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The Relationship between the Use of the Kahoot Application and Mathematics Learning Outcomes in the Online Learning Process for Elementary School Students

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Abstrak

Penelitian ini bertujuan untuk meningkatkan hasil belajar matematika di sekolah dasar melalui penggunaan aplikasi Kahoot dalam proses pembelajaran online. Jenis penelitian ini adalah penelitian kuantitatif-korelasi. Subjek penelitian adalah 32 siswa kelas III SDN Tengah 03 Pagi. Penelitian ini memiliki dua variabel yaitu penggunaan aplikasi Kahoot (X) dan hasil belajar matematika (Y). Selanjutnya, peneliti yang digunakan adalah one-group posttest-only design. Hasil penelitian mengenai proses pembelajaran online menggunakan aplikasi Kahoot menunjukkan adanya peningkatan hasil belajar matematika siswa. Oleh karena itu, dapat disimpulkan bahwa pembelajaran matematika dan penggunaan aplikasi Kahoot dalam proses pembelajaran online saling berhubungan. Dengan kata lain, penggunaan aplikasi Kahoot memiliki hubungan dengan hasil belajar matematika siswa sekolah dasar dalam proses pembelajaran online. Hal ini dibuktikan dengan hasil analisis yang menunjukkan koefisien korelasi sebesar 0,375, sedangkan r_tabel dengan tingkat signifikansi 5% adalah 0,361. Artinya r_hitung > r_tabel (0,375 > 0,361) dengan p-value yang diperoleh 0,021 (< 0,05).
Keywords: *Character, Elementary School, Early Childhood.*

Abstrack

This study aims to improve mathematics learning outcomes in elementary schools through the use of the Kahoot application in the online learning process. The type of this study was quantitative-correlation research. The research subjects were 32 grade III students at SDN Tengah 03 Pagi. This study had two variables: the use of Kahoot application (X) and mathematics learning outcomes (Y). Furthermore, the researchers employed is one-group posttest-only design. Results of this study concerning the online learning process using the Kahoot application indicated an increase in students' mathematics learning outcomes. Therefore, it can be concluded that learning mathematics and the use of the Kahoot application in the online learning process correlate with each other. In other words, the use of the Kahoot application has a relationship with the mathematics learning outcomes of elementary school students in the online learning process. It is evidenced by the results of the analysis showing a correlation coefficient of 0.375, while r_{table} with a level of significance of 5% was 0.361. This means that r_{count} was > r_{table} (0.375 > 0.361) with the obtained *p*-value of 0.021 (< 0.05).
Keywords*: Kahoot, Learning Outcomes, Mathematics, Online Learning, Elementary School.*

INTRODUCTION

The COVID-19 pandemic has had many impacts on education. One of those impacts is to make the online learning process mandatory (Cucinotta & Vanelli, 2020). Therefore, there is a need for solutions to overcome the impacts caused by the COVID-19 pandemic in education, especially in mathematics. On the other hand, mathematics is still a challenge for teachers in the offline learning process. Therefore, when online learning takes place, it becomes the biggest challenge for teachers for gaining desired mathematics learning outcomes (Haryati, Sukarno, & Purwanto, 2021).

One of the problems experienced by teachers in teaching mathematics online to elementary school students is that students feel bored and less interested during the learning process. Thus, students cannot fully understand the lessons given in the online learning process (Donnelly & Patrinos, 2021). When students hear the word "mathematics", what comes to their mind is a scary and difficult subject. These thoughts affect

their interest and learning outcomes in mathematics because they feel the lessons given are difficult to understand.

Mathematics is very important because it may be used as a measure of student success academically. For this reason, an understanding of mathematics needs to be instilled in elementary school students. Its objective is that students can develop the skills of counting, measuring, deriving, and applying mathematical formulas (Hernaeny, Marliani, & Marlina, 2021; Purwaningtyas, Sary, & Artharina, 2020; Schaeffer et al., 2021). The mathematical lessons that are indispensable in everyday life include measurement, geometry, algebra, and trigonometry. In addition, mathematics can develop the ability to communicate ideas with language through mathematical models that can be in the form of mathematical equations, diagrams, graphs, or tables (Rahmah, 2018). In learning mathematics, students need to be accustomed to providing arguments for each answer and responding to answers given by others so that what is learned becomes more meaningful for them.

For this reason, teachers need to use technology to maximize students' understanding of mathematics lessons (Ghani, Fatayan, Azhar, & Ayu, 2022). Based on the current Indonesian educational curriculum, the learning process must use technology so that students can give feedback in the learning process. It is more felt, especially during the COVID-19 pandemic, in which online learning technology is an important part of the learning process. The use of technology in the process makes students more enthusiastic about learning mathematics (Abdillah, Mastuti, Rijal, & Sehuwaky, 2022).

One of the technologies that can be used in learning and evaluating students' understanding of mathematics lessons is the Kahoot application. By using this application, teachers have attempted innovation in online learning. A study conducted by Kuhfeld *et al*. (2020) revealed that teachers can increase grade III elementary school student interest in the mathematics learning process by using the Kahoot application. The reason is that the Kahoot application is an online application that contains questions packed with games. Thus, students do not feel like they are taking a test or exam. Instead, they feel they are playing an online game (Sibel, 2018).

Kahoot is a platform resulting from a joint project collaboration between the Norwegian University of Technology and Science with Johan Brand and Jamie Brooker as initiators. Kahoot has two website addresses: https://kahoot.com/ for teachers and https://kahoot.it/ for students. This platform can be accessed by the public and all the features in it can be used for free (Licorish, Owen, Daniel, & George, 2018). The advantage of this platform is that it prioritizes the process of evaluating the learning process through games in groups even though these games can be played individually and the students must be connected to the internet (Wang & Tahir, 2020). Furthermore, the learning evaluation process can collaborate with learning resources that are already widely available on the internet (Irwan, Luthfi, & Waldi, 2019).

The utilization of the Kahoot application can influence mathematics learning outcomes in online learning in elementary schools. The materials provided with the Kahoot application are not only in the form of written text but can be equipped with pictures and videos, making learning and evaluation using the Kahoot application enjoyable for elementary school students (Siwalette & Suyoto, 2021). Subjects, that were initially difficult, became easier and more interesting for students. In other words, this application may make students love mathematics. Then, from these feelings, students' mathematics learning outcomes can be influenced, in this case, an increase in mathematics learning outcomes. Moreover, mathematics questions given to elementary school students can be HOTS questions. It is to make students able to think critically in solving a problem related to mathematics (Purwati, Sumardi, Minsih, & ..., 2022).

METHODS

The type of this study was quantitative research. Samples were 32 grade III students. In addition, this study was conducted at SDN Tengah 03 Pagi. Furthermore, the method employed was correlational research, aiming at examining the proposed hypotheses. In correlational research, statistical techniques are used to find the relationship or correlation between two or more variables, each called the independent variable (X) and the dependent variable (Y). In this study, the independent variable was the use of Kahoot application, while the dependent variable was the mathematics learning outcomes. This study was conducted in the form of a correlation test analysis. In this study, the researchers applied a one-group posttest-only design. In this design, there is no control group. Furthermore, treatment (X) is given to one group of subjects only (Shekhar, Prince,

Finelli, Matt, & Waters, 2019). Observations were made on subjects to assess the effect of the treatment given. At the end of the program, subjects were given tests and questionnaires related to the treatment.

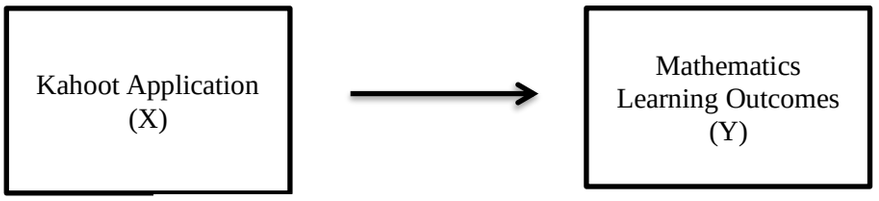

Figure 1. The Design of Correlation Research

Sampling is a technique to determine the samples to be used in a study. To determine the samples in a study, many sampling techniques can be used (Gradini, 2022). In this study, the researchers employed the saturated sampling technique in which all members of the population became research subjects. Furthermore, the type of instrument used to determine student success in the learning process was a test. In Webster, a test is a series of questions to measure the knowledge or skills possessed by individuals (Damayanti & Dewi, 2021).

The independent variable in this study was the Kahoot application, which is a collaborative platform from the University of Technology and Sciences with Johan Brand and Jamie Brooker as the initiators. The specialty of this platform is that it prioritizes the process of evaluating the learning process through group games even though it can be played individually and must be connected to the internet. Another advantage is that learning activities take place through internet-based technology (online). Principally, this Kahoot application is made to make students not limited by time and space (flexible) in accessing learning materials (Ardiansyah, 2020).

RESULTS AND DISCUSSION

In this study, the researchers employed a correlational research method to find out the relationship between the independent variable and the dependent variable. Results indicated that the percentage of student responses to the use of the Kahoot application was 70.9, classified in the good category. Meanwhile, the percentage of the results of the mathematics test to determine learning outcomes was 67.56, also classified in the good category.

Furthermore, the results of the correlation test between the independent and dependent variables showed a significant relationship. The correlation coefficient value of the use of Kahoot application on mathematics learning outcomes was 0.375 with a *p*-value of 0.021 (< 0.05). Thus, the correlation coefficient between the variables X and Y was significant. The degree of relationship between the use of Kahoot application and mathematics learning outcomes was in the low classification after being correlated with the critical table of $r_{Product\ Moment}$. The t-test significance table showed that the coefficient of variable X was 2.138 with a *p*-value of 0.041/2 = 0.0205 (< 0.05) (to the right side), indicating that H_0 is rejected, meaning that the use of the Kahoot application is correlated with the student mathematics learning outcomes. Likewise, in the simultaneous significance test from the Model Summary table, we may see the first line of the correlation coefficient (r_{xy}) is 0.375 with the $f_{count}(f_{change})$ of 4.570 and *p*-value of 0.041 (< 0.05). This means that H_0 is rejected. Thus, the correlation between X and Y is significant.

Meanwhile, the coefficient of determination as shown by R_{Square} was 0.140 x 100% = 14%. It can be interpreted that 14% of the variation in mathematics learning outcomes (Y) can be explained by the use of the Kahoot Application (X). Therefore, it can be concluded that the relationship between the use of the Kahoot application and mathematics learning outcomes is 14%. The Kahoot application correlates with mathematics learning outcomes because students enjoy the learning process with questions on the Kahoot application. In this application, students compete to get the highest score and satisfactory results.

Furthermore, students become consistent and serious to work on the questions to get good scores and do not run out of time to answer. They can also see the results of their classmates so that those with low scores will try harder to beat their friends who have high scores. One of the advantages of this application is to make students more motivated to improve their mathematics learning outcomes.

CONCLUSION

Based on the results of this study aforementioned, it can be concluded as follows.

1. The use of the Kahoot application correlates with elementary school students' mathematics learning outcomes. This is evidenced by the results of the analysis that has been carried out, resulting in a correlation coefficient of 0.375 and r_{table} with the level of significance of 5% obtaining 0.361. Furthermore, the results of the correlation test indicate $r_{count} > r_{table}$ (0.375 > 0.361) with a *p*-value of 0.021 (< 0.05). Thus, the correlation between the variables X and Y is significant. Therefore, in this test, it can be concluded that there is a positive and significant correlation between the use of the Kahoot application and the mathematics learning outcomes of elementary school students.
2. There is a positive and significant relationship between the use of the Kahoot application and the mathematics learning outcomes of grade III students at SDN Tengah 03 Pagi. This is evidenced by the value of $f_{count}(f_{change})$ of 4.570 and the obtained *p-value* of 0.041 (< 0.05). Furthermore, the significant value of the simultaneous test (F-test) is 0.041, showing that the obtained value of significance is smaller than the probability of 0.05.

Therefore, H_0 is rejected and H_a is accepted. It can be concluded that there is a positive and significant relationship between the use of the Kahoot application and the mathematics learning outcomes of elementary school students. Based on this conclusion, the use of the Kahoot application can provide useful changes and may grow student learning outcomes. Furthermore, online learning with questions provided in the Kahoot application can improve student learning outcomes and may help reduce the boredom felt by students during the online learning process. This innovation in using the Kahoot application can present an effective learning process in answering questions for students, thereby increasing student learning outcomes in online learning.

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