

## **Analysis of the Learning Process and Learning Outcomes of Mathematics for Class VIII UPTD SMP Negeri 1 Gunungsitoli Idanoi**

**Nur Ayu Zebua<sup>1</sup> Amin Otoni Harefa<sup>2</sup> Yulisman Zega<sup>3</sup>**

Mathematics Education Study Program, Faculty of Teacher Training and Education,  
Universitas Nias, Gunungsitoli City, Nort Sumatera Province, Indonesia<sup>1,2,3</sup>

Email: [nurayuzebua@gmail.com](mailto:nurayuzebua@gmail.com)<sup>1</sup>

### **Abstract**

The background of this research is the researcher's observations about the learning process and learning outcomes that occur at UPTD SMPN 1 Gunungsitoli Idanoi. This study intends to obtain information or a clear picture of how the learning process is carried out in this school with the learning outcomes achieved by class VIII students. This type of research is a qualitative research using a descriptive approach research method. The research population was all students of class VIII which consisted of seven classes with twenty students in each class. Data was collected through interviews, documentation, observation of the learning process. Then, it is analyzed by the percentage of the learning process and learning outcomes presented in tabular form. The data analysis used consisted of data collection, data presentation, data triangulation, and conclusions. Based on the results of the research that has been done, the average percentage of observations of the learning process is 74.01% which is quite good with an average learning result of 73.98 which is quite satisfactory.

**Keywords:** Learning Process Analysis, Mathematics Learning Outcomes



This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).

### **INTRODUCTION**

Education has a very important role for the development of students. This is stated in the Law of the Republic of Indonesia Number 20 of 2003 article 3 which states that national education functions to develop abilities and form dignified national character and civilization in the context of educating the nation's life, aiming at developing the potential of students to become human beings who believe and fear piety to God Almighty, have noble character, be healthy, knowledgeable, capable, creative, independent, and be a democratic and responsible citizen. Education is very closely related to science, one type of knowledge that is important to have is mathematics.

The word mathematics comes from the Latin word "mathematika" which was originally taken from the Greek word "mathematike" which means study. This word has the origin of the word mathema which means knowledge or science (knowledge, science). The word mathematice is also related to other words that are almost the same, namely mathein or mathenein which means learning (thinking). So, based on the origin of the word, the word mathematics means knowledge that is obtained by thinking (reasoning). Mathematics emphasizes activities in the world of ratios (reasoning), not emphasizing the results of experiments or observations that mathematics is formed because of human thoughts, which are related to ideas, processes, and reasoning. Russeffendi (Siagian, 2016). In Law number 20 of 2003 concerning the National Education System it is said that in order to achieve national education goals, teachers must be able to create and manage a learning environment that can encourage students to develop their potential. One of the updates made to develop student potential is implementing the 2013 curriculum.

According to the Minister of Education and Culture Number 20 of 2016 concerning the basic competencies of the 2013 curriculum, it states that: The 2013 curriculum is the curriculum that applies in the Indonesian education system. This curriculum is the main

foothold, in the learning process which was initially teacher centered to become student centered. Supporting student-centered learning, this curriculum adheres to an integrated approach through a scientific approach (scientific approach) including activities of observing, asking, reasoning, trying, and communicating. The 2013 curriculum, which is implemented gradually in national education, currently emphasizes the importance of a balance of attitude, knowledge and skill competencies. The learning process which was originally focused on knowledge, in the 2013 curriculum is equipped with attitudes and skills through the process of observing, asking, gathering information, processing information, and informing which is better known as the scientific approach.

During the learning process teaching and learning activities are carried out in schools. Learning is an activity that cannot be separated from human life. In the world of education, learning is a component that is a key to success in achieving educational goals. Many experts provide different understanding of learning. In addition to learning, in the learning process there is also interaction between teachers and students which aims to achieve learning objectives, (Kuncara, 2016). In the learning process there are indicators of the learning process including management of learning implementation, communicative teaching and learning processes, student responses, and learning outcomes, (Yusuf, 2018). This indicator is closely related to teachers and students who are components of the teaching and learning process. Fahrudin (2022) suggests the components of the learning process include teachers, students, learning methods, learning tools, evaluation. The components in this learning are interrelated in supporting the learning process. The role of the teacher is not only as a teacher (conveying knowledge), but also as a guide, developer, and manager of learning activities that can facilitate student learning activities in achieving the goals set.

A teacher must be able to create a good learning atmosphere. The process of selecting approaches, methods, strategies, and techniques is carried out by taking into account the situation, conditions, needs and characteristics of students faced in the context of learning objectives. The same thing happened at UPTD SMPN 1 Gunungsitoli Idanoi, where the teacher created a good learning atmosphere with different processes. So that the teacher's ways and strategies in teaching are able to influence student learning outcomes at different levels as well. Low learning outcomes can not be separated from the factors of teachers and students. Based on the results of interviews and observations made with teachers, information was obtained that for the most part, the learning was still conventional and the teaching methods used were less varied. Most teachers still use the lecture method in delivering mathematics material. Students tend to be passive in the learning process because students only listen, so students are less enthusiastic when participating in learning, during the learning process students are not focused, as evidenced by their lack of attention to explanations from the teacher, and students have not been able to understand the material being taught.

According to Nurhadi (in Syafaruddin, 2019) suggests that learning outcomes are an achievement obtained by children in the form of subject values. In other words, learning outcomes are achievements that result in changes in individuals as a result of learning activities. Learning outcomes can also be interpreted as student achievement in the form of acquisition or level of ability in participating in the learning process. Results with changes in behavior, skills or knowledge can be measured and assessed in the form of numbers or statements. Basically, the success of the learning process can be seen from the increase in student learning outcomes. Learning outcomes are abilities that students acquire after participating in learning activities. Wartu (2016) argues that: "learning outcomes are changes in behavior from those who cannot become able from those who do not know to know". Learning outcomes can determine the level of student achievement in learning as Sutrisno

said (in Warti, 2016) that through learning outcomes can reveal the thinking style of students by indicating the success of student achievement after going through learning.

Based on the limitations of the problem, the following problem formulation can be made: How is the student learning process at UPTD SMPN 1 Gunungsitoli Idanoi? What is the data on student mathematics learning outcomes at UPTD SMPN 1 Gunungsitoli Idanoi? The objectives of conducting this research are: To describe the learning process of students at UPTD SMPN 1 Gunungsitoli Idanoi. Describe the data on student mathematics learning outcomes at UPTD SMPN 1 Gunungsitoli Idanoi.

## **RESEARCH METHODS**

Researchers used qualitative research with a descriptive approach. According to Sugiyono (2019) qualitative descriptive analysis is analyzing, describing and summarizing various conditions, situations from various data collected in the form of observations regarding the problems studied that occur in the field. This research method is often used to research on natural object conditions, namely objects that develop as they are, not manipulated by researchers. In qualitative research, the problem formulation is a research focus that is still temporary and will develop after researchers enter the field to see firsthand.

This research was conducted at one of the schools in Gunungsitoli Idanoi, to be precise at UPTD SMPN 1 Gunungsitoli Idanoi, which is located on Jl. Pelud Binaka Km. 14 Simanaere Village, Gunungsitoli Idanoi District, Gunungsitoli City Prov. North Sumatra Postal Code: 22871. Researchers conducted research at this school because previously researchers had made observations at this school.

The source of the data used to measure the learning process in this study came from observations and interviews with class VIII UPTD students at SMPN 1 Gunungsitoli Idanoi. Data on learning outcomes that support the evaluation of the learning process in this study were obtained from documentation of student learning outcomes data in the form of grade VIII odd semester 2022/2023 report cards. The informants of this study were students of class VIII UPTD SMPN 1 Gunungsitoli Idanoi which consisted of 7 classes, namely VIII-A to VIII-G with 20 students per class. In terms of data collection, the researcher goes directly to the research object to obtain valid data, the researcher uses the following method:

1. Interview. The interview instrument was in the form of questions that were used to gather information from students to find out how the learning process and learning outcomes were in mathematics. The type of interview used in this study was structured interviews. This type of interview uses several core questions, including matters related to the learning process and learning outcomes of mathematics. The interview was conducted in writing, meaning that the researcher summarized all the types of questions desired, then shared them with students who became informants to fill in/answer them. This type of interview was conducted by considering the situation and condition of the informant. With a better interview atmosphere, the data is obtained in full.
2. Documentation. Documentation is data on students' mathematics learning outcomes in the form of odd semester report cards obtained by researchers from subject teachers as evidence of carrying out tests or supporting evaluation data in the learning process obtained during research. The document will later be used to link the learning process and student mathematics learning outcomes.
3. Observation of Learning Process. Observation is direct observation made by researchers in the school environment related to the learning process. Observation of the symptoms that appear in the object of this research uses participatory observation, in which the researcher directly observes the learning activities in class, especially the ongoing mathematics material.

## **RESEARCH RESULTS AND DISCUSSION**

### **Interview Result**

This research was conducted in class VIII SMP Negeri 1 Gunungsitoli Idanoi. With a population of 140 students from 7 classes, this entire population will be the research sample. Coinciding on July 25, 2022 researchers obtained research permits from the school. Starting on July 27 2022, researchers conducted interviews with 2 classes, then on July 29 2022, interviews were conducted in 3 classes, and on August 1 2022 researchers conducted interviews in the last 2 classes. The following describes the results of interviews conducted by researchers in all class VIII, which consists of 20 students per grade.

#### **1. Class VIII-A**

Based on the results of interviews conducted in class VIII-A it is known that as many as 5 students like mathematics because mathematics is fun and often found in everyday life, while the other 12 students do not like mathematics because it is difficult to understand and understand, and 3 students are dizzy with solving questions that are different from the examples explained by the teacher. With the learning process applied by the teacher, namely explaining the beginning of the material, giving examples explaining examples, question and answer sessions, and the teacher will explain again if there are students who still do not understand the material being taught, some students are able to understand and follow the learning process so that they able to solve problems related to the material during the learning process, but the assignments given by the teacher cannot be done alone because for the reason they forget the teacher's explanation because in one day they do not only study mathematics. With this learning process, the results of interviews conducted by researchers in class VIII-A were quite satisfactory.

#### **2. Class VIII-B**

The results of the interviews that the researchers obtained in this class about learning mathematics, some students liked learning mathematics because the explanation of the teacher and other students did not really like this lesson, but they were able to follow the ongoing learning process. The learning process applied by the teacher is enough to make students active in learning because the teacher gives students the opportunity to do blackboard assignments and is given the opportunity to ask questions, when students do not do assignments (homework) the teacher usually gives punishments such as standing up or lifting a chair, being hit with a ruler wood, and punished while doing their own work in line with the ongoing learning process. The results of students' mathematics learning in this class are quite satisfactory.

#### **3. Class VIII-C**

When the researchers conducted interviews in this class, almost all students did not like mathematics because learning mathematics made them bored and sleepy, the learning process applied by the teacher was in the form of group assignments, and active learning or question and answer of teachers and students, some students if they did not understand the material explained by the teacher will be silent and daydreaming thinking about a very boring formula, and some ask their own friends, and some students also ask the teacher. Mathematics learning outcomes are satisfactory and some are lacking.

#### **4. Claas VIII-D**

From the results of interviews the researcher conducted in this class about 7 students liked math because the lesson was fun and the teacher also explained well and was

understandable by students. Some other students do not like mathematics because they do not understand mathematics material so that some students feel lazy when learning mathematics. The teacher's learning process so far has been quite good, the explanation is accompanied by a description of the formula, the results of this mathematics student learning some students admit that their scores are not satisfactory. If students do not do assignments or homework the teacher will give punishments such as hitting hands and standing in place, and in the last session the teacher will re-explain the assignments that have been given.

#### 5. Class VIII-E

In this class the researcher found that 50% or 10 students liked mathematics because they liked learning to count, the material was also easy to understand because the way the teacher explained in class was explained one by one and gave examples of questions, the teacher also told them to record important points. When students do not do the assignment, the teacher will give punishment and will explain again about part of the student's assignment. Their math grades were also quite satisfying and the students tried to study harder so they wouldn't stay in class.

#### 6. Class VIII-F

In this class the researcher found that almost all students liked the mathematics they taught because the lessons were fun and very challenging, even though in fact the material being taught was poorly understood even though the teacher explained the material in detail. Students are also given the opportunity to ask the teacher how to do questions that are difficult for students to understand and the teacher will explain it again. Their learning outcomes were also sufficient and some were very bad or unsatisfactory, because they were influenced by their friends when it came to playing.

#### 7. Class VIII-G

The results of the interviews that the researchers obtained in this class were that most of the students liked mathematics because the teacher who taught in their class explained the material well and the way the material was delivered was quite clear and firm, so that students were able to understand the material being explained, the learning process applied by the teacher was very good and good, especially in remembering formulas and sometimes the teacher will order students who are not paying attention to explain the material being explained again. The teacher also gives the opportunity to ask and answer questions about material that is not understood by students so that students can understand the material well. And their learning outcomes are good and can be said to be quite satisfactory.

### **Observation of Learning Process**

Based on the results obtained from processing the observation questionnaire about the learning process that took place in class VIII, the following is a description of the results of observations about the learning process.

#### 1. Class VIII-A

During the observations in this class, in the early stages the teacher always greeted when entering the class with a polite greeting, and rarely asked students to pray because the math lesson was in the middle of the schedule. At the core stage, the teacher does not use learning media such as power point when teaching, because the teacher teaches using the scientific method, namely teaching by involving students. The teacher always coordinates learning in class and implements learning according to the learning objectives. During the

learning process students are always focused on hearing explanations from the teacher and are always active during the learning process. Teachers often provide assistance if students experience difficulties during individual, group, or classical learning, always using teaching time efficiently. Teachers often respond to questions asked by students by managing the learning process situation to remain conducive. In the final stage, the teacher usually gives students homework and ends the lesson by saying happy learning.

## 2. Class VIII-B

During the observations in this class, in the early stages of the learning process the teacher greeted students when entering the class and the students returned the greeting politely, and the teacher often asked students to pray because the math lesson coincided at the beginning of learning. At the core stage, the teacher teaches using a manual, and always conditions learning in the classroom. During the learning process some students liked learning mathematics because of the teacher's explanation, and other students did not really like this lesson, but they were able to follow the ongoing learning process. The learning process applied by the teacher is enough to make students active in learning and at the end of the learning process the teacher gives students for assignments (homework).

## 3. Class VIII-C

In the early stages of starting the learning process the teacher always greets when entering class, and always invites students to pray before starting the learning process, in the core stage of carrying out the learning process the teacher rarely uses media and learning resources because usually teachers only use manuals as teaching materials. The teacher always sees the situation when teaching. During the learning process, almost all students feel bored and sleepy, the learning process applied by the teacher is in the form of group assignments, and active learning or question and answer of the teacher and students, if some students do not understand the material explained by the teacher, they will be silent and daydream thinking about formulas. which was very boring, and some asked their own friends, and some students also asked the teacher. When closing the lesson the teacher will give assignments at home to students.

## 4. Class VIII-D

While making observations in this class, at the beginning of the learning process the teacher often greets students when entering class, and rarely invites students to pray because the math lesson is in the middle of the learning process schedule, the teacher also checks student attendance. In the learning process activities the teacher always uses media and learning resources for example using PowerPoint and other manuals, the teacher always conditions the situation during the learning process in class. The way the teacher explains material related to formulas is enough to make students understand because the teacher describes in detail and also explains the reduction of the formula so that students are interested in learning it, the teacher often carries out assessments during the learning process, and always conducts mid and end semester assessments. At the end of the lesson the teacher will give homework to students and tell students to prepare for the next lesson.

## 5. Class VIII-E

In this class the teacher always greets when entering the class by greeting students in the early stages of learning and checking assignments that have been given, and always inviting students to pray because the math lesson is in the middle of the learning process schedule. When the teaching and learning process the teacher always uses learning media and

learning resources for example using power point and other manuals, the teacher always conditions the situation during the learning process in class, the researcher found that students in this class students really like to learn to count marked by student responses quickly in answer some numbers related to calculations during the teacher's explanation. The material taught is easy to understand because the way the teacher explains in front of the class is explained one by one and gives examples of questions, the teacher also asks them to record important points. When students do not do the assignment, the teacher will give punishment and will explain again about part of the student's assignment. The teacher always carries out assessments during the learning process, and carries out mid and end semester assessments. At the final stage of learning the teacher usually summarizes the material that has been taught and asks students to study the material at home.

#### 6. Class VIII-F

While making observations in this class, the teacher always greets when entering the class by greeting students, and often invites students to pray because the mathematics lesson is at the end of the learning process schedule. During the teaching and learning process the teacher never uses learning facilities and resources, for example using power point and other guidebooks besides textbooks which are distributed to students, the teacher never conditions the situation when the learning process in class is marked by students dressed neatly or not, class is clean or no, students do other homework or not, the teacher still starts the learning process. Students are also given the opportunity to ask the teacher how to do questions that are difficult for students to understand and the teacher will explain it again. The teacher's assessment always carries out mid and end semester assessments. The teacher closes the lesson with a light greeting and urges students not to make a fuss.

#### 7. Class VIII-G

While making observations in this class, the teacher always greets when entering the class by greeting students, and always invites students to pray because the mathematics lesson is at the end of the learning process schedule. When starting the teaching and learning process, the teacher will ask again the material that has been studied before. The teacher teaches by using learning facilities and resources, for example using power points and other manuals, the teacher always conditions the situation during the learning process in class. The way the teacher explains the material is quite clear, especially in remembering the formula and sometimes the teacher will order students who are not paying attention to re-explain the material being explained, the teacher uses teaching time efficiently and responds to questions asked by students in language that is easily understood by students and always manages conduciveness of the class during the learning process takes place, teachers often carry out assessments during the learning process and also carry out mid and end semester assessments. At the final stage of the learning process, the teacher will give assignments to students and encourage students to study at home to deepen the material they have learned.

### **Discussion**

Based on the activities that have been carried out by researchers in schools both in observation and interviews of the learning process and documentation of student learning outcomes that have been described previously, it is known that the teachers who teach in grade 8 consist of three people, the first teacher teaches in classes A, B, and G, who the second teaches in classes C, D, and E, the third teaches in class F. The first teacher teaches by inviting students to participate in the learning process, so that students are able to follow and understand better in the material being taught and are able to work on questions related to

ongoing material but they usually find it difficult to understand again when doing homework (PR) given by the teacher. So that we can see from the overall student learning outcomes that are stated to be complete based on the KKM and the average learning outcomes are also quite satisfactory.

For the second teacher, sometimes the teacher teaches by forming groups and explaining the formula in detail, sometimes the teacher gives small notes in the form of a quick way to remember the formula and a quick way to do the questions, so that students are able to follow the lessons better. Teachers are also close enough to students so they don't hesitate to ask questions and find out about material they still don't understand. If we look back at student learning outcomes in the previous learning outcomes data, the average student score was quite satisfactory and all students were declared complete based on the KKM determined by the school. Whereas for the third teacher, maybe because the teacher is quite elderly so this teacher rarely conditions the situation during the learning process by paying attention to all students starting from clothing, class atmosphere, and directly asking students (PR) that has been given, even though some of the students not ready, the teacher continues the learning process. The student scores obtained were also quite satisfactory and almost all students were declared complete in their report card scores. Overall, the results obtained by researchers regarding the learning process can be stated to be quite good, students are quite capable of participating in mathematics learning and the teacher is also quite successful in teaching, which is indicated by the results of student mathematics learning which are quite satisfactory based on the learning outcomes data that the researchers previously described.

## **CONCLUSION**

Based on the results of the research that has been done, it can be concluded that the learning process carried out by the three mathematics teachers at the school where the research was conducted has been carried out well and student learning outcomes have also been quite satisfactory. With the results of observing the learning process is quite good with an average observation result of 74.01% with an average learning result of 73.98, this value is quite satisfactory. For each observation result is 82% for class A which is classified as good and all students are declared complete in the final assessment results with an average learning result of 75.2 belonging to the quite satisfactory category, 85% for class B is classified as good with the learning outcomes category which is satisfactory with an average of 76.8, for class C it reaches 82% and their learning outcomes are 75.35 with quite satisfactory criteria and all students complete the final assessment, the percentage of the learning process for class D is 71% with a good category so that learning outcomes are obtained students are also quite satisfactory with an average of 74, class E is quite good with a percentage of 65% with an average learning result of 71.35 which is quite satisfactory, class F learning outcomes are quite satisfactory and almost all students get completeness with the percentage of the learning process 64% which is quite good, and the last is class G with a fairly good learning process with a percentage of 70% which is in line with the learning outcomes which are quite satisfactory when viewed from the average student learning outcomes of 73.98.

In this study, the researcher gave suggestions, namely: For researchers, if there are problems with students' mathematics learning outcomes related to the learning process, they can use this research as reference material. Teachers should pay more attention to the methods or strategies used in the learning process that can make students interested in learning so that the learning outcomes obtained are satisfactory. Students are expected to be



able to play an active role in the learning process activities. Being actively involved in the learning process will certainly improve learning outcomes.

## **BIBLIOGRAPHY**

- As'ari Rahman Abdur, dkk. 2019. Mengembangkan HOTS (High Order Thinking Skills) melalui Matematika. Malang : UM (Universitas Negeri Malang)
- Asrul, dkk. 2015. Evaluasi Pembelajaran. Bandung : Citapustaka Media.
- Dimiyati dan Mudjiono. 2009. Belajar dan Pembelajaran. Jakarta : Rineka Cipta.
- Emir. 2019. Metodologi Penelitian Pendidikan. Jakarta:PT RajaGrafindo Persada
- Fahrudin. 2022. Komponen Pembelajaran Dalam Perspektif Pendidikan Islam. Journal Of Islamic Education, Vol 1, No.2
- Faizah Farah, 2019. Buku Strategi Pembelajaran Matematika. Jakarta : “tanpa penerbit”
- Farahfaizah. 2019. Buku Strategi Pembelajaran Matematika. Jakarta: “tanpa penerbit”
- Fhatani, Abdul, Halim. 2016. Ensiklopedi Matematika. Jogjakarta : Ar-Ruzz Media.
- Hariono, Didi. 2014. Filsafat Matematika. Bandung : Penerbit Alfabeta.
- Hayati Sri. 2017. Belajar dan Pembelajaran Berbasis Cooperative Learning. Magelang: Graha Cendekia
- Kuncara Wahyu Adi, dkk. 2016. Analisis Proses Pembelajaran Matematika berdasarkan Kurikulum 2013 Pada Materi Pokok Peluang Kelas X SMAN 1 Surakarta. Jurnal Elektronik Pembelajaran Matematika, Vol. 4, No. 3, Mei, 352-365.
- Kurnia Sari Asrilia, Dkk. 2020. Analisis Efektifitas Pelaksanaan Belajar Dari Rumah (BDR) Selama Pandemi Covid-19. Jurnal Kajian Pendidikan Dan Hasil Penelitian. Vol 6 Nomor 3.
- Lefudin. 2017. Belajar dan Pembelajaran dilengkapi dengan Model Pembelajaran, Strategi Pembelajaran, Pendekatan Pembelajaran dan Metode Pembelajaran. Yogyakarta:DeePublish.
- Noer Hastuti Sri. 2017. Strategi Pembelajaran Matematika. Yogyakarta; Penerbit Matematika.
- Pane, Aprida & Dapasong, Darwis, Muhammad. 2017. Belajar dan Pembelajaran, dalam Jurnal Kajian Ilmu-ilmu Keislaman, Vol. 3, No. 2, Desember, 333-352
- Permendikbud nomor 20 tahun 2016 tentang kompetensi dasar kurikulum 2013.
- Ratumanan, dkk. 2017. Belajar dan Pembelajaran Matematika. Bandung : Penerbit Alfabeta.
- Republika. 17 November 2021. Pengamat: Cetak Biru Pendidikan Indonesia Sangat Dibutuhkan. Jakarta. Indra Charismiadj
- Rusman (2017). Belajar & Pembelajaran Berorientasi Standar proses Pendidikan. Jakarta:Kencana.
- Siagian Daut Muhammad. 2016. Kemampuan Koneksi Matematika dalam Pembelajaran Matematika, MES (Journal of Mathematics Education And Science) Vol. 2, No. 1, Oktober, 58-67
- Suardi Moh. 2018. Belajar & Pembelajaran. Deepublish: CV. Budi Utama
- Sudijono Anas. 2012. Pengantar Evaluasi Pendidikan. PT Raja Grafindo Persada
- Sudjana Nana. 2005. Penilaian Hasil Proses Belajar Mengajar. Bandung; PT REMAJA ROSDAKARYA
- Sugiyanti. 2018. Peningkatan Hasil Belajar Membuat Skets Grafik Fungsi Aljabar Sederhana Pada Sistem Koordinat Kartesius Melalui Metode Kooperatif Learning Jigsaw Pada Siswa Kelas VIII F SMP Negeri 6 Sukoharjo Semester I Tahun Pelajaran 2017/2018. Jurnal Edunomika stie, Vol. 2, No.1, Februari, 175-186.
- Sugiyono. 2019. Metode Penelitian Pendidikan Pendekatan Krantitatif, Kualitatif dan R&D. Bandung: Alfabet
- Sugiyono. 2020. Metode Penelitian Pendidikan Pendekatan Krantitatif, Kualitatif dan R&D. Bandung: Alfabet

- Suyono, Hariyanto. 2014. Belajar dan Pembelajaran “Teori Dan Konsep Dasar”. (Cetakan Keempat). Bandung: PT Remaja Rosda Karya.
- Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 tentang Sistem Pendidikan Nasional.
- Wardani Khasuma Decyta. 2019. Pengaruh Mmodel Pembelajaran Project Based Learning terhadap Hasil Belajar Matematika. Jurnal Mimbar PGSD Undiksha. Vol.7, No.3
- Warti Elis. 2016. Pengaruh Motivasi Belajar Siswa Terhadap Hasil Belajar Matematika Siswa di SD Angkasa 10 Halim Perdana Kusuma Jakarta Timur. Jurnal Pendidikan Matematika STKIP Garut, Vol. 5, No. 2, Mei, 177-185.
- Yusuf. 2018. Konsep dan Indikator Pembelajaran Efektif. Jurnal kajian pembelajaran dan keilmuan, Vol. 1, No. 2, Oktober