

VERIFYING THE EFFECT OF PROJECT BASED LEARNING IMPLEMENTATION TOWARD ELEMENTARY STUDENTS' CRITICAL THINKING SKILLS AND LEARNING MOTIVATION IN KLATEN REGENCY INDONESIA

Tuning Sri Lestari¹, Banu Setyo Adi²

^{1,2}Yogyakarta State University, Yogyakarta City, Indonesia

E-mail: tuning0056fip.2021@student.uny.ac.id¹, banu_adi@uny.ac.id²

Abstract

This study aims to verify whether the application of the Project Based Learning model has an effect or no on the improvement of students' critical thinking skills and learning motivation. This research was conducted at SD Negeri 1 Pakisari, Cawas District, Klaten Regency, Indonesia in the 2021-2022 Academic Year. The population of this study consisted of 60 students and the randomly sample taken from the fifth grader students which consisting of 13 students. To achieve the objectives of this research, the research method applied was quantitative research. The research design adopted was True Experiment research consisting of an experimental class and a control class. The data collection technique was written test by using multiple-choice question instrument consisting of 4 options for each item. The results showed that: (1) Partially there was a significant difference in critical thinking ability between the experimental class and the control class by the Sig value of critical thinking skills of 0.009 was smaller than 0.05. (2) Partially there was a significant difference in learning motivation between the experimental class and the control class by the Sig value of learning motivation of 0.013 was smaller than 0.05. Thus, it can be concluded that the Project Based Learning model has an effect to the students' of critical thinking skills and learning motivation.

Keywords: *Project Based Learning, Implementation, Critical Thinking, Learning Motivation*

INTRODUCTION

Critical thinking skill is the ability to examine information accurately such as comparing, detailing, and distinguishing, or analyzing for similarities and differences in information received and not easily believe to the information without going through information analysis. Critical thinking skills will encourage students to be able to understand aspects of the scientific process which consists of observing various events, phenomena and events in the field, classifying various information or knowledge based on gradations, measuring symptoms, accuracy and truth information, identification and control of variables, formulation of hypotheses, experimental design a strategy or theory, generalization of experimental results, and communicating experimental results (Sudana&Astawan, 2013). Mastery of the aspects mentioned above is the indicator of students' critical thinking skills to find information in the form of scientific experimental results which delivered through presentation activities.

According to Umam (2018), critical thinking in learning aims to direct students to have a structured and intelligent way of thinking in organizing between concepts to solve problems. Furthermore, Kowijah (2012) states that the development of students' critical thinking skills must be oriented to correct and rational perceptions, analysis of assumptions and biased arguments, and logical interpretation. The development of students' critical thinking skills has continuity and interrelationships which need to be carried out through the learning process to achieve learning objectives (Kurniawati&Ekayanti, 2020). Students' critical thinking skills are characterized by the ability to formulate problems, evaluate, and have sensitivity to things around them (Putri et al., 2018).

Ideally, students' critical thinking skills are characterized by their ability to recognize emerging problems that are being faced and students are required to be able to solve these problems (Wijayanti, 2018 and Sari et al., 2019). However, the results of previous research conducted by Hendryawan et al., (2017) showed that the critical thinking ability of elementary school students was still low because the designed learning process did not encourage students to engage in thinking a lot in the learning process. Based on the observations of researchers in the field that the low critical thinking ability of students is because thinking exercises in the learning process are not carried out in a planned manner through learning plans. Students very rarely read books and rarely re-learn material that has been discussed at school. It has been previously stated that the learning process has not been designed optimally to involve students in the process according to their character (Sari et al., 2019 and Anggreni et al., 2019).

Edu et al., (2021) say that motivation is a behavior which provides encouragement, encouragement, support that is directed and lasts a long time. In the other hand, Suprihatin (2015) defined that student motivation is characterized by attitudes such as being diligent in participating in learning, doing assignments, being tenacious in facing difficulties, not easily giving up on the difficulties encountered, being able to work and learning

independently, not liking routine words, sticking to his opinion, has a high enthusiasm to do a given job or task, and is able to manage himself such as setting study hours, managing play time, and arranging rest times. The growth of motivation in students is influenced by various factors so that this influence becomes a driving force for the emergence of motivation in students. The explanation above is in line with [Sari et al., \(2021\)](#) which states that motivation is an impulse from within students and they act diligently, tenaciously and seriously to achieve goals. The learning process will run effectively and be able to achieve goals if students have high motivation.

Students' motivation take part in learning arises influenced by external factors and internal factors. These internal factors arise from within themselves such as physical and psychological factors ([Al-fath&Sugito, 2021](#)). Intrinsic motivation has been proven to fulfill people's psychological needs and is positively correlated with student academic achievement ([Trevino &DeFreitas, 2014](#)). Intrinsic motivation arises from outside influences, perhaps from relatives, family and teachers ([Hau Lin Tam et al., 2020](#)). External factors come from outside such as family, school and environmental factors. These various factors are very influential on students' learning motivation. The behavior and abilities of students who come from within are the determining factors for the success of learning ([Restiaji et al., 2020](#)) can also be helped by external factors or encouragement from outside to increase learning motivation by changing learning styles to a more modern.

According to [Hamzah B. Uno Uno \(2011\)](#) the important role of the essence of motivation has an important role in the learning process, including The role of learning motivation in determining learning reinforcement. Motivation can play a role in strengthening learning if a child who is learning is faced with a problem that determines the solution and can only be solved thanks to the help of things that have been passed. The role of motivation in clarifying learning objectives

The role of motivation in clarifying learning objectives is closely related to the meaning of learning. Children will be interested in learning something, if at least what is learned can be known or enjoyed by the child. Motivation determines perseverance in learning. A child who has been motivated to learn something tries to study well and diligently in the hope of getting better results.

In addition, [OemarHamalik \(2011\)](#) mentions that the function of motivation includes: Motivation functions as a director means that it leads to actions to achieve the desired goals. Motivation functions as a driving force, meaning as a driving force in learning activities. Online learning has several positive impacts for students because students can learn anywhere and anytime. However, there are problems which can interfere with the online learning process, namely students have less motivation to learn when running online learning, even though learning motivation is important in the learning process. Motivation in learning has a role to foster a sense of pleasure, passion, and enthusiasm for learning ([Patria, L., Yulianto, K. 2011](#)).

The results of previous studies showed that the motivation of students in several elementary schools was still low, especially during the covid-19 pandemic. [Hau Lin Tam et al., \(2020\)](#) revealed that the problem of students' motivation lies in external factors where the role of the family was not optimally carried out so that this caused low motivation from within the students themselves. The results of research by [Al-fath&Sugito \(2021\)](#) revealed the low motivation of students in participating in the learning process and doing learning tasks because many teachers were found to be dominant in carrying out learning without applying learning models that were relevant to the character of students. Various learning problems arise such as students often feel bored and lazy to follow learning. Teachers were also found to give assignments without providing feedback such as not giving an assessment of student performance results. The results of previous studies also revealed the low motivation of students to learn because of the low application of student discipline in the classroom, the teacher's low initiative in involving students in the learning process, and the low curiosity of students ([Sasmita et al., 2020](#) and [Edu et al., 2021](#)).

The problems above require teachers to apply learning models which relevant to school conditions, students' character, and types of learning materials to improve students' critical thinking skills and students' motivation. Referring to the problem above, the learning model applied by the researcher was project based learning. Project based learning motivated students to learn independently to find their own information from various sources, such as a team of experts, the environment, the media and the internet. Students were motivated to work with teams to produce creative ideas which realized in a product. This project learning also trained students to think critically about contextual problems related to biological material through the themes they choose, so that they can improve students' cognitive abilities starting from analyzing, synthesizing, evaluating, and creating ([Insyasiska et al., 2017](#)). Meanwhile, Intan Kartika Sari stated that the project based learning model has a positive influence on critical thinking skills and learning motivation ([Sari, 2018](#)).

[Sianturi et al., \(2020\)](#) stated that there was a significant difference between the problem based learning and project based learning model on critical thinking skills in algebraic material in terms of students' motivation to learn mathematics. This is in line with what was stated by [Fitri et al., \(2018\)](#) in their research which aimed to determine the difference in higher order thinking skills between students who were taught using a project based learning model

and students who were taught using a conventional model in terms of achievement motivation. The results of this study indicated that (1) there was a significant effect of the project based learning model on higher-order thinking skills, (2) there was an influence of achievement motivation on higher-order thinking skills, and (3) the project based learning model and achievement motivation jointly influence on higher order thinking skills. So it can be concluded that this research by Fitri et al., (2018) contributed to the significant differences in the project based learning model on higher order thinking skills and students' learning motivation.

According to Trianto (2011) project based learning model have enormous potential to make learning experiences more interesting and useful for students (Santyasa, 2006). In project based learning, students were encouraged to be more active in learning. The teacher only acts as a facilitator, evaluating the students' work products that are displayed in the results of the projects they are working on, so as to produce real products that can encourage students' creativity to be able to think critically in analyzing factors in the concept of economic problems. Pratama&Prastyaningrum (2016), the results of their research shown an increase in students' critical thinking skills after the learning process was carried out by applying the project based learning model. Pratiwi&Setyaningtyas (2020) stated that there are differences in the use of problem based learning and project based learning models for students' critical thinking skills. The project based learning learning model is better able to show students' critical thinking skills, in terms of sig values. (2 tailed) is $0.000 < 0.005$ then H_0 is rejected and H_a is accepted.

The educational psychology theories that underlie the development of project based learning include John Dewey (the importance of learning that comes from experience), Jerome Bruner learning as an active process in which students transform information so as to lead to motivation, retention, and personal development, Carl Rogers (humanistic learning theory). Lewin in-group learning, (Morgan, 1983; Anreasen& Nielsen, 2013; andHarmer, 2014). Handayani (2020) revealed that students are motivated to carry out project work through project based learning model which carried out without any burden and produces maximum results. Turner also provides reinforcement on project based learning, according to him, the project based learning model motivates students to apply critical thinking skills, be active for project planning, problem solving by working together and higher order thinking skills (Turner, 2012).

This is in line with Habok& Nagy (2016), project should ensure that students carry out research and work cooperatively in order to improve their problem-solving skills, motivation and creativity. What this means is that the project must ensure that students do research and work together in order to improve students' problem solving skills, motivation and creativity. This finding in line with that expressed by Hung, Hwang and Huang to effectively conduct a project based learning activity, it is necessary to design learning tasks that can promote the learning motivation and improve the learning achievement of the students (Hung et al., 2012). This statement can be interpreted so that learning activities with the project based learning model are carried out effectively, it is necessary to develop a design of learning tasks that are able to stimulate learning motivation and improve students' achievement. Students have responsibility for their own learning, thereby increasing self-direction and motivation (Westwood & Peter, 2008). The advantages of project based learning increase students' motivation to learn, encourage their ability to do important work, and they need to be rewarded as expressed (Majid & Rochman, 2015).

RESEARCH METHOD

To achieve the objectives of this research, the research method applied is quantitative research. According to Sugiyono (2018), quantitative data is a research method which based on positivistic (concrete data), research data in the form of numbers to be measured using statistics as a calculation test tool, related to the problem being studied to produce a conclusion. The research design adopted in this study was a True Experiment consisting of an experimental class and control class. Sampling technique in this study was taken by random sampling technique. Random sampling technique was taking of sample members from the population which was carried out randomly without regard to the strata which exist in the population (Sugiyono, 2018). This research was conducted at SD Negeri 1 Pakisari, Cawas District, Klaten Regency, Indonesia in the 2021-2022 Academic Year. The population of this study consisted of 60 students and the sample of this study was taken randomly consist of 13 students from A fifth grader as the experimental class and 13 studentstaken from B fifth grader as the control class.

In the experimental class, the researcher used the project based learning model and in the control class, the researcher used the problem based learning model. The data collection technique in this study was through written test by using multiple-choice question. The instrument of this research consist of 20 questions whose validity was tested and consisting of 4 options for each item of the instrument. The instrument test was carried out statistically to determine the validity, normality, and homogeneity of the research instrument. The data analysis technique uses One Way Anove using SPSS statistics version 20.

RESEARCH RESULTS AND DISCUSSION

1. Normality test

The Kolmogorov Smirnov test (Chakravart, Laha, and Roy, 1967) is commonly used to decide if the sample comes from a population with a specific distribution. This test compares a series of data in a sample against the normal distribution of a series of values with the same mean and standard deviation. The basis for decision making in this normality test is if the value of Sig. greater than 0.05 then the distribution of research data is normal.

Table 1. Normality Test Results

	Kolmogorov-Smirnov ^a		Shapiro-Wilk		
	Statistic	Sig.	Statistic	df	Sig.
Critical Thinking Skills Learning Morivation	.094	.200*	.981	17	.966
	.142	.200*	.950	17	.460

The statistical calculation in table 1 above uses Shapiro-Wilk because the research subject is less than 50. Based on the test results in table 1 above, it can be concluded that the critical thinking ability Sig value is 0.966 and the learning motivation Sig 0.460 is greater than 0.05 so that the research data is normally distributed.

2. Homogeneity Test

Homogeneity test (Levenes test) is a statistical test procedure that aims to show that two or more groups of sample data have been taken from a population that has the same variance. In other words, the homogeneity test is carried out to find out that the data set being studied has the same characteristics or not. The basis for decision making in this homogeneity test is if the value of Sig. greater than 0.05 then the research data is homogeneous.

Table 2. Result of Homogeneity Test

		F	df1	df2	Sig.
Critical Thinking Skills Learning Morivation		.027	1	15	.872
		.406	1	15	.534

Table 2 above shows that the homogeneity test of critical thinking skills and learning motivation is using the Levenes test. The statistical test results show that the critical thinking ability Sig value is 0.872 and the learning motivation Sig is 0.534 greater than 0.05 so that it is feasible to compare because the two groups are homogeneous..

3. Multivariate Test

a. Simultaneous Effect

At this stage of the multivariate test, it will be found that there are significant differences in critical thinking skills and learning motivation between the experimental class taught by the project based learning model and the control class taught using the problem based learning model.

Table 3. Result of Multivariate Test

Effect		Value	F	Hypot hesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.998	4.565E3 ^a	2.000	14.000	.000	.998
	Wilks' Lambda	.002	4.565E3 ^a	2.000	14.000	.000	.998
	Hotelling's Trace	652.147	4.565E3 ^a	2.000	14.000	.000	.998
	Roy's Largest Root	652.147	4.565E3 ^a	2.000	14.000	.000	.998
Grup	Pillai's Trace	.443	5.563 ^a	2.000	14.000	.017	.443
	Wilks' Lambda	.557	5.563 ^a	2.000	14.000	.017	.443
	Hotelling's Trace	.795	5.563 ^a	2.000	14.000	.017	.443
	Roy's Largest Root	.795	5.563 ^a	2.000	14.000	.017	.443

In this study, the results obtained in the multivariate tests data, Sig value of 0.017 because the value of Sig <0.05, it can be stated that simultaneously there is a significant difference in critical thinking ability and learning motivation between the experimental class and the control class. These results also prove empirically that project-based learning motivates students to learn independently to find their own information from various sources, such as a team of experts, the environment, the media and the internet. Students are motivated to work with teams to produce creative ideas which are then realized in a product. This project learning also trains students to think critically about

contextual problems related to biological material through the themes they choose, so as to improve students' cognitive abilities starting from analyzing, synthesizing, evaluating, and creating (Insyasiska et al., 2017).

b. Partial Influence

Table 3. Result of Partial Influence

Tests of Between-Subjects Effects								
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	
Corrected Model	KemBerTis	109.441 ^a	1	109.441	9.146	.009	.379	
	MoBel	92.785 ^b	1	92.785	7.859	.013	.344	
Intercept	KemBerTis	87315.559	1	87315.559	7.297E3	.000	.998	
	MoBel	78832.785	1	78832.785	6.677E3	.000	.998	
Grup	KemBerTis	109.441	1	109.441	9.146	.009	.379	
	MoBel	92.785	1	92.785	7.859	.013	.344	
Error	KemBerTis	179.500	15	11.967				
	MoBel	177.097	15	11.806				
Total	KemBerTis	88273.000	17					
	MoBel	79696.000	17					
Corrected Total	KemBerTis	288.941	16					
	MoBel	269.882	16					

In this study, the results obtained in the tests of between subjects effects data, the Sig value of critical thinking skills was 0.009 because the value of Sig < 0.05, it can be stated that partially there is a significant difference in critical thinking skills between the class taught with the experimental class and the control class learning model. These results empirically proven that partially there was a significant difference in critical thinking skills in the experimental class that applies project based learning. As revealed by Pratiwi&Setyaningtyas (2020) that there are differences in the use of problem based learning models and project based learning models for students' critical thinking skills. The project based learning model was better able to show students' critical thinking skills, in terms of the value of sig (2 tailed) is 0.000 < 0.05, then Ho is rejected and Ha is accepted. This finding also supported the research from Pratama&Prastyaningrum (2016), the results of his research show an increase in students' critical thinking skills after the learning process was carried out by applying the project based learning model.

Likewise, for the partial effect of project based learning on learning motivation in this study, the results obtained in the tests of between subject effects data, the Sig value of learning motivation is 0.013. Because the value of Sig < 0.05, it can be stated that partially there was significant difference in learning motivation in the experimental class taught by the project based learning model, so that empirically also proves that the project based learning model motivates students to apply critical thinking skills active for project planning, problem solving by working together as well as higher order thinking skills (Turner, 2012).

CONCLUSION

Based on the results of the research and discussion above, the results of this study can be concluded that:

1. Simultaneously there were significant differences in critical thinking skills and learning motivation between the experimental class taught by project based learning and the control class taught by problem based learning. H0 was rejected Ha was accepted. Values (Sig Critical Thinking 0.017 and Sig Learning Motivation 0.017) were smaller than 0.05. (Sig < 0.05).
2. Partially there was significant difference in critical thinking skills between the experimental class which was taught by project based learning and the control class which was taught by problem based learning. H0 was rejected Ha was accepted. The Sig Critical Thinking value of 0.009 is smaller than 0.05. (Sig < 0.05).

3. Partially there was a significant difference in learning motivation between the experimental class which was taught by project based learning and the control class which was taught by problem based learning. H_0 was rejected H_a was accepted with Sig Learnig Motivation value of 0.013 which was smaller than 0.05. (Sig < 0.05).

SUGGESTIONS

Based on the results of the research and the conclusions above, the writer's suggestion is to apply the Project Based Learning model to improve students' critical thinking skills and students' motivation to learn at the elementary school level in particular, and at all levels of education in general.

REFERENCES

- Al-Fath, A. M & Sugito. (2021). Meningkatkan Motivasi Belajar Siswa Kelas IV Melalui Media Video. *Journal of Elementary School*. Volume 8(2), 219-227.
- Andreasen, L. B., & Nielsen, J. L. (2013). Dimensions of Problem Based Learning-Dialogue and Online Collaboration in Projects. *Journal of Problem Based Learning in Higher Education*, 1(1), 210-229.
- Anggreni, I. D. A. Y. D., Margunayasa, I. G., & Kusmariyatni, N. N. (2019). Pengaruh Model Pembelajaran Kolaboratif Ditinjau Dari Motivasi Berprestasi Terhadap Hasil Belajar IPA. *Indonesian Journal of Educational Research and Review*, Volume 2(2), 125-136.
- Edu, A. L., Saiman, M., & Nasar, I. (2021). Guru dan Motivasi Belajar Siswa Sekolah Dasar. *Jurnal Literasi Pendidikan Dasar*. Volume 2(2), 26-30.
- Fitri, H., Dasna, I. W., & Suharjo, S. (2018). Pengaruh Model Project Based Learning (PJBL) Terhadap Kemampuan Berpikir Tingkat Tinggi Ditinjau Dari Motivasi Berprestasi Siswa Kelas IV Sekolah Dasar. *Briliant: Jurnal Riset dan Konseptual*, 3(2), 201-212.
- Handayani, L. (2020). Peningkatan Motivasi Belajar IPA Melalui Model Pembelajaran Project Based Learning pada Masa Pandemi Covid-19 bagi Siswa SMP Negeri 4 Gunung Sari. *Jurnal Paedagogy*, 7(3), 168-174.
- Hapsari, D. I., Airlanda, G. S., & Susiani, S. (2019). Penerapan Project Based Learning Untuk Meningkatkan Motivasi Belajar Matematika. *Jurnal Riset Teknologi dan Inovasi Pendidikan (JARTIKA)*, 2(1), 102-112.
- Harmer, N. (2014). *Project-Based Learning: Literature review*. Plymouth University, 1-33.
- Hau-lin Tam, et al. (2020). Arti Penting Kecerdasan Emosional untuk Motivasi Belajar Siswa dan Prestasi Akademik: Studi di Hong Kong dengan Warisan Konfusianisme. *Kowloon Tong: Jurnal Review Layanan Anak dan Remaja*. Volume 12(1), 1-36.
- Hendryawan, S., Yusuf, Y., Wachyar, T. Y., Siregar, I., & Dwiyanti, W. (2017). Analisis Kemampuan Berpikir Kritis Matematis Siswa SMP Tingkat Rendah Pada Pembelajaran Berbasis Masalah Dengan Green's Motivational Strategies. *Jurnal Aksioma*, Volume 8(2), 50-58.
- Insyasiska, D., Zubaidah, S., & Susilo, H. (2017). Pengaruh Project Based Learning Terhadap Motivasi Belajar, Kreativitas, Kemampuan Berpikir Kritis, Dan Kemampuan Kognitif Siswa Pada Pembelajaran Biologi. *Jurnal pendidikan biologi*, 7(1), 9-21.
- Kurniawati, D., & Ekayanti, A. (2020). Pentingnya Berpikir Kritis Dalam Pembelajaran Matematika. *PeTeKa: Jurnal Penelitian Tindakan Kelas dan Pengembangan Pembelajaran*, 3(2), 107-114.
- Kumar, S. (2022). A quest for sustainium (sustainability Premium): review of sustainable bonds. *Academy of Accounting and Financial Studies Journal*, Vol. 26, no.2, pp. 1-18
- Allugunti V.R (2022). A machine learning model for skin disease classification using convolution neural network. *International Journal of Computing, Programming and Database Management* 3(1), 141-147
- Morgan, A. (1983). Theoretical Aspects of Project-Based Learning in Higher Education. *British Journal of Educational Technology*, 14(1), 66-78.
- Pratama, H., & Prastyaningrum, I. (2016). Pengaruh Model Pembelajaran Project Based Learning Berbantuan Media Pembelajaran Pembangkit Listrik Tenaga Mikrohidro Terhadap Kemampuan Berpikir Kritis. *Jurnal Penelitian Fisika Dan Aplikasinya (JPFA)*, 6(2), 44-50.
- Putri, F. M., Susanti, E., Kritis, K. B., & Matematika, P. (2018). Kemampuan Berpikir Kritis Matematis Siswa Dalam Pembelajaran Matematika Menggunakan Teori Apos. 1-11.
- Pratiwi, E. T., & Setyaningtyas, E. W. (2020). Kemampuan Berpikir Kritis Siswa Melalui Model Pembelajaran Problem Based Learning dan Model Pembelajaran Project Based Learning. *Jurnal Basicedu*, 4(2), 379-388.
- Priantini, D. A. M. M. O. (2022). Implementasi Kurikulum 2013 Dengan Model Project Based Learning Untuk Meningkatkan Motivasi Belajar Siswa Sekolah Dasar Di Masa Pandemi Covid-19. *Widya Accarya*, 13(1), 74-81.

- Putri, F. M., Susanti, E., Kritis, K. B., & Matematika, P. (2018). Kemampuan Berpikir Kritis Matematis Siswa Dalam Pembelajaran Matematika Menggunakan Teori Apos. 1-11.
- Restiaji, D. Hardiam, M. Hidayah, Y & Suryaningsih, A. (2020). Identifikasi Motivasi Belajar Anak Dalam Penerapan Media Pembelajaran Uno Stacko for Question Card. *Surabaya: Journal of Elementary School, Volume 7(19), 254-264.*
- Santyasa, I. W. (2006). Pembelajaran Inovatif: Model Kolaboratif, Basis Proyek, dan Orientasi NOS. *Semarang: Makalah.*
- Sari, D. P. (2017). Penerapan Metode Presentasi Ilmiah Berbasis Poster untuk Meningkatkan Keterampilan Berbicara Siswa Kelas V Sekolah Dasar. *Jurnal Antologi UPI. Volume 5(1), 2-10.*
- Sari, A. W., Stefanus, C. Relmasira., & Hardini, A. T. A. (2019). Upaya Peningkatan Kemampuan Berpikir Kritis dan Hasil Belajar Melalui Model Pembelajaran Cooperative Learning Tipe Jigsaw. *Journal of Education Action Research. Volume 3(2), 72-79.*
- Sari, R., Melani, A., Rahmayani, A., Aisyah, D. P.N., dan Nuraeni, S. D. (2021). Tips Meningkatkan Motivasi Belajar Siswa Pada Pembelajaran Daring Akibat Pandemi Covid-19. *Jurnal Dedikasi. Volume 1(1), 1-17.*
- Sasmitha, et al. (2020). Peran Guru Kelas Untuk Meningkatkan Motivasi Belajar Peserta Didik Di Sekolah Dasar. *Jurnal Literasi Pendidikan Dasar. Volume 1(1), 1-12.*
- Sianturi, R., Firdaus, M., & Susiaty, U. D. (2020). Komparasi Efektivitas Antara Problem Based Learning (Pbl) Dan Project Based Learning (PJBL) Terhadap Kemampuan Berpikir Kritis Ditinjau Dari Motivasi Belajar Matematika. *Edu Sains: Jurnal Pendidikan Sains dan Matematika, 8(2), 57-69.*
- Sugiyono. (2019). *Quantitative Approach Management Research Methods, Qualitative, Combination (Mixed Method), Action Research, and Evaluation Research.* Bandung: Alfabeta Publisher.
- Suprihatin. (2015). Upaya Guru Dalam Meningkatkan Motivasi Belajar Peserta Didik. *Jurnal Pendidikan Ekonomi. Volume 3(1), 1-12.*
- Trevino, Naomi Noel & Freitas, Stacie Craft. (2014). Hubungan Antara Motivasi Intrinsik dan Prestasi Akademik untuk Mahasiswa Latino Generasi Pertama. Washington: *Jurnal Internasional Psikologi Sosial Pendidikan. Volume 17(2), 293-306.*
- Trianto. (2011). *Model Pembelajaran Terpadu.* Jakarta: Bumi Aksara.
- Umam. (2018). Peningkatan Kemampuan Berpikir Kritis Matematis Siswa Melalui Pembelajaran Reciprocal Teaching. *Jurnal Pendidikan Matematika Indonesia, Volume 3(2), 57-61.*
- Wijayanti., Ratna, R., Relmasira, S. C., & Juneau, J. L. (2018). Penerapan Model Pembelajaran Cooperative Tipe TAI (Team Assisted Individualization) untuk Meningkatkan Hasil Belajar dan Kemampuan Berpikir Kritis Matematika. *Jurnal Ilmiah Sekolah Dasar Volume 2, Number 4.*