The Effect of 21st Century Learning on Increasing Mathematics Learning Outcomes in High and Low Emotional Intelligence Students

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Abstract— The end of the 20th century was marked by a shift in the development paradigm from economic development to the paradigm of human resource development. Also, student learning outcomes can be seen through emotional intelligence. Students who can control their emotions will easily accept the knowledge conveyed by the teacher in the learning process. The purpose of this study was to determine the effect of 21st-century learning on improved learning outcomes in terms of emotional intelligence of students in high and low emotional intelligence. This research uses descriptive quantitative research methods. In this study, the subjects were students of class 5A SDN Waruberon. To obtain data, researchers used 2 instruments, namely: students' emotional intelligence questionnaire sheet and learning outcome test sheet. This type of research is classified as quasi-experimental research. The results of the t-test calculation, t_count > t_table is 6,36086 > 1,78. The average increase in high emotional intelligence is better than low emotional intelligence with a value of 37,333 > 26,5. It can be concluded that student's emotional intelligence is able to accept 21st-century learning well so that it can improve student mathematics learning outcomes.

Keywords— Use Behavior, UTAUT, E-TLE, Traffic Violation Fine.

INTRODUCTION

The end of the 20th century was marked by a shift in the development paradigm from economic development to the paradigm of human resource development. Greenstein in Sugiyarti et al (2018) states that students living in the 21st century must master science, have metacognitive skills, be able to think critically and creatively, and be able to communicate or collaborate effectively, this situation illustrates the gap between expectations and reality. The main priority that must be carried out by the government as one of the efforts to improve the quality of human resources is development in the education sector. Education is one of the main rights for humans. Ace Suryadi in Relevance (2016) said that education is expected to lead the Indonesian nation to gain excellence in global competition.

Murti in Andrian & Rusman (2019) reveals that in the 21st century, education is becoming increasingly important to ensure that students have the skills to learn and innovate, the skills to use technology and information media, and can work, and survive by using the skills to live. life skills). According to Prihadi in Sugiyarti et al (2018) which states that in formal schools, learning is required to apply 4C skills (Critical Thinking, Communication, Collaboration, Creativity), this can be realized quickly, not only demands on teacher performance in changing teaching methods, but also the role and the responsibility of non-formal educators in getting children to apply the 4Cs in everyday life.

Learning outcomes have an important role in the process of learning mathematics. According to Prayitno (2020), learning outcomes are processes to see the extent to which students can master learning after participating in the teaching and learning process activities or the success achieved by a student after taking part in learning which is marked by the form of certain numbers, letters or symbols agreed by the education provider. Learning outcomes are the process of assigning values to the learning outcomes achieved by students with certain criteria (Rajagukguk, 2015). Meanwhile, according to Sulistiasih (2018), learning outcomes are a number of abilities (cognitive, affective, and psychomotor) that have been mastered by students after the completion of a learning program implementation. To measure the quality of education, of course, criteria/indicators are needed. The teaching and learning process is said to be successful if the absorption of the subject matter being taught achieves high achievement both individually and in groups, including in mathematics. In essence, mathematics is related to the ability to think from low to high levels, including in real life. This is in accordance with the general objectives of learning mathematics in Permendiknas No.22 of 2006 concerning Content Standards.

Talking about mathematics achievement, Indonesia's position is still below the international level, as reported by Trends International Mathematical and Science Study (TIMSS). The results of the 2007 TIMSS study, Indonesia is ranked 36 out of 49 participating countries with an average score of 397, the results of the 2011 TIMSS study, Indonesia is ranked 38 out of 42 participating countries with an average score of 386, while the international average score is 500. And TIMSS 2015 results, Indonesia is ranked 44th out of 49 countries (Hadi & Novaliyosi, 2019). Based on the data from TIMSS, the application of 21st century learning in Indonesia is needed to improve scores according to TIMSS

The ability to be able to understand one's own feelings, the ability to motivate oneself, the ability to manage emotions in relation to other people, empathy and build good relationships with others is emotional intelligence developed in this study. According to Goleman in Astuti & Suparno (2017), emotional intelligence is the ability to recognize one's own emotions and the emotions of others, the ability to motivate oneself, and the ability to manage emotions well in oneself and in relation to others. According to Prayitno (2020), emotional intelligence is the potential that a person has to adapt to his environment. Students' emotions towards learning mathematics have a big effect on learning achievement in mathematics, because students who can control their emotions will easily accept the knowledge conveyed by the teacher in the learning process. However, in reality at school, there are many students who are still not good at recognizing, understanding, and processing a mathematical problem which is reflected in not being able to answer story questions because of the inability to identify the problems in the math problem.

In the learning process, it is very necessary to understand and pay attention and try to invite students to be involved in the material being taught so that students can be more focused and active. One of the learning models that can be used is the 21st century learning model. In this model students will be involved and more active, communicative, work together in solving problems and encourage each other to achieve better learning outcomes.

METHOD

The research method used is descriptive quantitative research method. This descriptive quantitative study aims to describe the influence of 21st century learning on improving mathematics learning outcomes for students with high and low emotional intelligence. This type of research is classified as a quasi-experimental

research. The place of implementation of this research is an elementary school in Waruberon Village, Balongbendo District, Sidoarjo Regency. This study used a pretest-posttest control group design. The research design can be presented in tabular form as follows:

Table 1: Research design

Emotional Intelligence	21st Century Learning (A1)
High Emotional Intelligence (X1)	A1X1
Low Emotional Intelligence (X2)	A1X2

The population in the research that the author did were all 5th grade students of SDN Waruberon which consisted of two classes, namely grades 5A and 5B. The sample in this study was taken from class 5A in the odd semester at SDN Waruberon. Class sampling was done by using purposive sampling method. This method uses the criteria that have been selected by the researcher in selecting the sample. The criteria for selecting the sample are the inclusion criteria. Inclusion criteria are general characteristics of research subjects from a target and affordable population to be studied (Setiadi in Hidayat & Hayati, 2019).

The research instrument used is in the form of emotional intelligence test sheets and learning outcomes tests. Before conducting the research, the researcher first conducted a validity test and a reliability test. The results of the validity and reliability of emotional intelligence tests have been tested by researchers. While the validity and reliability tests of learning outcomes were carried out at Seketi Balongbendo Elementary School, Sidoarjo. The results of the validity test of the learning outcomes test were obtained with a = 5%, the rtable value with a total of 24 respondents was 0.4044 while the rcount value for item 1 was 0.8941, for item 2 was 0.7717, and for item 3 was 0.7741, for item 4 is 0.9440. Of the four items that have rcount > rtable, the learning outcomes test consisting of 4 items is declared valid and can be used in this study. Based on the results of the reliability test on the learning outcomes test with a significance level of 5%, the rtable value was obtained with the number of students tested as many as 24 5th grade students of SD Seketi was 0.4044 while the rac value was 0.8525. This means that the value of rac > rtable, thus the reliability test of the learning outcome test is declared reliable. The data collection technique used to obtain data in this study used tests which were divided into 2, namely emotional intelligence tests and learning outcomes tests.

After the data is collected using the data collection techniques above, the researcher will analyze it descriptively. The process of analysis activities is carried out by means of data analysis. Data analysis is the most decisive step in research because data analysis serves to conclude research results. The data from the students' emotional intelligence was taken after the 5A grade students of SDN Waruberon had carried out the learning process using the 21st century learning model for two meetings. To analyze the students' emotional intelligence data, the researcher used a guideline for assessing students' emotional intelligence tests. Meanwhile, to analyze the learning outcomes data, the data normality test was carried out using the Lilliefors test to increase student learning outcomes. Then proceed to test the homogeneity with the F test and test the hypothesis by using the t test. The hypothesis of this research is that there is an effect of 21st century learning on improving mathematics learning outcomes in high and low emotional intelligence students.

RESULTS AND DISCUSSION

The data collected in the first meeting was in the form of an emotional intelligence test and a pre-test of students' mathematics learning outcomes in the experimental class. The results of the emotional intelligence test obtained the following data:

Table 2: Student Emotional Intelligence Test Results

Experiment Class			
code		code	
DAIP	72	AI	35
MM	70	ZV	34
SA	69	DM	33
ADP	64	AB	32
APWY	60	IRS	30
AN	58	DK	29
		ZU	26
		SM	24

The results of the emotional intelligence test were obtained as many as 6 students were in high emotional intelligence with the highest score of 72 and the lowest 58. Then there were 8 students on low emotional intelligence with the highest score of 35 and the lowest 24. After getting data on the results of the emotional intelligence test, then a second meeting was held. namely post-test student learning outcomes. The overall student learning outcomes test obtained the following data:

Table 3: Mathematics Learning Outcomes of Experimental Class Students

High Emotional Intelligence				Low Emotional Intelligence			
Student Code	Pre-test	Post-test	Enhancement	Student Code	Pre-test	Post-test	Enhancement
DAIP	58	100	42	AI	50	74	24
MM	54	96	42	ZV	45	72	27
SA	58	94	36	DM	46	71	25
ADP	60	92	32	AB	42	70	28
APWY	54	90	36	IRS	38	69	31
AN	50	86	36	DK	40	68	28
				ZU	44	68	24
				SM	41	66	25
			37,333				26,5

Based on the data above, the researchers then analyzed the data on improving students' mathematics learning outcomes by using the normality test, homogeneity test, and t test. Researchers conducted a normality test to find out the class was normally distributed. After calculating using the Lilliefors test, the group of students with high emotional intelligence obtained the value of L_count L_table, namely 0.2997 0.319, so it can be concluded that the data is normally distributed. While the normality test in the group of students with low emotional intelligence obtained the value of L_count L_table, namely 0.2291 0.285, so it can be concluded that the data is normally distributed.

Next, the researcher calculated the homogeneity test to determine whether the class was homogeneous or not. The value of F_count F_table is 0.2577783 3.97, so it can be concluded that the data is homogeneous or there is no difference in variance between groups of high emotional intelligence students and groups of low emotional intelligence students in the experimental class. After obtaining normal and homogeneous data, the researcher conducted a t-test to find out the truth of the formulated hypothesis.

The results of the t-test calculation obtained the value of t_count = 6.36086 with dk = 12. At the significant level

= 0.05 and the 12 degrees of freedom from the t distribution table obtained $t_{(0.95)(12)} = 1.78$. Because t_count > t_table which is 6.36086 > 1.78, it can be concluded that there is an influence of 21st century learning on increasing mathematics learning outcomes in high and low emotional intelligence students.

CONCLUSION

The difference in learning outcomes according to Prihadi's opinion in Sugiyarti et al (2018) states that in formal schools, learning is already required to apply 4C skills (Critical Thinking, Communication, Collaboration, Creativity), this can be realized quickly, not only demands on teacher performance in changing teaching methods, but also the roles and responsibilities of non-formal educators in getting children to apply the 4Cs in their daily lives. In the results of the t-test calculation, the value of t_count > t_table is 6.36086 > 1.78 and the average value of the study group of students with high emotional intelligence who is taught using 21st century learning is 37,333 which is better than the average value of the study group of students with intelligence. emotional low of 26.5. From these data, it can be concluded that there is an effect of 21st century learning on improving mathematics learning outcomes for students with high and low emotional intelligence, and emotional intelligence of students being able to accept 21st century learning well so as to improve students' mathematics learning outcomes.

Based on the results of this study, there are several suggestions that researchers can give, namely considering that 21st century learning that has been applied to 5A grade students at SDN Waruberon can improve students' mathematics learning outcomes, it is suggested to mathematics teachers to use 21st century learning as an alternative to learning mathematics. Also, it is hoped that teachers will train students' emotional intelligence more so that the mathematics learning outcomes obtained by students can be more optimal.

REFERENCES

[1] Andrian, Y., & Rusman, R. (2019). Implementasi pembelajaran abad 21 dalam kurikulum 2013. Jurnal Penelitian Ilmu Pendidikan, 12(1), 14–23. https://doi.org/10.21831/jpipfip.v12i1.20116

[2] Astuti, R. D., & Suparno, S. (2017). Pengembangan Physics Comprehensive Contextual Teaching Materials Berbasis Kkni Untuk Meningkatkan Hots Dan Menumbuhkan Kecerdasan Emosional. JPF (Jurnal Pendidikan Fisika) FKIP UM Metro, 5(1), 1–14.

[3] Hadi, S., & Novaliyosi. (2019). TIMSS Indonesia (Trends in International Mathematics and Science Study). Prosiding Seminar Nasional & Call For Papers Program Studi Magister Pendidikan Matematika Universitas Siliwangi.

[4] Hidayat, R., & Hayati, H. (2019). Pengaruh Pelaksanaan Sop Perawat Pelaksana Terhadap Tingkat Kecemasan Pasien Di Rawat Inap Rsud Bangkinang. Jurnal Ners, 53(9), 1689–1699.

[5] Prayitno, S. H. (2020). Pengaruh Kecerdasan Emosional Dalam Pembelajaran Matematika Abad 21. 171(November 2017), 8557.

[6] Rajagukguk, W. (2015). Evaluasi Hasil Belajar Matematika.

[7] Relevansi, M. D. A. N. (2016). 4-Kurikulum Pendidikan Tinggi Keagamaan Islam Mutu Dan Relevansi. 3(April), 1–15.

[8] Sugiyarti, L., Arif, A., & Mursalin. (2018). Pembelajaran Abad 21 di SD. Prosiding Seminar Dan Diskusi Nasional Pendidikan Dasar.

[9] Sulistiasih. (2018). Evaluasi dan Asesmen Pembelajaran SD. Graha Ilmu.