



A Study Comparative: Cooperative Learning Model and Process Skills

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Abstrak

Model Pembelajaran Kooperatif dan Keterampilan Proses dalam kepribadian setiap siswa sangat penting dimiliki guna memaksimalkan aktivitas dan hasil belajar setiap siswa. Penelitian ini bertujuan untuk menganalisis perbedaan dan juga hubungan antara keterampilan proses siswa dengan respon siswa terhadap model pembelajaran jigsaw pada mata pelajaran matematika. Penelitian ini penting dilakukan agar guru atau pendidik mengetahui keterampilan proses siswa dan respon siswa terhadap model pembelajaran jigsaw. Urgensi penelitian ini sebagai acuan bagi pendidik dalam melaksanakan pengajaran agar lebih optimal dengan menggunakan model pembelajaran jigsaw untuk meningkatkan keterampilan proses siswa pada mata pelajaran matematika di SDN/MIS. Jenis penelitian ini adalah penelitian kuantitatif kuasi eksperimen dengan membandingkan 8 kelas menggunakan model jigsaw dengan kecepatan dan debit material. Sampel dalam penelitian ini adalah 288 siswa sekolah dasar, teknik pengambilan sampel adalah purposive sampling. Penelitian ini menggunakan analisis data kuantitatif dengan bantuan statistik SPSS 25. Berdasarkan uji korelasi keterampilan proses siswa dan respon siswa terhadap model jigsaw dengan materi speed and discharge, terdapat hubungan antara keterampilan proses siswa dan respon siswa terhadap model jigsaw dengan materi speed and discharge.

Kata kunci: Keterampilan Proses, Jigsaw, Matematika, Kecepatan, Debit

Abstract

Cooperative Learning Model and Process Skills in the personality of each student are very important to have to maximize the activities and learning outcomes of each student. This study aims to analyze the differences and also the relationship between student process skills and student responses to the jigsaw learning model in mathematics subjects. This research is important so that teachers or educators know the students' process skills and student responses to the jigsaw learning model. The urgency of this research is as a reference for educators in carrying out teaching so that it is more optimal by using the jigsaw learning model to improve students' process skills in mathematics subjects at SDN/MIS. This type of research is quasi-experimental quantitative research by comparing 8 classes using a jigsaw model with material velocity and discharge. The sample in this study was 288 elementary school students, the sampling technique was purposive sampling. This study uses quantitative data analysis with the help of SPSS 25 statistics. Based on the correlation test of student process skills and student responses to the jigsaw model with speed and discharge material, there is a relationship between student process skills and student responses to the jigsaw model with speed and discharge material.

Keywords: Process Skills, Jigsaw, Mathematics, Speed, Debit

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1. INTRODUCTION

Education is a very important aspect of individual survival, education is the learning of knowledge, skill, and habits of a group of people. Education is a process that seeks to improve human abilities and potential (Jayanti & Senam, 2017; Musanna, 2017). Education is a provision to develop self-creativity to achieve a desire (Sukarni et al., 2021). Education is very important at all levels (Johnes et al., 2017; Parker, 2019; Prajapati et al., 2017). Quality education is a reflection of the success of a nation (Duma et al., 2021; Joarder et al., 2020; Mahartika & Dewantoro, 2017). Curriculum 2013 (K-13) is the applicable curriculum in the Indonesian Education System.

The 2013 curriculum is a new curriculum set by the government to replace the 2006 curriculum. The 2013 curriculum is a learning system or approach that involves several disciplines to provide meaningful and broad experiences to students (Fellner, 2018; Loudon, 2019; Sofyan, 2019). Permendikbud Number 57 of 2014 states that curricular learning in the 2013 Curriculum aims to develop students' attitudes, knowledge, and skills competencies (Haidar et al., 2020; Putri et al., 2020; Yusuf, 2018). Aspects of knowledge and skills are the two main competencies that must be achieved in learning (Af'idayani et al., 2018; Chumdari et al., 2018; Dewanti, 2019). The 2013 curriculum is a curriculum that emphasizes challenging learning, motivating students to participate actively (Richardo & Richardo, 2016; Hidayati et al., 2020; Kurniawan, 2021). The existence of educational standards and curriculum changes aims to advance Indonesian education in various fields, such as in the field of natural sciences.

Mathematics is one of the subjects that will be studied during education. Mathematics is a universal knowledge and underlies the development of science and technology (Muhtadi et al., 2017; Pujiyanto et al., 2020). Mathematics learning which is usually carried out in schools is limited to the aim of improving students' cognitive, affective, and psychomotor abilities without paying attention to other aspects, these aspects of mathematics are interrelated (Surya et al., 2017). Mathematics is the knowledge that is inherent in life activities, where every activity cannot be separated from mathematical activities (Hidayatullah et al., 2021; Muhtadi et al., 2017). Process skills mean the treatment specified in the teaching and learning process by using the power of thought and creativity effectively and efficiently. Science process skills involve cognitive & investigative skills including understanding of investigative scientific methods & procedures (Fahrurrizal et al., 2019; Majeed & Rana, 2018; Rosadi, endang., 2018). Science process skills are one of the important process skills for students to have (Adnyana & Citrawathi, 2017; Chorunnisa et al., 2018; Yadaeni et al., 2018). Science process skills are very important to educate children to be more responsive and able to think critically (Nafsiati et al., 2020; Nugroho & Surjono, 2019). With the approach of science process skills, students' science can develop.

To make the transfer of knowledge more effective and efficient, it is necessary to apply a learning model, one of the effective learning models is the jigsaw cooperative learning model. Cooperative learning is not a uniform, homogenous approach to teaching and learning (Casey & Fernandez-rio, 2019). The jigsaw learning model is a learning model that emphasizes heterogeneous group members (Kamaruddin & Yusoff, 2019; Kumar et al., 2017; Riyanto, 2019). The Jigsaw type is designed to increase students' sense of responsibility toward their learning and the learning of others (Kusuma, 2018; Wati & Anggraini, 2019). The Jigsaw method is an innovative and cooperative teaching and learning method because it involves the active participation of students, focuses on the cooperation of fellow students and ensures teamwork (Nurbianta & Dahlia, 2018; Sharma et al., 2019). Jigsaw is a cooperative learning model that produces individual responsibility and focuses on achieving team goals.

This research is relevant to the previous research regarding the effect of the application of the Jigsaw type cooperative guided inquiry learning model on students' process skills. In this study, it can be concluded that the guided inquiry learning model combined with a cooperative jigsaw and early academic ability has a significant effect on students' process skills. In addition, the other research stated that the application of the cooperative jigsaw guided inquiry learning model was able to have a real influence on student learning activities in the classroom so that it could encourage increased learning outcomes (Kahar et al., 2020; Nurfitriyanti, 2017). However, previous research did not link the differences and relationships between the two variables with other differentiating indicators and factors as in this study. Based on the description above, the Cooperative Learning Model and Process

Skills in the personality of each student are very important to have to maximize the activities and learning outcomes of each student, so the researchers here aim to compare the process skills of fifth-grade students at SDN 156/I Bulian Baru, SDN 04/I Ruan Ilir River, MIS Nurul Jadid, and MIS Nurul Ihsan with velocity and discharge material, to find out the comparison of student responses to the jigsaw model. class V at SDN 156/I Bulian Baru, SDN 04/I Sungai Ruan Ilir, MIS Nurul Jadid, and MIS Nurul Ihsan with the speed and discharge material, and knowing the relationship between student process skills and student responses to the jigsaw model on speed and release material.

2. METHODS

This type of research is a quasi-experimental quantitative study by comparing 8 classes using the jigsaw model with speed and discharge material. This research was conducted at 4 schools, consisting of 2 SD and 2 MI with 36 students in each class. So the total number of students is 288 students. This study uses a type of comparative quantitative research. Quantitative methods can be interpreted as research methods based on a positive philosophy, used for research on a particular population or sample and, data collection using research instruments instrument (Rachmad, 2021). The procedure design in quantitative research is that the researcher administers a questionnaire to a small group of people (called a sample) to identify tendencies in attitudes, opinions, behaviors, or characteristics of a large group of people.

Populations and samples can be perceived the same and can also be different, depending on where the perception point of view is built, both the population and the sample are the subject of research (Danim, 2003). The sample in this study were 288 students from SD Negeri 156/I Bulian Baru, SD Negeri 04/I Sungai Ruan Ilir, MIS Nurul Jadid and MIS Nurul Ihsan in Batanghari district. The sampling technique is purposive sampling. Purposive sampling is a type of sampling in which the research more a less handpicks case. The reason for taking this technique is that not all samples have criteria that match the phenomenon being studied. The most important thing in sampling must consider is the analysis of the sample. The sample taken is class VA and VB consisting of 160 women and 128 men. The research samples used in this study are shown in Table 1.

Table 1. Research Sample

SD Negeri 156/I Bulian Baru		SD Negeri 04/I Sungai Ruan Ilir		MIS Nurul Jadid		MIS Nurul Ihsan	
VA	VB	VA	VB	VA	VB	VA	VB
20	20	20	20	20	20	20	20
16	16	16	16	16	16	16	16

There are 2 instruments in this study, namely Process Skills and the Jigsaw Learning model. There are 47 items of process skills questions that use a Likert scale of 4 and 26 items of questions in the jigsaw learning model that uses a Likert scale of 5. The scale consists of 5 points for the learning model there are 1 (very bad), 2 (not good), 3 (Enough), 4 (good), and 5 (very good). While 4 points for process skills are 1 (very not good), 2 (not good), 3 (good), and 4 (very good). Each statement is representative of each indicator of process skills and learning models. The focus of this research is on 3 dimensions of process skills, namely observing, measuring, and compiling tables. Then the indicators used to measure the jigsaw model are enthusiasm in participating in learning, use of media, interest in learning science, and ease to understand the concepts and importance of science. The description of the

questionnaire instrument for student process skills on the speed and discharge material is shown in [Table 2](#).

Table 2. Grid of Students' Process Skills Questionnaire

Variable	Indicator	Statement Item Number
Science process skills with speed and discharge material	Observation	1,2,3
	Measure	13,14,15
	Arrange tables	25, 26, 27
Number of Statements		9

The description of the student process skills with the discharge velocity material is shown in [Table 3](#).

Table 3. Category of Student Process Skills

Category	Indicator Interval		
	Observation	measure	Arrange tables
Very Not Good	3.0-5.25	3.0-5.25	3.0-5.25
Not Good	5.26-7.50	5.26-7.50	5.26-7.50
Good	7.51-9.75	7.51-9.75	7.51-9.75
Very Good	9.76-12.00	9.76-12.00	9.76-12.00

The description of the jigsaw questionnaire instrument lattice with velocity and discharge material is shown in [Table 4](#).

Table 4. Grid of the Questionnaire Instrument

Variable	Indicator	Statement Item Number
Jigsaw model of velocity and discharge material	enthusiasm for learning	1,2,3,4,5,6
	Media use	7,8,9,10,11,12,13
	interest in studying science	14,15,16,17,18,19,20
	easy to understand the concept and importance of science	21,22,23,24,25,26
Number of Statements		26

The description of the jigsaw model questionnaire with the discharge velocity material is shown in [Table 5](#).

Table 5. Categories of Student Responses

Category	Indicator Interval			
	enthusiasm in participating in learning	Media use	interest in studying science	easy to understand the concept and importance of science
Very Not Good	26.0-46.8	26.0-46.8	26.0-46.8	26.0-46.8
Not Good	46.9-67.6	46.9-67.6	46.9-67.6	46.9-67.6
Enough	67.7-88.4	67.7-88.4	67.7-88.4	67.7-88.4
Good	88.5-109.2	88.5-109.2	88.5-109.2	88.5-109.2
Very Good	109.3-130	109.3-130	109.3-130	109.3-130

This study uses quantitative data analysis with the help of SPSS statistics 25, to look for descriptive statistics and inferential statistics. Descriptive statistics discuss ways of collecting, summarizing, and presenting data so that information is easier to understand, information that can be obtained with descriptive statistics includes data concentration (mean, median, mode), data distribution (range, average deviation), mean, variance and standard deviation), the tendency of a data set, the size of the location (quartiles, deciles, and percentiles) (Muchson, 2017). Inferential statistics are statistics relating to how to draw conclusions based on data obtained from samples to describe the characteristics or characteristics of a population (Astri et al., 2013). In this study, before testing the hypothesis, the assumption test was carried out first. The assumption test carried out in this study was the normality test and linearity test. Furthermore, after testing the assumptions, it is possible to test the hypothesis, namely the T-test and correlation test. The T-test is a test conducted to determine the difference between two unpaired samples while the correlation test is carried out to find out the relationship between 2 variables.

In collecting data, the first activity that must be carried out is to select students based on the categories given by the researcher, then provide a questionnaire of students' process skills in mathematics subjects with flat-sided geometry, and student interest questionnaires in mathematics subjects with flat-sided wake-up material. Then the questionnaire data were processed using the SPSS application. The use of the SPSS application functions to view descriptive statistics, in the form of mean, min, max, percentage, and student categories (Pramesti, 2018; Santoso, 2019; Wahyuni, 2020). The data needed in the study can be collected or obtained from various data sources. The procedures for collecting data in this study are shown in figure 1.

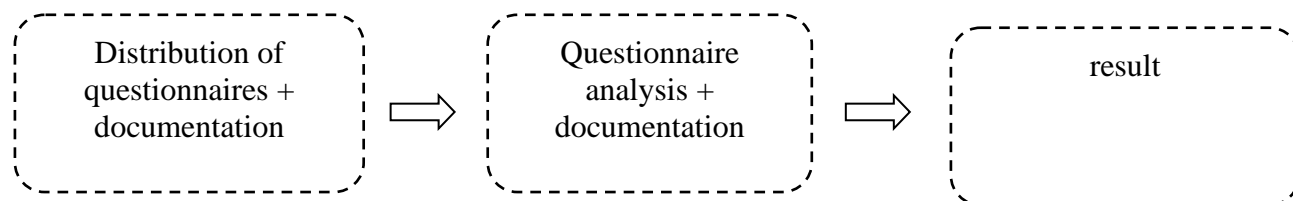


Figure 1. Research Procedure

3. RESULTS AND DISCUSSION

Result

The following describes the results of descriptive statistics on student process skills variables and student responses to the jigsaw model in mathematics subjects with speed and discharge material, where the results will be obtained from the distribution of questionnaires in-class VA and VB at SDN 156/Bulian Baru, SDN 04/I ruan ilir river, MIS Nurul Jadid and MIS Nurul Ihsan.

Descriptive Statistics Test

Table 6. Description of the process skills of SD/MI Students Towards Mathematics Lessons on Speed and Discharge Material on the Observation Indicator

Student Response	interval	F	%	Category	Mean	Median	Min	Max
SD Negeri 156/I	3.0-5.25	13	18,1%	Very Not Good	2.6667	3	1	4
Bulian Baru	5.26-7.50	18	25%	Not Good				
SD Negeri	7.51-9.75	21	29,2%	Good	2.6667	3	1	4
	9.76-12.00	20	27,8%	Very Good				
SD Negeri	3.0-5.25	13	18,1%	Very Not Good	2.6667	3	1	4

Student Response	interval	F	%	Category	Mean	Median	Min	Max
04/I Sungai ruan ilir	5.26-7.50	18	25%	Not Good	2.6667	3	1	4
	7.51-9.75	21	29,2%	Good				
	9.76-12.00	20	27,8%	Very Good				
	3.0-5.25	13	18,1%	Very Not Good				
MIS Nurul Ihsan	5.26-7.50	18	25%	Not Good	2.6667	3	1	4
	7.51-9.75	21	29,2%	Good				
	9.76-12.00	20	27,8%	Very Good				
	3.0-5.25	13	18,1%	Very Not Good				
MIS Nurul Jadid	5.26-7.50	18	25%	Not Good	2.6667	3	1	4
	7.51-9.75	21	29,2%	Good				
	9.76-12.00	20	27,8%	Very Good				

Based on [Table 6](#), the process skills of SD/MI students towards mathematics subjects with speed and discharge material on the observation indicators it was found that the average number of students chose the good category with the percentage for SD N 156 29.2% good, SD N 04 29.2% good, MIS NI 29.2% good, MIS NJ 29.2% good.

Table. 7 Description of the Process Skills of SD/MI Students Towards Learning Mathematics with the Material of Speed and Discharge on Measuring Indicators

Student Response	interval	F	%	Category	Mean	Median	Min	Max
SD Negeri 156/I Bulian Baru	3.0-5.25	15	20,8%	Very Not Good	2.4444	3	1	4
	5.26-7.50	16	22,2%	Not Good				
	7.51-9.75	35	48,6%	Good				
	9.76-12.00	6	8,3%	Very Good				
SD Negeri 04/I Sungai ruan ilir	3.0-5.25	16	22,2%	Very Not Good	2.4722	3	1	4
	5.26-7.50	19	26,4%	Not Good				
	7.51-9.75	24	33,3%	Good				
	9.76-12.00	13	18,1%	Very Good				
MIS Nurul Ihsan	3.0-5.25	11	15,3%	Very Not Good	2.5556	3	1	4
	5.26-7.50	23	31,9%	Not Good				
	7.51-9.75	25	34,7%	Good				
	9.76-12.00	13	18,1%	Very Good				
MIS Nurul Jadid	3.0-5.25	14	19,4%	Very Not Good	2.5278	3	1	4
	5.26-7.50	20	27,8%	Not Good				
	7.51-9.75	24	33,3%	Good				
	9.76-12.00	14	19,4%	Very Good				

Based on [Table 7](#), the process skills of SD/MI students on mathematics subjects with speed and discharge material with measuring indicators found that the average student chose the good category with the percentage for SD N 156 48.6% good, SD N 04 33.3% good, MIS NI 34.7% good, MIS NJ 33.3% good.

Table 8. Description of the Process Skills of SD/MI Students Towards Learning Mathematics with Speed Material and the Indicators of Compiling a Table

Student Response	interval	F	%	Category	Mean	Median	Min	Max
SD Negeri 156/I Bulian Baru	3.0-5.25	8	11,1%	Very Not Good	2,8056	3	1	4
	5.26-7.50	14	19,4%	Not Good				
	7.51-9.75	34	47,2%	Good				
	9.76-12.00	16	22,2%	Very Good				
SD Negeri 04/I Sungai ruan ilir	3.0-5.25	8	11,1%	Very Not Good	2,6944	3	1	4
	5.26-7.50	18	25,0%	Not Good				
	7.51-9.75	34	47,2%	Good				
	9.76-12.00	12	16,7%	Very Good				
MIS Nurul Ihsan	3.0-5.25	11	15,3%	Very Not Good	2,6389	3	1	4
	5.26-7.50	17	23,6%	Not Good				
	7.51-9.75	31	43,1%	Good				
	9.76-12.00	13	18,1%	Very Good				
MIS Nurul Jadid	3.0-5.25	9	12,5%	Very Not Good	2,7083	3	1	4
	5.26-7.50	16	22,2%	Not Good				
	7.51-9.75	34	47,2%	Good				
	9.76-12.00	13	18,1%	Very Good				

Based on Table 8, the process skills of SD/MI students towards mathematics lessons with speed and discharge material in the indicators in compiling the table, it was found that the average number of students chose the good category with the percentage for SD N 156 47.2% good, SD N 04 47.2% good, MIS NI 43.1% good, MIS NJ 47.2% good.

Table 9. Description of Student Responses to the Jigsaw Learning Model in Mathematics Subjects with Speed and Discharge Material Materi

Student Response	interval	F	%	Category	Mean	Median	Min	Max
SD Negeri 156/I Bulian Baru	26,0-46,8	0	0%	Very Not Good	2,7639	3	2	4
	46,9-67,6	18	25%	Not Good				
	67,7-88,4	53	73,6%	Enough				
	88,5-109,2	1	1,45	Good				
	109,3-130	0	0%	Very Good				
SD Negeri 04/I Sungai ruan ilir	26,0-46,8	0	0%	Very Not Good	2,6111	3	2	3
	46,9-67,6	28	38,9%	Not Good				
	67,7-88,4	44	61,6%	Enough				
	88,5-109,2	0	0%	Good				
	109,3-130	0	0%	Very Good				
MIS Nurul Ihsan	26,0-46,8	0	0%	Very Not Good	2,4583	2	2	3
	46,9-67,6	39	54,2%	Not Good				
	67,7-88,4	33	45,8%	Enough				
	88,5-109,2	0	0%	Good				
	109,3-130	0	0%	Very Good				
MIS Nurul Jadid	26,0-46,8	0	0%	Very Not Good	2,4861	2	2	4
	46,9-67,6	39	54,2%	Not Good				
	67,7-88,4	31	43,1%	Enough				
	88,5-109,2	2	2,8%	Good				
	109,3-130	0	0%	Very Good				

Based on [Table 9](#), a description of student responses to the jigsaw learning model for mathematics lessons with speed and discharge material, it was found that the average number of students chose enough with the percentage for SD N 156 73.6% good, SD N 04 61.6% good, MIS NI 45.8% good, MIS NJ 43.1% good.

Test assumptions

In this assumption test, two tests will be carried out, namely the normality test which serves to see whether the data is normally distributed or not, and the linearity test which serves to see the linear relationship between the two variables to be tested ([Wijoyo, 2020](#)).

Normality test

A normality test is a test that is useful for determining the data that has been collected is normally distributed or not. The data requirements are said to be normally distributed if the value of sig. > 0.05 .

Table 10. Description of the Normality Test of Student Process Skills and Student Responses to the Jigsaw Learning Model in Mathematics Subjects with Speed and Discharge Material SD/MI

Variable	School	Sig.	Distribute
Process skills	SD Negeri 156/I Bulian Baru	0.200	Normal
	SD Negeri 04/I Sungai RuanIlir	0.200	Normal
	MIS Nurul Jadid	0.200	Normal
	MIS Nurul Ihsan	0.100	Normal
Jigsaw	SD Negeri 156/I Bulian Baru	0.200	Normal
	SD Negeri 04/I Sungai RuanIlir	0.200	Normal
	MIS Nurul Jadid	0.200	Normal
	MIS Nurul Ihsan	0.100	Normal

Based on [Table 10](#), which obtained the results of the normality test, namely the significance value > 0.05 , it can be concluded that there is a normal relationship between students' process skills and student responses to the jigsaw model in mathematics subjects with speed and discharge material in SD/MI.

Linearity test

A linearity test is a test used to determine the form of the relationship between the independent variable and the dependent variable. The data conditions are said to be related if the value of sig. < 0.05 .

Table 11. Description of the Results for the Linearity Test of Students' Process Skills and Student Responses to the Jigsaw Model in Mathematics Subjects with Speed and Discharge Material in SD/MI

Variable	School	Sig.	Distribute
Process Skills*Student responses to the jigsaw model	SDN156/I Bulian Baru	0,025	linear
	SDN 04/I	0,034	linear
	SungaiRuanIlir		
	MIS Nurul Jadid	0,050	linear
	MIS Nurul Ihsan	0,044	linear

Based on Table 11, obtained from the results of the linearity test, namely the significance value < 0.05 , it can be concluded that there is a linear relationship between students' process skills and student responses to the jigsaw model in mathematics subjects with speed and discharge material in SD/MI.

Hypothesis test

In this hypothesis test, the tests carried out are the T-test and correlation test. The t-test aims to determine whether the independent variable affects the dependent variable while the correlation test aims to determine the relationship between process skills and the jigsaw model on velocity and discharge material.

T-Test

Table 12. T-test Description of Students' Process Skills Towards Mathematics Lessons with Speed and Discharge Material in SD/MI

School	Class	Sig. (2-tailed)
SDN 156/I Bulian Baru	V A	0.019
	V B	
SDN 04/I sungai ruan ilir	V A	0.037
	V B	
MIS Nurul Jadid	V A	0.039
	V B	
MIS Nurul Ihsan	V A	0.023
	V B	

Based on Table 12, the results of the T-test are obtained, namely the value of sig. (2-tailed) < 0.05 , it can be concluded that there are differences in students' process skills towards speed and discharge material in SD/MI.

Table 13. T-test Description of Student Responses to the Jigsaw Model on Velocity and Discharge Material in SD/MI

School	Class	Sig. (2-tailed)
SDN 156/I Bulian Baru	V A	0.023
	V B	
SDN 04/I sungai ruan ilir	V A	0.046
	V B	
MIS Nurul Jadid	V A	0.37
	V B	
MIS Nurul Ihsan	V A	0.049
	V B	

Based on Table 13. The results of the T-test were obtained, namely the value of sig. (2-tailed) < 0.05 , it can be concluded that there are differences in student responses to the jigsaw model on velocity and discharge material in SD/MIS.

Correlation test

The description of the results for the correlation test between student process skills and student responses to the jigsaw model with velocity and discharge material in SD/MI is shown in Table 14.

Table 14. Description of the Correlation Test of Students' Process Skills and Student Responses to the Jigsaw Model with Velocity and Discharge Material in SD/MI

School	Variable	Pearson Correlation	Sig. (2-tailed)	N
SDN 156/I Bulian Baru	Process Skills Student response to the jigsaw model	0.627	0.045	72
SDN 04/I Sungai Ruan Iilir	Process Skills Student response to the jigsaw model	0.612	0.049	72
MIS Nurul Jadid	Process Skills Student response to the jigsaw model	0.617	0.046	72
MIS Nurul Ihsan	Process Skills Student response to the jigsaw model	0.636	0.044	72

Based on Table 14, obtained the results of the correlation test, namely the value of sig. (2-tailed) < 0.05, it can be concluded that there is a relationship between student process skills and student responses to the jigsaw model with speed and discharge material.

Discussion

Descriptive statistical analysis was carried out by describing all data from all variables in the form of a frequency distribution (Soleh & Zainiyati, 2020). Inferential statistics can also be referred to as inductive statistics, namely, statistics related to data analysis (samples) to then make conclusions (inferences) which are generalized to the entire subject where the data is taken (population) (Nurgiyantoro, 2019). Based on the descriptive statistical test of SD/MI students' process skills with observation indicators, it was found that the average number of students chose the good category with the percentage for SDN 156/I Bulian Baru 29.2% good, SDN 04/I Sungai Ruan Iilir 29.2% good, MIS Nurul Ihsan 29.2% good, MIS Nurul Jadid 29.2% good. Based on descriptive statistics on the process skills of SD/MI students with measuring indicators, it was found that on average many students chose the good category with the percentage for SDN 156/I Bulian Baru 48.6% good, SDN 04/I Sungai Ruan Iilir 33.3% good, MIS Nurul Ihsan is 34.7% good, MIS Nurul is 33.3% good. Based on the descriptive statistical test of SD/MI students' process skills with indicators compiling tables, it was found that the average number of students chose the good category with the percentage for SDN 156/I Bulian Baru 47.2% good, SDN 04/I Sungai Ruan Iilir 47.2% good, MIS Nurul Ihsan 43.1% is good, MIS Nurul is 47.2% good. Based on the descriptive statistical test of student responses to the jigsaw learning model on the speed and discharge material, it was found that the average number of students chose enough with the percentage for SDN 156/I Bulian Baru 73.6% good, SDN/I 04 Sungai Ruan Iilir 61.6% good,

MIS Nurul Ihsan is 45.8% good, MIS Nurul is 43.1% good. At each indicator there is the most dominant difference in each school, it is due to differences in school background and environment and the abilities of students from each school.

In this assumption test, two tests will be carried out, namely the normality test which serves to see whether the data is normally distributed or not, and also the linearity test which functions to see the linear relationship between the two variables to be tested. Based on the normality test of students' process skills with speed and discharge material at SD/MI SDN 156/I Bulian Baru, the normality test was obtained for Kolmogorov-Smirnov with a value of $0.200 > 0.05$ and MIS Nurul Jadid, with a value of $0.200 > 0.05$, it can be concluded that the data normally distributed. Based on the normality test of students' process skills with velocity and discharge material at SDN 04/I Sungai Ruan Ilir, the Kolmogorov-Smirnov normality test was obtained with a value of $0.200 > 0.05$ and Nurul Ihsan's MIS with a value of $0.100 > 0.05$, it can be concluded that the data is normally distributed. based on the normality test of student responses to the jigsaw model with velocity and discharge material at SDN 156/I Bulian Baru, the normality test was obtained with Kolmogorov-Smirnov with a value of $0.200 > 0.05$ and Nurul Jadid's MIS with a value of $0.200 > 0.05$, it can be concluded that the data is normally distributed. Based on the normality test of student responses to the jigsaw model with velocity and discharge material at SDN 04/I Sungai Ruan Ilir, the normality test was obtained with Kolmogorov-Smirnov with a value of $0.200 > 0.05$ and Nurul Ihsan's MIS with a value of $0.100 > 0.05$, it can be concluded that the data is distributed normally. Based on the linearity test of students' process skills and student responses to the jigsaw model with the material speed and class discharge at SDN 156/I Bulian Baru obtained, a significance value of $0.525 < 0.05$, it can be concluded that there is a linear relationship between student process skills and student responses to the jigsaw model. with the speed and discharge material at SDN 156/I Bulian Baru. Based on the linearity test of students' process skills and student responses to the jigsaw model with the material speed and class discharge at SDN 04 / Sungai Ruan Ilir obtained, a significance value of $0.304 < 0.05$, it can be concluded that there is a linear relationship between student process skills and student responses to the model. jigsaw with material speed and class discharge at SDN 04/I Sungai Ruan Ilir. Based on the linearity test of students' process skills and student responses to the jigsaw model with the material speed and class discharge at MIS Nurul Jadid obtained, a significance value of $0.351 < 0.05$, it can be concluded that there is a linear relationship between student process skills and student responses to the jigsaw model with the material. speed and class discharge at MIS Nurul Jadid. Based on the linearity test of students' process skills and student responses to the jigsaw model with the speed and class discharge material at MIS Nurul Ihsan obtained, a significance value of $0.054 < 0.05$, it can be concluded that there is a linear relationship between student process skills and student responses to the jigsaw model with speed material. and class discharge at MIS Nurul Ihsan.

In this hypothesis test, the tests carried out are the T-test and correlation test. The t-test aims to determine whether the independent variable affects the dependent variable while the correlation test aims to determine the relationship between process skills and student responses to the jigsaw model on velocity and discharge material. Based on the T-test of the process skills of students in grades V A and V B at SDN 156 Bulian Baru, the value of sig. (2-tailed) $0.019 < 0.05$, it can be concluded that there are differences in students' process skills in terms of speed and discharge at SDN 156 Bulian Baru. Based on the T-test of the process skills of students in grades VA and VB at SDN 04 Sungai Ruan Ilir, the value of sig. (2-tailed) $0.039 < 0.05$, it can be concluded that there are differences in students' process skills in terms of speed and discharge at SDN 04 Sungai Ruan Ilir. Based on the T-test of the process skills of students in grades V A and V B at MIS Nurul Jadid, the value of sig. (2-tailed) $0.039 < 0.05$, it can be concluded that there are differences in students' process skills

in terms of speed and discharge at MIS Nurul Jadid. Based on the T-test of the process skills of students in grades V A and V B at MIS Nurul Ihsan, the value of sig. (2-tailed) $0.023 < 0.05$, it can be concluded that there are differences in students' process skills towards speed and discharge material at MIS Nurul Ihsan. Based on the T-test of student responses to the jigsaw model, the value of sig. (2-tailed) $0.023 < 0.05$, it can be concluded that there are differences in student responses to the jigsaw model on the speed and discharge material for classes V A and V B at SDN 156/I Bulian Baru. Based on the T-test of student responses to the jigsaw model on the speed and discharge material for classes VA and VB at SDN 04/I Sungai Ruan Ilir, the value of sig. (2-tailed) $0.046 < 0.05$, it can be concluded that there are differences in student responses to the jigsaw model at speed and discharge material for class VA and VB at SDN 04/I Sungai Ruan Ilir. Based on the T-test of student responses to the jigsaw model on the speed and discharge material for classes VA and VB at MIS Nurul Jadid, the value of sig. (2-tailed) $0.037 < 0.05$, it can be concluded that there are differences in student responses to the jigsaw model on the speed and discharge material. class VA and VB at MIS Nurul Jadid. Based on the T-test of student responses to the jigsaw model on the speed and discharge material for class VA and VB at MIS Nurul Ihsan obtained a sig. (2-tailed) value of $0.049 < 0.05$, it can be concluded that there are differences in student responses to the jigsaw model on the speed and discharge material class VA and VB at MIS Nurul Ihsan. The T-test conducted on each school showed that there were class differences in each school, as well as school background and environment differences and the student's abilities. In addition to the difference, it can be seen that there is a diversity of the student process skills of each class in each school.

Based on the correlation test of students' process skills and student responses to the jigsaw model with speed and discharge material at SDN 156/I Bulian Baru, the value of sig. (2-tailed) $0.045 < 0.05$, it can be concluded that there is a relationship between students' process skills and student responses to the jigsaw model with velocity and discharge material. Based on the correlation of student process skills and student responses to the jigsaw model with velocity and discharge material at SDN 04/I Sungai Ruan Ilir obtained, the value of sig. (2-tailed) $0.049 < 0.05$, it can be concluded that there is a relationship between science process skills and student responses to the jigsaw model with velocity and discharge material. Based on the correlation test of student process skills and student responses to the jigsaw model with speed and discharge material at MIS Nurul Jadid, the value of sig. (2-tailed) $0.046 < 0.05$, it can be concluded that there is a relationship between student process skills and student responses to students' responses to the jigsaw model with velocity and discharge material. Based on the correlation test of student process skills and student responses to the jigsaw model with the speed and discharge material at MIS Nurul Ihsan obtained, the value of sig. (2-tailed) $0.044 < 0.05$, it can be concluded that there is a relationship between science process skills and student responses against the jigsaw model with velocity and discharge material. A correlation test conducted on each school showed that there is a link between student process skills and student responses to the jigsaw learning model, and the jigsaw learning model can improve student process skills because the jigsaw learning model is designed to increase students' sense of responsibility and train students to cooperate with the group.

Previously, research on students' science process skills was conducted by researchers found that the basic process skill indicators used were only observation and measurement and integrated process indicators only analyzed investigations and conducted experiments as well (Dari & Nasih, 2020). Then other research stated what indicators are used and also in this study examines the influence of the guided inquiry learning model combined with a cooperative jigsaw with science process skills (Jiwanto & Sugianto, 2017). The novelty of this study compared to previous research is to use student response variables to the jigsaw

learning model and student process skills, with indicators that are different from previous studies and this research, is a generalization of previous research. In addition, this study also uses data analysis techniques, namely the assumption test in the form of normality test, homogeneity test, and linearity test. In addition, hypothesis testing is used, namely the T-test and correlation test which aims to compare the process skills of fifth-grade students at SDN 156/I Bulian Baru, SDN 04/I Sungai Ruan Ilir, MIS Nurul Jadid, and MIS Nurul Ihsan with speed and material discharge, knowing Comparison of student responses to the fifth-grade jigsaw model at SDN 156/I Bulian Baru, SDN 04/I Sungai ruan ilir, MIS Nurul Jadid, and MIS Nurul Ihsan with speed and discharge material, and to find out the relationship between student process skills and student response to the jigsaw model on the speed and discharge material. The urgency of this research is for the teacher can find out whether the application of the jigsaw learning model affects students' process skills.

This study has many weaknesses due to the limitations of the author. These weaknesses include that the samples used in this study were only conducted at SDN 156/I Bulian Baru, SDN 04/I Sungai Ruan Ilir, MIS Nurul Jadid, and MIS Nurul Ihsan, so the results obtained might make a difference if they were carried out in schools or schools. another class. The data collection method used in this study only used questionnaire data. The variables studied in this study were only the variables of process skills and student responses to the jigsaw model on velocity and discharge. The new research uses the data analysis techniques of normality test, homogeneity test, and linearity test, and it also uses a hypothetical test of the T-test and correlation test to know the comparison of process skills students, knowing the comparison of student responses to the jigsaw model and knowing the relationship between student process skills and student responses to the jigsaw model on velocity and discharge material.

4. CONCLUSION

The results of this study indicate that there are differences and relationships between students' process skills and students' responses to the jigsaw learning model on speed material and material release at school. The four schools have student process skills with student responses to the jigsaw learning model for learning mathematics. the results of the process skills of state elementary school students and state Islamic schools have good presentations, not much different. while the results of student responses to the jigsaw learning model of state elementary school students have a fairly dominant percentage which is higher than that of state Islamic schools. although it has students' process skills with low student response to the jigsaw learning model, it does not always have a negative effect on students' process skills and student responses to the jigsaw learning model in mathematics. With the research on student process skills and student responses to the jigsaw model in mathematics subjects with speed and discharge material, researchers hope that in the future there will be research on other variables and also on other materials.

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6. REFERENCES

- Adnyana, P. B., & Citrawathi, D. M. (2017). The Effectiveness of Question-Based Inquiry Module in Learning Biological Knowledge and Science Process Skills. *International Journal Of Environmental & Science Education*, 12(8), 1871–1878. http://www.ijese.net/makale_indir/IJESE_1947_article_59ebc423e0e73.pdf.
- Af'idayani, N., Setiadi, I., & Fahmi. (2018). The Effect of Inquiry Model on Science Process Skills and Learning Outcomes. *European Journal of Education Studies*, 4(12), 177–182. <https://doi.org/10.5281/zenodo.1344846>.
- Astri, M., Nikensari, S. I., & Kuncara W., H. (2013). Pengaruh Pengeluaran Pemerintah Daerah Pada Sektor Pendidikan Dan Kesehatan Terhadap Indeks Pembangunan Manusia Di Indonesia. *Jurnal Pendidikan Ekonomi Dan Bisnis (JPEB)*, 1(1), 77. <https://doi.org/10.21009/jpeb.001.1.5>.
- Casey, A., & Fernandez-río, J. (2019). *Cooperative Learning and the Affective Domain*. 3084. <https://doi.org/10.1080/07303084.2019.1559671>.
- Chorunnisa, N. L., Prabowo, P., & Suryanti, S. (2018). Improving Science Process Skills for Primary School Students Through 5E Instructional Model-Based Learning Improving Science Process Skills for Primary School Students Through 5E Instructional Model-Based Learning. *Journal of Physics: Conference Series PAPER*. <https://doi.org/doi:10.1088/1742-6596/947/1/012021>.
- Chumdari, Anita, S., Budiyono, & Suryani, N. (2018). Implementation of Thematic Instructional Model in Elementary School. *International Journal of Educational Research Review Implementation*, 23–31. <https://doi.org/10.24331/ijere.424241>.
- Danim, S. (2003). *Reset Keperawatan: Sejarah Dan Metodologi* (M. Ester (ed.)). Penerbit Buku Kedokteran EGC.
- Dari, R. W., & Nasih, N. R. (2020). Analisis Keterampilan Proses Sains Mahasiswa Pada Praktikum Menggunakan E-Modul. *Edu Sains Jurnal Pendidikan Sains & Matematika*, 8(2), 12–21. <https://doi.org/10.23971/eds.v8i2.1626>.
- Dewanti, B. A. (2019). Activities assessment as a tool to measure students' observation skills in science learning. *Science Education and Application Journal*, 1(1), 17. <https://pdfs.semanticscholar.org/49ec/3f0028e61576af8177f7bc11544f1040d860.pdf>.
- Duma, S., Limbong, M., & Kailola, L. G. (2021). Pengaruh Kompetensi Profesional Guru , Motivasi Belajar terhadap Hasil Belajar Siswa di Sekolah Menengah Kejuruan Kristen Bittuang-Tana Toraja. *Jurnal Pendidikan Tambusai*, 5, 815–826. <https://doi.org/https://www.jptam.org/index.php/jptam/article/view/1036>.
- Erika, Astalini, & Kurniawan, D. A. (2021). Literatur Review : Penerapan Sintaks Model Pembelajaran Problem Solving Pada Kurikulum 2013. *Edumaspul - Jurnal Pendidikan*, 5(1), 147–153. <https://doi.org/https://doi.org/10.33487/edumaspul.v5i1.1101>.
- Fahrurrizal, M., Suwono, H., & Susilo, H. (2019). Studi Komparatif Strategi Pembelajaran Inkuiri Ditinjau dari Kemampuan Kognitif Siswa SMA. *Jptpp*, 4(6), 747–752. <https://www.academia.edu/download/77188206/5799.pdf>.
- Fellner, K. D. (2018). Embodying Decoloniality: Indigenizing Curriculum and Pedagogy. *American Journal of Community Psychology*, 62(3–4), 283–293. <https://doi.org/10.1002/ajcp.12286>.
- Haidar, D. A., Yuliati, L., & Handayanto, S. K. (2020). Pengaruh Pembelajaran Inkuiri dengan Scaffolding terhadap Keterampilan Proses Sains dan Pemahaman Konsep Siswa pada Materi Cahaya. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, 5(12), 1800–1811. <https://doi.org/http://dx.doi.org/10.17977/jptpp.v5i12.14342>.

- Hidayati, N., Rahmawati, A. Y., Khomah, I., & Abdullah, A. A. (2020). Identifikasi Etnomatsains pada Tradisi Gunungan di Kraton Yogyakarta. *PENDIPA Journal of Science Education*, 4(3), 52–59. <https://doi.org/https://doi.org/10.33369/pendipa.4.3.52-59>.
- Hidayatullah, Z., Wilujeng, I., Nurhasanah, N., Gusemanto, T. G., & Makhrus, M. (2021). Synthesis of the 21st Century Skills (4C) Based Physics Education Research In Indonesia. *JIPF (Jurnal Ilmu Pendidikan Fisika)*, 6(1), 88. <https://doi.org/10.26737/jipf.v6i1.1889>.
- Jayanti, K. D., & Senam, S. (2017). Studi kinerja guru lulusan Program Studi Pendidikan Kimia Universitas Negeri Yogyakarta di Daerah Istimewa Yogyakarta. *Jurnal Inovasi Pendidikan IPA*, 3(1), 63. <https://doi.org/10.21831/jipi.v3i1.13686>.
- Jiwanto, I. N., & Sugianto. (2017). Jurnal pendidikan ipa veteran. *Jurnal Pendidikan Ipa*, 1(35), 1–8. <https://doi.org/10.31331/jipva.v1i1.511>.
- Joarder, M. H. R., Ashraf, M. A., & Ratan, S. R. A. (2020). Quality education from faculty management perspectives in private higher education: Does faculty commitment behaviour mediate? *International Journal of Education and Practice*. <https://doi.org/10.18488/journal.61.2020.81.190.206>.
- Johnes, J., Portela, M., & Thanassoulis, E. (2017). Efficiency in education. *Journal of the Operational Research Society*, 68(4), 331–338. <https://doi.org/10.1057/s41274-016-0109-z>.
- Kahar, M. S., Anwar, Z., & Murpri, D. K. (2020). Pengaruh Model Pembelajaran Kooperatif Tipe Jigsaw Terhadap Peningkatan Hasil Belajar. *Supermat (Jurnal Pendidikan Matematika)*, 9(2), 279–295. <https://doi.org/https://doi.org/10.24127/ajpm.v9i2.2704>.
- Kamaruddin, S., & Yusoff, N. M. R. N. (2019). The Effectiveness of Cooperative Learning Model Jigsaw and Team Games Tournament (TGT) towards Social Skills. *Creative Education*, 10(12), 2529–2539. <https://doi.org/10.4236/ce.2019.1012180>.
- Kumar, C. S. V., Kalasuramath, S., Patil, S., Kumar, K. G. R., Taj, K. R. S., Jayasimha, V. L., Basavarajappa, K. G., Shashikala, P., Kukkamalla, A., & Chacko, T. (2017). Effect of Jigsaw Co-Operative Learning Method in Improving Cognitive Skills among Medical Students. *International Journal of Current Microbiology and Applied Sciences*, 6(3), 164–173. <https://doi.org/10.20546/ijcmas.2017.603.018>.
- Kusuma, A. W. (2018). Meningkatkan Kerjasama Siswa dengan Metode Jigsaw. *Konselor*, 7(1), 26–30. <https://doi.org/10.24036/02018718458-0-00>.
- Loudon, G. (2019). Integrating ideas from design disciplines into the STEM curricula. *Higher Education Pedagogies*, 4(1), 284–286. <https://doi.org/10.1080/23752696.2019.1599688>.
- Mahartika, A. S., & Dewantoro, D. A. (2017). Meningkatkan Kemampuan Membaca Pemahaman Anak Tunagrahita Ringan dengan Menggunakan Metode Reading Aloud. *Jurnal ORTOPEDAGOGIA*. <https://doi.org/10.17977/um031v3i22017p123>.
- Majeed, S., & Rana, R. A. (2018). Effect of Jigsaw vs. Traditional Group Work on 8th Graders' Basic Science Process Skills achievement in Laboratory. *Pakistan Journal of Education*, 34(2). <https://doi.org/10.30971/pje.v34i2.377>.
- Muchson, M. (2017). *Statistik Deskriptif* (Guepedia (ed.)). Guepedia.
- Muhtadi, D., Charitas, R., & Prahmana, I. (2017). Sundanese Ethnomathematics : Mathematical Activities In Estimating , Measuring , And Making. *Journal on Mathematics Education*, 8(2), 185–198. <https://eric.ed.gov/?id=EJ1150241>.
- Musanna, A. (2017). INDIGENISASI PENDIDIKAN: Rasionalitas Revitalisasi Praksis Pendidikan Ki Hadjar Dewantara. *Jurnal Pendidikan Dan Kebudayaan*, 2(1), 117–133. <https://doi.org/10.24832/jpnk.v2i1.529>.

- Nafsiati, R., Vikhas, A., & Intan, N. (2020). Pengembangan Lembar Kerja Siswa (LKS) Berbasis Keterampilan Proses Sains Untuk Meningkatkan Keterampilan Berpikir Kritis Siswa Madrasah Ibtidaiyah. *In Proceeding of International Conference on Islamic Education (ICIED)*, 4(1), 38–46. <http://conferences.uin-malang.ac.id/index.php/icied/article/view/1064>.
- Nugroho, I. A., & Surjono, H. D. (2019). Pengembangan multimedia pembelajaran interaktif berbasis video materi sikap cinta tanah air dan peduli lingkungan. *Jurnal Inovasi Teknologi Pendidikan*. <https://doi.org/10.21831/jitp.v6i1.15911>.
- Nurbianta, N., & Dahlia, H. (2018). The Effectiveness of Jigsaw Method in Improving Students Reading Comprehension. *ETERNAL (English Teaching Journal)*, 9(1), 70–86. <https://doi.org/10.26877/eternal.v9i1.2416>.
- Nurfitriyanti, M. (2017). Pengaruh Model Pembelajaran Kooperatif Tipe Jigsaw Terhadap Hasil Belajar Matematika ditinjau dari Kecerdasan Emosional. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, 7(2), 153–162. <https://doi.org/10.30998/formatif.v7i2.2229>.
- Nurdiyantoro, B. (2019). *Statistika Terapan untuk penelitian ilmu-ilmu sosial*. BPEE.
- Parker, K. (2019). The Growing Partisan Divide in Views of Higher Education. *Pew Research Center*, 1–7. <https://luminafoundation.org/wp-content/uploads/2019/09/the-growing-partisan-divide-in-views-of-higher-education.pdf>.
- Prajapati, R., Sharma, B., & Sharma, D. (2017). Significance Of Life Skills Education. *Contemporary Issues in Education Research*, 10(1), 1–6. <https://doi.org/https://doi.org/10.19030/cier.v10i1.9875>.
- Pramesti, G. (2018). *Mahir Mengolah data Penelitian Dengan Spss 25*. elex media.
- Pujianto, E., Doktor, U., & Magetan, N. (2020). Analisis deskripsi pembelajaran matematika melalui permainan ular tangga. *EDUSCOTECH*, 1(2), 1–10. <https://doi.org/https://journal.udn.ac.id/index.php/eduscotech/article/view/33>.
- Putri, N. P. J. E., Artini, L. P., & Wahyuni, L. G. E. (2020). EFL Teachers' Perception and Strategies for Integrating Character Education into the Lesson. *Jurnal Pendidikan Dan Pengajaran*. <https://doi.org/10.23887/jpp.v53i1.19172>.
- Rachmad, A. (2021). Keterkaitan Gender, Usia, Terhadap Prestasi Dan Stres Kerja. *Proceeding of 1st Annual Interdisciplinary Conference on Muslim Societies (AICOMS)*, 1, 13–27. <https://doi.org/10.1016/j.sbspro.2013.04.056>.
- Richardo, R. (2016). Peran Ethnomatematika dalam Penerapan Pembelajaran Matematika. *LITERASI (Jurnal Ilmu Pendidikan)*, 7(2), 118–125. <https://doi.org/http://dx.doi.org/10.21927/literasi>.
- Riyanto, P. (2019). Pengaruh Model Pembelajaran Jigsaw Terhadap Peningkatan Kemampuan Dribble Bola Basket. *Musamus Journal of Physical Education and Sport (MJPES)*, 2(01), 59–67. <https://doi.org/10.35724/mjpes.v2i01.2069>.
- Rosadi, endang., ruslan & alimuddin. (2018). Pengembangan Asesmen Praktikum Mikrobiologi Berbasis Pendekatan Keterampilan Proses Sains Pendidikan Biologi Universitas Muslim Maros. *Angewandte Chemie International Edition*, 6(11), 951–952. <http://eprints.unm.ac.id/10874/>.
- Santoso, S. (2019). *Menguasai SPSS versi 2*. Elex Media Komputindo.
- Sharma, S., Chauhan, S., & Kaur, M. (2019). Introduction and Assessment of Jigsaw Method of Teaching on Challenging Topics in Physiology for First Year Medical Students. *International Journal of Physiology*, 7(4), 238. <https://doi.org/10.5958/2320-608x.2019.00178.1>.
- Sofyan, F. A. (2019). Implementasi Hots Pada Kurikulum 2013. *Inventa*, 3(1), 1–9. <https://doi.org/10.36456/inventa.3.1.a1803>.
- Soleh, & Zainiyati, H. S. (2020). Does Motivation, Personality and Environment Influence Enthusiasm of Generation Z to Continuing Study to Higher Education? *International*

- Journal of Educational Research Review*, 287–295.
<https://doi.org/10.24331/ijere.748771>.
- Sukarni, W., Astalini, A., & ... (2021). Literatur Review: Sistem Sosial Model Pembelajaran Problem Solving Terhadap Sikap Sosial Siswa. *Edumaspul: Jurnal Pendidikan*, 5(1), 106–115. <https://doi.org/10.33487/edumaspul.v5i1.1102>.
- Surya, E., Putri, F. A., & Mukhtar. (2017). Improving Mathematical Problem-Solving Ability And Self-Confidence Of High School Students Through Contextual Learning Model. *Journal on Mathematics Education*, 8(1), 85–94. <https://eric.ed.gov/?id=EJ1173627>.
- Tofiqurrohman, H. (2019). Pendidikan Multikultural dan Relevansinya dengan Pendidikan Agama Islam Hanif. *Kependidikan*, 7(2), 179–191. <https://doi.org/https://doi.org/10.24090/jk.v7i2.3080>.
- Wahyuni. (2020). *Statistik Deskriptif untuk penelitian: Olah data manual dan SPSS Versi 25*. Bintang Pustaka Madani.
- Wati, M., & Anggraini, W. (2019). Strategi pembelajaran kooperatif tipe jigsaw: pengaruhnya terhadap kemampuan berpikir kritis siswa. *Indonesian Journal of Science and Mathematics Education*, 2(1), 98–106. <http://ejournal.radenintan.ac.id/index.php/IJSME/article/view/3976>.
- Wijoyo, H. (2020). Analisis Minat Belajar Mahasiswa STMIK Dharmapala Riau Dimasa Pandemi Coronavirus Disease (Covid-19). *Jurnal Pendidikan : Riset Dan Konseptual*, 4(3), 396–404. https://doi.org/10.28926/riset_konseptual.v4i3.2.
- Yadaeni, A., Kusairi, S., & Malang, F. U. N. (2018). Penguasaan Konsep dan Keterampilan Proses Sains Siswa Kelas XII pada Materi Fluida Statis. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, 3(3), 357–364. <https://doi.org/10.17977/jptpp.v3i3.10657>.
- Yusuf, W. F. (2018). Implementasi Kurikulum 2013 (K-13) Pada Mata Pelajaran Pendidikan Agama Islam Sekolah Dasar (Sd). *Jurnal Al-Murabbi*, 3(2), 263–278. <https://jurnal.yudharta.ac.id/v2/index.php/pai/article/view/1097>.