Introduction
Countries that are in the process of growing and developing need quality, productive, innovative and skilled Human Resources (HR) in all sectors [1]. In this regard, the progress of a nation and country depends on the quality of human resources which in the aspect of education means students who will become the next generation [2]. Students who play the next generation become a milestone in the progress of a nation, so that quality education will be able to produce students who are also qualified [3]. For the sake of realizing it, an educator must have the ability to be able to see the future, because an educator has a significant contribution in preparing students who have competitiveness so that they can follow technological advancements in 21st-century education for the future citizens of the nation. In line with the goal of national education, which is to develop students to become human beings who believe and fear God Almighty, noble, healthy, knowledgeable, capable, creative, independent and become citizens of a democratic and responsible [4].
It is undeniable in the era of Education for the 21st Century, the conventional learning process method that usually takes place in the classroom into a learning method that integrates technology development. It is because, the development of technology that has affected all aspects of human life is no exception to the educational element [5], so the existence of technology is expected to facilitate students and educators in teaching and learning activities [6]. In connection with efforts to face current global challenges, the implementation of the 2013 Curriculum in the national education system in Indonesia has changed in the direction of learning, one of which focuses on developing higher-order thinking skills (HOTS) for students [7]. The development of this ability is mainly in high-class students, so students can practice and learn consistently to achieve a higher-order in the process of thinking ability [8]. The approach that can be taken to develop students’ HOTS abilities is that educators can implement various strategies such as questioning techniques, problem-solving, project-based learning, simulations, discussions, and role-playing by increasing the difficulty of the tasks given gradually [9]. Thus, in the learning process students are expected to be able to achieve the objectives of the assessment by the indicators and emphasize the ability of HOTS in students in 21st-century education [10]. HOTS indicators compiled based on operational verbs (KKO) in Bloom’s taxonomy as a result of Anderson’s revision known as Taxonomy of Learning, analyzing are in C4 phase, evaluating are in C5 phase, and creating are in phase C6.

E-learning is the right solution due to a change in the paradigm of the world of education because e-learning is the result of the implementation of technological developments that are integrated into the field of education [11]. The existence of technological developments in the learning process in the modern era also plays an essential role in the process of optimizing HOTS abilities in students, for example, the use of e-learning as a system in the field of education, one of which uses web-based technology development [12], due to the use of e-learning web-based can improve student learning outcomes indirectly [13]. A positive and significant influence of e-learning on the quality of education can be obtained if the technology integrated into the learning process is used intensively [14]. Related to the positive impact given, there are a variety of applications and content that can be used to support the distance learning process such as Home Learning, Smart Classes, Your School, Zenius, Quipper, Quizizz, Fun Roaming, Kipin School, and Google Classroom [15]. So, in the e-learning based learning process, it is necessary to have a design prepared by educators so that the learning objectives can be achieved optimally.

The challenge posed by the variety of applications and content that supports the implementation of e-learning is the ability of a professional educator who should be able to plan and prepare learning activities using the blended learning method. It relates to educators who play a responsible role in the ongoing learning process, to improve the quality of education to prepare students to be able to face the demands of 21st-century education [16]. Educators are professionals who are tasked with planning and implementing the learning process, assessing learning outcomes, coaching and training as well as conducting research and community service [4]. Thus, educators who are not trained to use and lack understanding of how to operate technology can cause learning difficulties for students. The success and effectiveness of variations in e-learning require educators who can understand student learning styles, and they can design, can provide unique material, and can monitor students so that students’ knowledge and skills can continue to develop [17].

Understanding the use of technology that is integrated into the field of education can affect the perspective of the sustainability of a learning process. In connection with the follow-up of the appeal related to the coronavirus pandemic issued by WHO, Indonesian President Joko Widodo issued some policies supported by the Indonesian Ministry of Education and Culture through press release number 083/Sipres/A6/IV/2020 on Thursday, April 9, 2020, namely so that people can work from home, learn from home, and worship at home to reduce or even stop the risk of spreading the virus. The existence of this policy finally affects the sectors in the life of Indonesian society, one of which is the education sector. The learning process that is usually carried out in schools is encouraged to be transferred at the home of each educator and student through distance learning (e-learning). Thus, implementing technological developments to support the distance learning process is deemed appropriate when done
during the coronavirus pandemic as it is now. Based on the description that has been presented above, so in this study will examine the effectiveness of variations of e-learning based on Google Classroom and e-learning based on Edulogy in fifth-grade elementary school students on HOTS questions during the corona pandemic.

2. Methods
This type of research used by researchers was quantitative research quasi-experimental design with the design of The Posttest-Only Control-Group. It was a type of research that does not allow researchers to control and manipulate all relevant variables in full as in pure experiments [18]. This study involved two sample groups, one group as a control group and one group as an experimental group.

In this study, the dependent variable was the ability of HOTS (Y) and the independent variable was the use of variations of e-learning (X). Variables in the use of e-learning variations were classified in the form of Edulogy (X1) and Google Classroom (X2). Students who act as samples were grouped into two groups. The population selected in this study were all students of class V of an elementary school in the even semester of the 2019/2020 school year who had implemented the 2013 curriculum and used e-learning during the corona pandemic. The subjects in this study amounted to 38 students in grade V Elementary School in the even semester of the academic year 2019/2020. The reason for choosing the subject was to get as much information as possible from various sources. Thus, the data obtained can be used to formulate differences in the effectiveness of Edulogy and Google Classroom-based e-learning variations which were often used as distance learning media in facilitating students according to HOTS indicators during the corona pandemic.

Thus, the specific criteria of the subjects in this study were students of class V of Elementary School in the even semester of the 2019/2020 school year who had implemented the 2013 Curriculum and had received material on Theme 8 (Our Friends’ Environment) Subtheme 1 (Humans and Environment) which also have started to accustom themselves according to improving HOTS ability, this is intended to make both groups of subjects have the same conditions. Data collection techniques used by researchers in this study are the interview method and test instruments. Through interviews, researchers can dig up information from informants related to the data needed in the study [19]. Instrument test is one type of instrument that can be used by educators to determine the ability of students to absorb the subject matter provided [20]. In this study, a test in the form of a description test that was previously validated by the judges’ Theme 8 (Environment Our Friends) Subtheme 1 (Humans and the Environment). Researchers also set guidelines in determining the score of answers to HOTS questions given to students. The scoring of responses can be categorized into several HOTS Traffic levels according to the adaptation by Lewy [8], presented in table 1 as follows.

| Scoring | HOTS Level |
|---------|------------|
| 100-76  | Excellent  |
| 75-51   | Good       |
| 50-26   | Intermediate|
| 25-1    | Low        |

Based on the HOTS level category in table 1 above, an assessment of scores obtained by students in the range of 76 to 100 is included in the excellent category, a variety of 51 to 75 is included in the good category, ranges from 26 to 50 are included in the intermediate group, and for range 1 up to 25 falls into the low group. Analysis of technical data used in this study is comparative data analysis. Comparative data analysis is used to analyze data in a definitive study, testing a comparative hypothesis means testing the parameters of participation that make up the difference. Related, the results of data analysis based on the results of the HOTS posttest can be used to find differences related to variations in e-learning that occur in the field. In testing this data, the SPSS 20.0 software
for Windows, the normality test use the Kolmogorov-Smirnov test, the homogeneity test uses the Levene Statistical test, and the hypothesis test uses the t-test Independent Sample.

3. Result and Discussion

Normality test used aims to determine whether the data sample in the study came from a normal distribution population or not. In this regard, if the test results obtained are normally distributed data, the results of statistical calculations can be generalized to the population. The normality test conducted on the two groups in the study was carried out with the Kolmogorov-Smirnov and Shapiro-Wilk tests using the SPSS 20.0 for Windows software program. The use of the Kolmogorov-Smirnov normality test is done to get less than or equal to 30, while the normality test with Shapiro-Wilk is done for more than 30 data. Based on the many data obtained in the research, 38 data, the researcher can conduct a normality test using Kolmogorov-Smirnov or Shapiro-Wilk.

Test the normality which is done by Kolmogorov-Smirnov test based on the hypothesis formulation as follows:

H$_0$: Data come from populations that are normally distributed
H$_a$: Data doesn’t come from populations that are normally distributed

The basis of decision making in the normality test takes a significance level of $\alpha = 5\%$, with the criteria for decision making if the significance (Sig.) $\geq 0.05$ then H0 is accepted and if the significance (Sig.) $<0.05$ then H0 is rejected. After processing the data, the output display can be seen in Table 2 below.

| Class         | Kolmogorov-Smirnov$^a$ | Sig. |
|---------------|------------------------|------|
| Edulogy       | 0.200                  |      |
| Google Classroom | 0.200                |      |

a. Lilliefors Significance Correction

Based on the test results presented in table 2, the Sig. = 0.200 is greater than $\alpha = 0.05$ then H$_0$ is accepted and H$_a$ is rejected, so it can be concluded that the sample data in this study come from populations that are normally distributed.

Homogeneity test used aims to determine whether the two groups in the study have the same variance or not. If both groups in the study have equal variance, the group is said to be homogeneous. Homogeneity testing is done by using Levene Statistics using the SPSS 20.0 for Windows software program. The hypothesis formulation for the F-test or Levene’s test is as follows:

H$_0$: there was no difference in variance between the two sample groups
H$_a$: there was a difference in variance between the two sample groups

The basis of decision making in the homogeneity test takes a significance level of $\alpha = 5\%$, with the criteria for decision making if the significance (Sig.) $\geq 0.05$ then H$_0$ is accepted and if the significance (Sig.) $<0.05$ then H$_0$ is rejected. Based on the test results, the Sig. (based on mean) = 0.108 is greater than $\alpha = 0.05$ then H$_0$ is accepted and H$_a$ is rejected, so it can be concluded that both groups that include Google Classroom-based e-learning groups and Edulogy-based e-learning groups in this study have no different variances.

The T-Test (Independent Sample T-Test) conducted with the assumption that the data come from a normally distributed population. Testing the assumptions of the data is done by t-test (Independent Sample T-Test) using the SPSS 20.0 for Windows software program. The formulation of the null hypothesis and the rival hypothesis is used to determine the difference in the average posttest score in the experimental and control groups, namely:

H$_0$: $\mu_1 = \mu_2$, the effectiveness of e-learning in the experimental group students and the control group on the final test did not differ significantly.
The results obtained in this study have similarities with research conducted by [21] related to the effective use of Google Classroom e-learning as a learning medium which shows the results that there is an increase in student learning outcomes as evidenced by the level of effectiveness tendencies of 77.27%. Supporting factors in the use of Google Classroom as a learning media are the availability of human resources that can improve e-learning learning, the availability of facilities in the form of internet networks, the availability of software facilities that can be used to develop media, as well as the need for the use of Google Classroom-based media in learning activities in class. However, the inhibiting factor in the use of this media is that there are other learning facilities in the classroom resulting in a lack of motivation in the development of Google Classroom-based media.

Implications of the use of e-learning based on Google Classroom that can be used as a tool to collect tasks that have been done by students, organize classrooms, and accommodate interactions with students [11], so educators need to explore other features in Google Classroom that has not been implemented in the learning process. Also, being able to facilitate the improvement of HOTS ability in students, due to implementing the use of Google Classroom in the world of education in Indonesia can improve the quality of educators and students [22], related to increasing technological literacy by the use of new methods in the world of education such as the blended learning method [23] in the learning process.

In connection with the results of research which states that e-learning based on Edulogy is less effective and less able to facilitate elementary school students on HOTS ability is not a bad thing. In line with research conducted by [24] on the impact of the use of e-learning in education which shows the result that an important thing that must be considered by educators is that not all e-learning applications can produce better outputs. It is because of the need for reciprocity from students regarding the implementation of e-learning so that evaluation activities can be done to correct deficiencies that arise during e-learning.

4. Conclusion

Based on the results of research and discussion that has been described, there are significant differences between e-learning based on Google Classroom and Edulogy used in the field in facilitating elementary school fifth-grade students to HOTS abilities during the corona pandemic. It can be seen based on the results of the t-test which proves that the results of the posttest working on HOTS questions by groups of students who previously implemented the use of e-learning based on Google Classroom are better than those of previous students applying the use of e-learning based on Edulogy. Thus, e-learning based on Google Classroom is more effective and more able to facilitate
students towards HOTS abilities. So, the results obtained in this study can be generalized that the use of Google Classroom helps the implementation of classrooms virtually. Google Classroom is appropriate to be used to facilitate educators in carrying out activities in the learning process with the blended learning method. It is because, in Google Classroom, there are features such as assignment, grading, communication, time-cost, archive course, privacy, and mobile application.

Through the variation of e-learning that is used in the learning process, it is expected to be able to increase motivation for students to be able to learn independently, creatively, and critically think according to educational challenges that require students to have HOTS abilities in the 21st-century education era. Learning that influences the appearance of the material becomes more exciting and the availability of various features is expected to be able to help create inspiring, interactive, and quality learning that attracts attention increases motivation and makes it easier for students to understand the subject matter provided even if they are not facing to face with an educator. Therefore, e-learning is appropriate when applied in the learning process during the corona pandemic as it is now.

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