TERAMPIL
Jurnal Pendidikan dan Pembelajaran Dasar

p-ISSN 2355-1925
e-ISSN 2580-8915

Article

The Influence Of Mathematical Process Skills On The Character Of Cooperation In High Grades Of Acceleration And Debit Materials

Kamid[1], Dwi Agus Kurniawan[2], Rahmat Perdana[3], Minarsih[4], Siti Rohana[5], Roy andre ferdinan[6], Rizki Alfiana[7]

[1,2,3,4,5,6,7] Fakultas Keguruan dan Ilmu Pendidikan, Univeristas Jambi, Jambi, Indonesia
* *Corresponding Author*. E-mail: kamid.math@unja.ac.id

Article Info

Article History

Received : 22-02-2023
Revised : 06-05-2023
Accepted : 06-06-2023

Keywords:

Mathematical process skills, Character cooperation, relationships, character education

ABSTRACT

The aim of this research is to find out how mathematical process skills influence the cooperation of high class students on acceleration and discharge material. This type of research uses mixed methods with an explanatory design. The sample for this research was 18 high school students at 4 different elementary schools. The collection used a random sampling technique. The instruments used in this research are a questionnaire sheet and observation sheet with cooperative characters as basic indicators and mathematical process skills as integrated indicators. The data obtained were analyzed using descriptive statistics and using regression tests for cooperative characters and mathematical process skills. This study confirms that mathematical process skills have an impact on students' cooperative character. This is proven by a sig (2-failed) value < 0.05. It can be concluded from the results of the table that the four schools have a regression influence on mathematical process skills with a cooperative character on mathematics learning regarding measurement and discharge material.

1. Introduction

In 21st century education, the demands of teachers in carrying out learning are more emphasized on innovation and creativity in learning. Not only the demands of teachers but 21st century learning also emphasizes aspects of knowledge, character, attitudes, behavior, especially in mathematics learning in elementary schools (Kamid, Syaiful, et al., 2022; Kenedi, 2019; Luo et al., 2022). At the elementary school level, learning mathematics is able to improve students' mathematical abilities so they can think more logically, critically, analytically and systematically so that learning is better (Budiarti et al., 2022; Nurlaily et al., 2019; Semin, 2019). This is in line with the objectives on the results of learning outcomes carried out by students and educators in order to achieve aspects of 21st century learning (Asrial et al., 2022; Ernawati et al., 2022; Saleh et al., 2018). Based on this, a form of process skills is needed to create a good learning.

Process skills are teaching and learning activities that involve active interaction by learners and educators. Mathematical process skills are very useful for the learning process (Rohana et al., 2021; Saw, 2017; Sumiati et al., 2018). Students' problem-solving skills using good learning methods will be able to improve a learning process such as learning mathematics (Chan et al., 2018; Darmaji et al., 2019; Syafmen et al., 2022). Mathematical process skills are an important aspect of providing precise and fast answers. With collaboration in the learning process, students can increase creativity and cooperation in group activities in learning (Astalini, Darmaji, Kurniawan, & Minarsih, 2022; Negoro, 2019). Thus, mathematical process skills can help learners in forming a sense of mutual need that refers to the character of cooperation.

One of the characters needed in learning is character of cooperation. Where character is cooperation in a learning will teach students how to appreciate every behavior that occurs in learning (Astalini, Darmaji, Kurniawan, Widodo, et al., 2022; Dietmaier & Dietmaier, 2017; Grenaudier-Klijn, 2020). The character of cooperation itself is a form of attitude or behavior of togetherness to achieve common goals including in learning (Farikah, 2019; Kamid, Sabil, et al., 2022; Setiawan et al., 2019). The benefit of the character of cooperation is that it can encourage the process of solving a problem to be easier (Colò, 2020; Kamaruddin, 2012; Kamid, Rohati, et al., 2022). Thus, with cooperation, there will be an assistance and perspective in solving problems.

Students who do not have a cooperative character will behave individually, for example, they do not want to do group tasks (Aqobah et al., 2020; Kurniawan & Sudrajat, 2017; Tari, 2019). This will also lead to behaviors such as brawls carried out in groups and bullying (Afiyatun, 2015; Soraya, 2020; Yulianti et al., 2017). Therefore, the character of cooperation is important to be possessed by students at the elementary level because this character is able to train students in understanding, feeling, and carrying out activities in learning (D. N. P. Putri & Arifin, 2022; Rukiyati et al., 2014; Sari et al., 2018). The character of this collaboration will also

have an impact on the daily lives of students and be useful for life in the community later.

Based on this description, researchers are interested in researching "How mathematical process skills affect the character of cooperation in grade 5 acceleration and discharge materials". So that later it can be known how the influence of mathematical process skills on the character of cooperation in grade 5 elementary school, especially on acceleration and debit materials.

2. Methods

This study uses a mixed method type sequential explanatory research design. Mixed research methods combine quantitative and qualitative research methods. The The sequential explanatory model or combined design method is a research method that combines quantitative and qualitative research methods sequentially, in the first phase of the research carried out quantitative methods and then using qualitative methods (Sugiyono, 2015).

The population in this study was high-grade students in 2 primary schools and 2 madrasahs ibtidaiyah dimuaro jambi as many as 90 students. The sample of this study was 72 students. Sampling using simple random sampling technique. Simple random sampling is the simplest sampling procedure that is carried out fairly, meaning that each unit has the same opportunity (Sumargo, 2020). The random sampling method can help sample the number of permanent voters (Nurdin et al., 2018). The simple random sampling technique is characterized by each element of the entire population having an equal chance of being selected, and using this technique the members of the sample can be obtained easily and quickly. The research instruments used in this study were questionnaire sheets and observation sheets and interviews. The following are the indicators used in cooperation assessment instruments in the form of questionnaires and mathematical process skills.

Table 1. Indicators of cooperation and skills of mathematical processes

Variable		**Indicators**	**Item Number of Question**
Collaborate	Basis	1. Light-handed help groupmates in carrying out their duties 2. Respect the opinions of groupmates	KS7, KS8, KS9, KS10, KS11, K12, KS13, KS14 M15, M16, M17, M18, M19, M20, M21
Process skills	Integrated	1. Obesrvation 2. Measure	O1, O2, O3. O4, O5, O6, O7,

	MG15, MG16, MG17, MG18, MG 19, MG20, MG21

The table above explains the two variables used in this research, then the two variables use two indicators for each variable. The variables used are cooperative character and mathematical process skills. The results of data analysis were collected using a Likert scale. The Likert scale is an assessment scale that presents a choice of scales with a value on each scale to measure the degree of agreement with something (Kamid, Sabil, et al., 2022; Maryuliana et al., 2016).

The following are the categories for the character of student cooperation in the table below:

Table 2. Cooperation Indicators Category

Category	Light-handed help groupmates in carrying out their duties	Respect the opinions of groupmates
Very unkind	8-14.4	7-12,6
Bad	14.5-20.9	12,8-18,3
Enough	21-27.4	18,4-23,9
Good	27,5-33.9	24-29,6
Execellent	34-40.4	29,7-35,3

Table 2 is a likert scale of cooperation characters with 2 indicators. Each indicator has a different scale in the assessment. Likewise, the mathematical process skill variables have different likert scales in the assessment. Here is a likert scale used for the category of mathematical process skills. With each ndikator has a very good category, not breeding, enough, good and snagat not good.

The following is a likert scale used for the category of mathematical process skills can be seen in the table below:

Table 3. Mathematical Process Skills Category

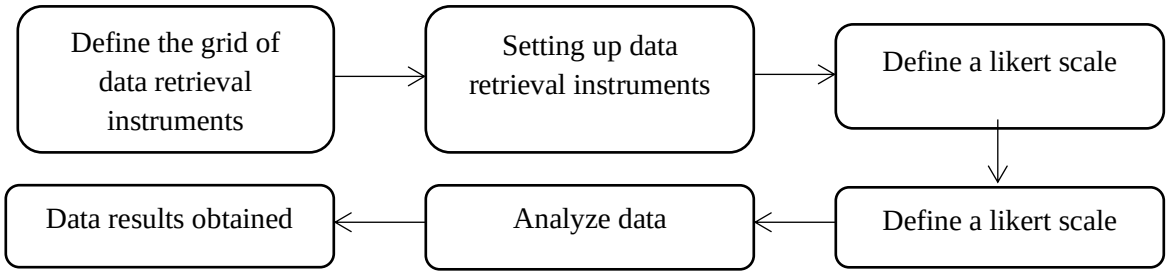
Category	Observation	Measure
Very unkind	7-12,25	7-12,25
Bad	12,26-17,51	12,26-17,51
Good	17,52-22,77	17,52-22,77
Excellent	22,78-28,03	22,78-28,03

The likert scale of mathematical process skill variables has different scales according to the indicators, namely observation and measuring. With categories of very bad, not good, good and very good. Interviews were also conducted with teachers on the cooperation and mathematical process skills of students in schools. The grid for teacher interviews is as follows.

Table 4. Interview Grids

No	Lattice	No item
1	Light-handed help groupmates in carrying out their duties	1
2	Respect the opinions of groupmates	2
3	Students' skills in making observations	3
4	Learners' skills in taking measurements	4

The first work procedure in this study was to determine the instrument grid for data collection so that later the desired data results would be obtained. The following is the working procedure in this study.



The data that has been obtained is then analyzed using descriptive statistics and using the t test and regression test for the character of cooperation and mathematical process skills. Quantitative data analysis techniques use descriptive statistics. Descriptive statistical data analysis activities are carried out by looking for the mean, median, minimum value and maximum value to obtain an overview of the characteristics of the data (Darmaji et al., 2019; F. I. Putri, 2021). Meanwhile, data analysis from interviews was carried out with Miles & Huberman. The activities carried out in Miles and Huberman's analysis are data reduction, data presentation, and conclusion verification (Huda, 2020; Rivani et al., 2022). To determine the influence between cooperative character and mathematical processing skills, a t test and regression test were carried out. Before carrying out the t test and regression test, the prerequisite tests in this research are carried out, namely normality, homogeneity and lineage tests.

3. Result and Discussion

The results of data analysis that have been obtained and processed using statistical science. The first data processing analysis is descriptive statistics. The descriptive statistical results for each of the variable indicators of science process skills and cooperation character in the subject matter of acceleration and debit are as follows:

Table 5. Indicators of learning cooperation (Light-handed help groupmates in carrying out their duties)

School	Category	Interval	F	%	Mean	Median	Min	Max

Elementary	Very unkind	8-14.4	0	0	27.588	28.5	21	33
School 6	Bad	14.5-20.9	0	0	24			
sungai	Enough	21-27.4	8	44.4				
duren	Good	27,5-33.9	9	50				
	Excellent	34-40.4	0	0				
Elementary	Very unkind	8-14.4	0	0	28.5	27.5	24	35
School 3	Bad	14.5-20.9	0	0				
senaung	Enough	21-27.4	9	50				
	Good	27,5-33.9	6	33.3				
	Excellent	34-40.4	3	16.6				
Madrasah	Very unkind	8-14.4	0	0	29.888	28.5	26	46
Ibtidaiyah	Bad	14.5-20.9	0	0	89			
4 Muaro	Enough	21-27.4	3	16.6				
Jambi	Good	27,5-33.9	13	72.2				
	Excellent	34-40.4	2	11.1				
Madrasah	Very unkind	8-14.4	0	0	28.055	27.5	22	36
Ibtidaiyah	Bad	14.5-20.9	0	0	56			
5 Jauharul	Enough	21-27.4	9	50				
	Good	27,5-33.9	6	33.3				
	Excellent	34-40.4	3	16.6				

From table 5, descriptive statistics of the character of light-handed cooperation were obtained, helping group mates in carrying out their duties towards mathematics learning in four schools with good categories in madrasah ibtidaiyah 4 Muaro Jambi higher than the other three schools, namely: Elementary School 6 Suangai Duren, Elementary School 3 Senaung, and madrasah ibtidaiyah 5 Jauharul. So, it can be said that Madrasah Ibtidaiyah 4 Muaro Jambi is superior in the character of light-handed cooperation to help group mates in carrying out their duties.

Furthermore, Descriptive statistical tests have the results of the cooperation indicator test on the opinions of group mates in the following table:

Table 6. Indicators of Cooperation (Respect for the opinions of groupmates)

School	Category	Interval	F	%	Mean	Median	Min	Max
Elementary	Very unkind	7-12,6	0	0	24.77778	24	20	33
School 6	Bad	12,8-18,3	0	0				
Sungai	Enough	18,4-23,9	9	50				
Duren	Good	24-29,6	7	38.8				
	Excellent	29,7-35,3	2	11.1				
Elementary	Very unkind	7-12,6	0	0	25.22222	25.5	18	30
School 3	Bad	12,8-18,3	1	5.5				
Senaung	Enough	18,4-23,9	2	11.1				
	Good	24-29,6	14	77.7				

	Excellent	29,7-35,3	1	5.5				
Madrasah	Very unkind	7-12,6	0	0	24.55556	24	18	31
Ibtidaiyah	Bad	12,8-18,3	1	5.5				
4 Muaro	Enough	18,4-23,9	8	44.4				
Jambi	Good	24-29,6	5	27.7				
	Excellent	29,7-35,3	3	16.6				
Madrasah	Very unkind	7-12,6	0	0	24.94444	25	20	32
Ibtidaiyah	Bad	12,8-18,3	0	0				
5 Jauharul	Enough	18,4-23,9	8	44.4				
	Good	24-29,6	8	44.4				
	Excellent	29,7-35,3	2	11.1				

From table 6, results descriptive statistics on the character of cooperation respect for the opinions of group friends on mathematics learning in four schools with a comparison of good categories at Senaung Elementary School 3 higher than three other schools, namely: Elementary School 6 Sungai duren, madrasah ibtidaiyah 4 Muaro Jambi and Madrasah ibtidaiyah 5 Jauharul. So, it can be said that Senaung Elementary School 3 is superior in cooperation indicators respecting the opinions of group mates.

Then the following is a descriptive statistical table of indicators of observational mathematical process skills, namely:

Table 7. KPM Indicator (Observation)

School	Category	Interval	F	%	Mean	Median	Min	Max
Elementary	Very unkind	7-12,25	0	0	22.83333	22.5	21	26
School 6	Bad	12,26-17,51	0	0				
Sungai	Good	17,52-22,77	9	50				
Duren	Excellent	22,78-28,03	9	50				
Elementary	Very unkind	7-12,25	0	0	23.33333	23	20	26
School 3	Bad	12,26-17,51	0	0				
Senaung	Good	17,52-22,77	5	27.7				
	Excellent	22,78-28,03	13	72.2				
Madrasah	Very unkind	7-12,25	1	5.5	22.33333	23.5	11	27
Ibtidaiyah 4	Bad	12,26-17,51	1	5.5				
Muaro	Good	17,52-22,77	6	33.3				
Jambi	Excellent	22,78-28,03	10	55.5				
Madrasah	Very unkind	7-12,25	0	0	22.61111	23.5	17	26
Ibtidaiyah 5	Bad	12,26-17,51	1	5.5				
Jauharul	Good	17,52-22,77	7	38.8				
	Excellent	22,78-28,03	10	55.5				

From table 7, descriptive statistical results of mathematical process skills observation of mathematics learning in four schools with a fairly good category comparison at Senaung Elementary School 3 are higher than three other schools, namely: Elementary School 6 Sungai duren, madrasah ibtidaiyah 4 Muaro Jambi and Madrasah ibtidaiyah 5 Jauharul. So, it can be said that Senaung Elementary School 3 is superior in indicators of observation mathematical process skills.

Then the following are the results of the descriptive statistical test indicators of mathematical process skills measured in the following table:

Table 8. KPM Indicator (measure)

School	Category	Interval	F	%	Mean	Median	Min	Max
Elementary	Very unkind	7-12,25	0	0	23.5	24	15	27
School 6	Bad	12,26-17,51	1	5.5				
Sungai	Good	17,52-22,77	6	33.3				
Duren	Excellent	22,78-28,03	11	61.1				
Elementary	Very unkind	7-12,25	0	0	23.27778	23.5	18	27
School 3	Bad	12,26-17,51	0	0				
Senaung	Good	17,52-22,77	7	38.8				
	Excellent	22,78-28,03	11	61.1				
Madrasah	Very unkind	7-12,25	0	0	22.44444	23	17	27
Ibtidaiyah	Bad	12,26-17,51	1	5.5				
4 Muaro	Good	17,52-22,77	7	38.8				
Jambi	Excellent	22,78-28,03	9	50				
Madrasah	Very unkind	7-12,25	0	0	23.44444	23.5	18	27
Ibtidaiyah	Bad	12,26-17,51	0	0				
5 Jauharul	Good	17,52-22,77	8	44.4				
	Excellent	22,78-28,03	10	55.5				

From table 8, descriptive statistical results of mathematics process skills measured mathematics learning in four schools with a comparison of categories in both Sungai duren Elementary School and Senaung 3 Elementary School higher than two other schools, namely: madrasah ibtidaiyah 4 Muaro Jambi and Madrasah ibtidaiyah 5 Jauharul. So, it can be concluded that Primary School 6 Sungai duren and Primary School 3 Senaung are superior in mathematical process skills.

Furthermore, test normality for cooperation characters and mathematical process skills in the following table:

Table 9. Normality Test of Cooperation Character and Mathematical Process Skills

Variable	School	Sig	Distribution
Collaboration	Elementary School 6 Sungai Duren	0.078[c]	Normal
	Elementary School 3 Senaung	0.137[c]	Normal

	Madrasah Ibtidaiyah 4 Muaro Jambi	0.200[c,d]	Normal
	Madrasah Ibtidaiyah 5 Jauharul	0.136	Normal
Mathematical Process Skilss	Elementary School 6 Sungai Duren	0.200[c,d]	Normal
	Elementary School 3 Senaung	0.200[c,d]	Normal
	Madrasah Ibtidaiyah 4 Muaro Jambi	0.200[c,d]	Normal
	Madrasah Ibtidaiyah 5 Jauharul	0.099[c]	Normal

From table 9, the results of the normality test of cooperation character and mathematical process skills were obtained for mathematics learning in four schools. This can be seen from the table above. conclusions were drawn from the data in the normally distributed table, with the normality test the significance value of the Kolmogorov-smoniv test > 0.05.

Then the following table is the result of the skill normality test Next is the result of the homogeneity test of the cooperation variables and mathematical process skills in the four schools:

Table 10. Homogeneity Test

School	Variable	Sig. (2-tailed)	Distribution
Elementary School 6 Suangai Duren	Cooperation character	0.023	Homogeneity
	Mathematical process skills	0.019	Homogeneity
Elementary School 3 Senaung	Cooperation character	0.022	Homogeneity
	Mathematical process skills	0.026	Homogeneity
Madrasah Ibtidaiyah 4 Muaro Jambi	Cooperation character	0.029	Homogeneity
	Mathematical process skills	0.032	Homogeneity
Madrasah Ibtidaiyah 5 Jauharul	Cooperation character	0.016	Homogeneity
	Mathematical process skills	0.029	Homogeneity

Based on Table 11, homogeneity test results were obtained, namely a significance value of > 0.05. It can be concluded that the data used in this study are homogeneous between the character variables of cooperation and the skills of the mathematical process.

Furthermore, it is the result of a linearity test of cooperation variables and mathematical process skills in all schools:

Table 11. Linearity Test

School	Variable	Sig. (2-tailed)	Distribution
Elementary School 6 Suangai Duren	Cooperation character	0.020	Linier
	Mathematical process skills	0.027	Linier
Elementary School 3 Senaung	Cooperation character	0.030	Linier
	Mathematical process skills	0.032	Linier
	Cooperation character	0.036	Linier

Madrasah Ibtidaiyah 4 Muaro Jambi	Mathematical process skills	0.039	Linier
Madrasah Ibtidaiyah 5 Jauharul	Cooperation character Mathematical process skills	0.035 0.034	Linier Linier

Based on the results of the table above. It can be concluded that there is a linear influence between the variables of cooperation character and mathematical process skills, as evidenced by the results of the Kolmogorov-smoniv test significance value < 0.05.

Furthermore, the character t test of cooperation in four schools can be seen in the following table:

Table 12. Cooperation Character T Test

Variable	School	Sig. (2-tailed)
Colaboration	Elementary School 6 Suangai Duren	.023
	Elementary School 3 Senaung	.020
	Madrasah Ibtidaiyah 4 Muaro Jambi	.027
	Madrasah Ibtidaiyah 5 Jauharul	.030

Based on the table above, it can be concluded that there is a comparison between the character of cooperation in SD 6 Sungai Duren, Elementary School 3 Senaung, Madrasah Ibtidaiyah 4 Muaro Jambi, Madrasah Ibtidaiyah 5 Jauharul. This is evidenced by the results of the sig. (2-tailed) smaller than 0.05.

Then the table below is the results of the t-test of mathematical process skills in four schools as follows:

Table 13. Mathematical Process Skills T Test

Variable	School	Sig. (2-tailed)
KPM	Elementary School 6 Suangai Duren	.023
	Elementary School 3 Senaung	.025
	Madrasah Ibtidaiyah 4 Muaro Jambi	.036
	Madrasah Ibtidaiyah 5 Jauharul	.032

Based on the table above, it can be concluded that there is a comparison between mathematical process skills in SD 6 Sungai Duren, Elementary School 3 Senaung, Madrasah Ibtidaiyah 4 Muaro Jambi, Madrasah Ibtidaiyah 5 Jauharul. This is evidenced by the results of the sig. (2-tailed) smaller than 0.05.

Then the table below is the result of the Regression test test f with ANOVA from cooperation characters and mathematical process skills as follows:

Table 14. Test Hypothesis Regression with ANOVA Cooperation Character And Mathematical Process Skills

Model	Sum of Squares	df	Mean Square	F	Sig.

Regression	15.738	1	15.738	.949	.045[b]
Residual	265.373	71	16.586		
Total	281.111	72			

The table above is a table of ANOVA regression test results from cooperation characters and mathematical process skills. So, it can be concluded that the character of cooperation and the skills of mathematical processes influence each other. This is evidenced by the value of sigs. < from 0.005.

Then the table below is the regression test results of cooperation characters and mathematical process skills as follows:

Table 15. Regression Test Cooperation Character and Mathematical Process Skills

R	R Square	Adjusted R Square	Std. Error of the Estimate
.237[a]	.056	.003	4.07257

Based on the table above, the results of the regression test of cooperation characters and mathematical process skills regarding, R square .056 x 100 = 56 %.

Then the table below is the regression test results of cooperation characters and mathematical process skills as follows:

Table 16. Regression Test Cooperation Character And Mathematical Process Skills

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
KPM ><	66.490	14.699		4.523	.000
Collaboration	.174	.179	.237	.974	.045

From the table, it is obtained that there is an influence between the skills of the mathematical process and the character of cooperation in the subject of mathematical learning. This is evidenced by the sig value (2-failed) < 0.05.

There are five criteria for mathematical process skills on the character of cooperation, namely: very bad, bad, enough, good, excellent. Based the results of description is cooperation indicators for mathematics learning, acceleration and debit materials in four schools, namely: elementary school 6 Suangi Duren, elementary school 3 Senaung, Madrasah Ibtidaiyah 4 muaro jambi, and Madrasah Ibtidaiyah 5 Jauharul. From results of descriptive statistical table about the lightness of the hand helping the groupmates in carrying out their duties, we can see that each school already has this character well, this is seen from the percentage results of each school obtained. Furthermore, in the results of the second table on the indicator of cooperation in respecting the opinions of group friends, it can be seen that the results in each school have a level of cooperation in the field of respecting the opinions of

group friends is quite good, this can be seen from the percentage obtained. Then, in addition to the character of cooperation, there are also descriptive statistical results of indicators of mathematical process skills with observations can be seen the results in table 6 of each school are quite good, this is seen from the presentations contained in each school. Furthermore, the last descriptive statistical result on the indicator of mathematical process skills by measuring the good results is seen from the presentation of each school in table 7.

Then proceed with the normality test where the significance value of the Kolmogorov-Smoniv test is > 0.05, this indicates that the data is normally distributed. It can be seen the results of the normality test for the character of cooperation with normally distributed data. Furthermore, the results of the normality test on mathematical process skills in table 9 can be seen in normal distributed data, obtained by the normality test with the Kolmogorov-smoniv test significance value > 0.05. Furthermore, a homogeneity test was carried out where the test was carried out to see whether the data in this study was homogeneous, as found in Table 10 the data in this study was homogeneous, As shown in table 10, the data in this research is homogeneous. A linearity test was carried out to look for a linear effect where if the Kolmogorov-smoniv <0.05 it can be said to have an influence (linear) and vice versa. So, can be inferred from the results four schools have linear influence between a skill of the science process and the character of cooperation on the study of mathematics. In the T test, the skills of the mathematical process and the character of student cooperation showed that the comparison between the two variables in the school was recorded, namely: elementary school 6 Suangi Duren, elementary school 3 Senaung, madrasah ibtidaiyah 4 Muaro Jambi, and madrasah ibtidaiyah 5 Jauharul.

Next is a table of the results of interviews with elementary school teachers regarding the character of cooperation with elementary school mathematics process skills as follows, in table 17:

In the regression test of mathematical process skills and disciplinary character towards mathematics learning, acceleration and debit materials in four schools, namely: elementary school 6 Suangi Duren, elementary school 3 Senaung, Madrasah Ibtidaiyah 4 Muaro Jambi, and Madrasah Ibtidaiyah 5 Jauharul. This Regression Test was carried out to find an influence found in the four schools regarding mathematical process skills with the character of cooperation with mathematics learning measurement and debit materials. The results of ui Regression in this study can be seen from tables 15-17 where it was obtained that there is an influence between mathematical process skills and the character of cooperation in mathematics learning subjects in four schools. This evidenced by the sig value (2-failed) < 0.05. Can be concluded that in results the table, the four schools have an influence of Regression on mathematical process skills with the character of cooperation on mathematics learning of measurement and debit materials. Based on the results of wawncara that has been carried out with mathematics teachers in four elementary schools, namely: Elementary School 6 Suangi Duren, Elementary School 3 Senaung, Madrasah Ibtidaiyah 4 Muaro Jambi, and Madrasah Ibtidaiyah 5 Jauharul. From the results of the interview, it can be concluded that the skills of mathematical process and

character student cooperation in school are quite good. Mathematical process skills and the character of cooperation in schools are mutually influential so that students who have good process skills can help each other as well as friends.

Table 17. Interview Result

Question		Answer
1. What are the skills of the mathematical process and the character of student cooperation?	Elementary School 6 Sungai Duren	In my opinion, the character of student cooperation in this school, especially grade 5, is quite good and also about the skills of the mathematical process in students have different skill levels so that the ability to learn mathematics becomes diverse
	Elementary School 3 Senaung	The skills of students in this school vary quite a bit depending on the interest in the learning that takes place. There are students who have empathy and respect for fellow friends well, there are also students who do not have a high sense of empathy to help sesame for the character of cooperation.
	Madrasah Ibtidaiyah 4 Muaro Jambi	For the character of cooperation in this school, it is good, especially for grade 5 elementary school students, and students have a fairly good level of mathematical process skills compared to the lower levels.
	Madrasah Ibtidaiyah 5 Jauharul	In my view as a teacher for the character of student cooperation is good enough as well as the skill of the mathematical process
2. Can mathematical process skills have an effect on the character of student cooperation in the learning process?	Elementary School 6 Sungai Duren	Mutual influence, because students' skills determine how the character of cooperation in the classroom can be realized.
	Elementary School 3 Senaung	Of course, this is what will encourage students to be more active in learning
	Madrasah Ibtidaiyah 4 Muaro Jambi	Yes, of course it is interrelated or influential
	Madrasah Ibtidaiyah 5 Jauharul	Of course, interrelated
3. What happens if students don't have a cooperative character?	Elementary School 6 Sungai Duren	If students do not have the character of cooperation then they will behave indifferently to their surroundings so that there is no sense of tolerance and respect for friends.
	Elementary School 3 Senaung	Students will not be able to communicate well at the time of learning both with friends and with the teacher
	Madrasah Ibtidaiyah 4 Muaro Jambi	Students will not have a sense of respect for friends and will not be able to mingle with friends
	Madrasah Ibtidaiyah 5 Jauharul	Students will tend to be alone in doing a lesson and will be silent (alone) because they cannot cooperate with classmates

Research of Rahmawati et al., (2023) character education is important in the process of learning mathematics. In Wulandari, (2020) stated that mathematics learning can be achieved because it is supported by the character value of cooperation. However, in the study, there was no assessment of how much influence the character of cooperation and student mathematics learning outcomes had. So that this research can later provide knowledge on how the character of cooperation can affect students' mathematics learning outcomes and their regression of students' mathematical process skills..

Hartono & Karnasih, (2017) states that mathematical process skills are needed to develop thought processes so that they can apply them in mathematical situations. In the study, there was no discussion about how the influence between the character of cooperation and the mathematical process skills of students. So that the update in this study is to be able to find out the magnitude of the influence of the character of cooperation with the mathematical process skills of students. Because the influence between the two needs to be studied so that teachers can find out whether the cooperative character education applied during the mathematics learning process has an effect on their mathematical process skills. If it is influential, teachers can emphasize the character of cooperation in mathematics learning.

In Rochmawati et al., research (2020) the character of student cooperation in making observations shows good results, this is marked by students collaborating in observing a problem or research focus. Students help each other in carrying out tasks, especially group tasks that require cooperation between their members. Pranowo, (2013) also stated that when conducting learning that uses observation skills with groups, members who are weak in participation tend to be silenced so that there is no formation of a cooperative character. This is a negative impact of the lack of cooperative character in students. So that students are more inclined to behave individually.

In addition, in this study, the diligent character of students influenced the skills of the measuring process. Marliza & Eliza, (2019) also stated that process skills, especially measuring can cultivate the assiduous character of learners. Diligent character in measuring skills can be characterized by students being able to use measuring instruments that are in accordance with the object to be measured, measuring procedures and measuring results accordingly (Yurika et al., 2014). The indicators that have been met indicate that students are diligent in their learning so that they are able to solve the problems given by the teacher.

The character of cooperation can make students helpful in helping their group friends in carrying out their duties and respecting the opinions of their group friends. If students do not have a cooperative character, they become individuals and be shunned by their peers. Individual character can cause difficulties for students both at school and outside the school environment. Students who do not have a cooperative character are also ostracized by society because they do not want to help each other and work together when there are activities in the community.

Mathematical process skills are needed in learning especially mathematics subjects. Because mathematical process skills can help students in observing

problems, exploring mathematical concepts and solving problems by measuring in mathematical processes. Thus, if students do not have mathematical process skills, students will find it difficult to solve problems in mathematics subjects, it is difficult to find problems because of the low ability to identify students' problems. And this also has an impact on daily life that relies on the mathematical abilities of learners.

4. Conclusion

The efficacy of this study is that there is an influence between the skills of the mathematical process and the character of student cooperation in grade 5 elementary school on the subject of mathematics measurement and debit material at SD 6 Suangi Duren, Elementary School 3 Senaung, Madrasah Ibtidaiyah 4 Muaro Jambi, and Madrasah Ibtidaiyah 5 Jauharul. With the skills of the mathematics process and the character of student cooperation applied in schools, it will make learning in the classroom more effective and efficient. Based on this, the researcher recommends to the next researcher to use more varied variables and higher levels of education in order to find out the extent to which a character of cooperation and process skills are useful for students in the classroom.

5. Author's Contribution

Kamid, Dwi Agus Kurniawan, and Rahmat Perdana developed the research concept and design. Minarsih, Siti Rohana, Roy Andre Ferdinan and Rizki Afiana collected data and presented a table, compiled discussions, conclusions and abstracts.

6. References

Afiyatun, U. (2015). *Pengembangan Nilai Cinta Damai untuk Mencegah Bullying di Sekolah dalam Rangka Membentuk Karakter Kewarganegaraan (Studi Kasus Di SMA Kecamatan Gemolong)*.

Aqobah, Q. J., Ali, M., Decheline, G., & Raharja, A. T. (2020). Penanaman Perilaku Kerjasama Anak Usia Dini Melalui Permainan Tradisonal. *Jurnal Eksistensi Pendidikan Luar Sekolah (E-Plus)*, *5*(2).

Asrial, A., Syahrial, S., Kurniawan, D. A., & Zulkhi, M. D. (2022). Response, Peace-Loving Characters and Homeland Love Characters: Integrating Traditional Game of Petak Umpet. *Jurnal Iqra': Kajian Ilmu Pendidikan*, *7*(1), 275–294.

Astalini, A., Darmaji, D., Kurniawan, D. A., & Minarsih, M. (2022). The Identification of HOTS Creative Thinking, Science Process Skills and Digital Literacy a in Physics Subject. *Jurnal Penelitian Fisika Dan Aplikasinya (JPFA)*, *12*(1).

Astalini, A., Darmaji, D., Kurniawan, D. A., Widodo, R. I., & Rohana, S. (2022). Junior High School Teacher's Forum Group Discussion Response on Application of Adat Bersendi Syara'Syara'Bersendi Kitabullah in Learning. *Journal Evaluation in Education (JEE)*, *3*(4), 102–107.

Budiarti, R. S., Kurniawan, D. A., & Rohana, S. (2022). A Comparison by Gender: Interest and Science Process Skills. *Journal of Education Research and Evaluation*, *6*(1), 88–97.

Chan, S.-Y., Lam, Y. K., & Ng, T. F. (2018). Student's perception on initial experience of flipped classroom in pharmacy education: Are we ready? *Innovations in Education and Teaching International*.

Colò, G. (2020). Nuclear density functional theory. *Advances in Physics: X*, *5*(1), 1740061.

Darmaji, D., Kurniawan, D. A., & Irdianti, I. (2019). Physics Education Students' Science Process Skills. *International Journal of Evaluation and Research in Education*, *8*(2), 293–298.

Dietmaier, C., & Dietmaier, C. (2017). Deskriptive Statistik. *Mathematik Für Wirtschaftsingenieure. Https://Doi. Org/10.3139/9783446454477.014*.

Ernawati, M. D. W., Asrial, A., Perdana, R., Septi, S. E., Rohana, S., & Nawahdani, A. M. (2022). Evaluation of Students' Interest, Attitudes, and Science Process Skills in Science Subjects. *Journal of Education Research and Evaluation*, *6*(1), 181–194.

Farikah, F. (2019). Developing the Students' Character through Literacy Activities in A Child-Friendly School Model. *Dinamika Ilmu*, *19*(2), 187–196.

Grenaudier-Klijn, F. (2020). Deportation, The Maternal Abject, and the Impossibility of Selfhood: Jacqueline Saveria Huré's 1954 Ni sains ni saufs. *The Journal of Holocaust Research*, *34*(2), 125–137.

Hartono, J. A., & Karnasih, I. (2017). *Pentingnya pemodelan matematis dalam pembelajaran matematika*.

Huda, H. N. (2020). Assertive Behavior and Its Application by Islamic Education Teacher in The Assessment of Student Learning Outcomes. *Tarbiyah: Jurnal Ilmiah Kependidikan*, *9*(1), 1–11.

Kamaruddin, S. A. (2012). Character education and students social behavior. *Journal of Education and Learning (EduLearn)*, *6*(4), 223–230.

Kamid, K., Rohati, R., Hobri, H., Triani, E., Rohana, S., & Pratama, W. A. (2022). Process Skill and Student's Interest for Mathematics Learning: Playing a Traditional Games. *International Journal of Instruction*, *15*(3), 967–988.

Kamid, K., Sabil, H., Syafmen, W., & Rohana, S. (2022). The Use of Traditional Gundu Games in Improving Student Discipline in Mathematics. *AL-Ishlah: Jurnal Pendidikan*, *14*(3), 3087–3100.

Kamid, K., Syaiful, S., Theis, R., Sufri, S., & Rohana, S. (2022). Cooperative Learning Model with Process Skills for Mathematics Learning in Elementary School. *International Journal of Elementary Education*, *6*(1), 58–68.

Kenedi, D. (2019). koneksi matematika siswa SD untuk memecahkan masalah matematika. *Journal on Mathematics Education*, *10*(1), 69–79.

Kurniawan, Y., & Sudrajat, A. (2017). Peran teman sebaya dalam pembentukan karakter siswa MTs (Madrasah Tsanawiyah). *SOCIA: Jurnal Ilmu-Ilmu Sosial*, *14*(2).

Luo, Z., Jingying, C., Guangshuai, W., & Mengyi, L. (2022). A three-dimensional model of student interest during learning using multimodal fusion with natural sensing technology. *Interactive Learning Environments*, *30*(6), 1117–1130.

Marliza, R., & Eliza, D. (2019). Peningkatan keterampilan proses sains melalui kegiatan belajar tanaman di taman kanak-kanak Aba Air Bangis. *JRTI (Jurnal Riset Tindakan Indonesia)*, *4*(1), 59–63.

Maryuliana, M., Subroto, I. M. I., & Haviana, S. F. C. (2016). Sistem informasi angket pengukuran skala kebutuhan materi pembelajaran tambahan sebagai pendukung pengambilan keputusan di sekolah menengah atas menggunakan skala likert. *TRANSISTOR Elektro Dan Informatika*, *1*(1), 1–12.

Negoro, R. A. (2019). Upaya membangun keterampilan proses sains melalui pembelajaran inkuiri berbantuan alat peraga gaya sentripetal. *Jurnal Pendidikan Fisika Dan Keilmuan (JPFK)*, *5*(1), 45.

Nurdin, N., Hamdhana, D., & Iqbal, M. (2018). Aplikasi Quick Count Pilkada Dengan Menggunakan Metode Sample Random Sampling Berbasis Android. *TECHSI-Jurnal Teknik Informatika*, *10*(1), 141–156.

Nurlaily, V. A., Soegiyanto, H., & Usodo, B. (2019). Elementary School Teachers' Obstacles in the Implementation of Problem-Based Learning Model in Mathematics Learning. *Journal on Mathematics Education*, *10*(2), 229–238.

Pranowo, D. J. (2013). Implementasi Pendidikan Karakter Kepedulian dan Kerja Sama pada Mata Kuliah Keterampilan Berbicara Bahasa Prancis dengan Metode Bermain Peran. *Jurnal Pendidikan Karakter*, *4*(2).

Putri, D. N. P., & Arifin, M. B. U. B. (2022). Peran Kinerja Guru Dalam Membentuk Karakter Kerjasama Pada Siswa Kelas IV. *Al-Mada: Jurnal Agama, Sosial, Dan Budaya*, *5*(2), 176–189.

Putri, F. I. (2021). Perbandingan Hasil Belajar Siswi Kelas VII C Dan VII D terhadap Mata Pelajaran IPA Fisika. *Qalam: Jurnal Ilmu Kependidikan*, *10*(1), 38–47.

Rahmawati, I., Anwar, M. S., Saputra, A. A., & Fauza, M. R. (2023). Implementasi Pendidikan Karakter Dalam Proses Pembelajaran Matematika Kelas X MA Ma'arif Roudlotut Tholibin Kota Metro. *Jurnal Penelitian Tindakan Kelas*, *1*(2), 91–105.

Rivani, P. A., Kurniawan, D. A., & Yohafrinal, Y. (2022). Pengahruh Minat Belajar Terhadap Prestasi Belajar Fisika Pada Siswa di SMAN 11 Kota Jambi. *Tunjuk Ajar: Jurnal Penelitian Ilmu Pendidikan*, *5*(1), 143–150.

Rochmawati, F., Irianto, A., & Rosidah, C. T. (2020). Identifikasi Karakter Kerjasama Pada Proses Pembelajaran Dengan Menggunakan Model Problem Based Learning (PBL). *Buana Pendidikan: Jurnal Fakultas Keguruan Dan Ilmu Pendidikan Unipa Surabaya*, *16*(30s), 7–12.

Rohana, S., Maison, D. A. K., & Syari, E. (2021). Analisis Model Discovery Learning Terhadap Karakter Disiplin dan Keterampilan Proses Sains Siswa Pada Mata Pelajaran Fisika. *Prosiding Seminar Nasional Matematika Dan Sains*, 378–384.

Rukiyati, R., Sutarini, Y. C. N., & Priyoyuwono, P. (2014). Penanaman nilai karakter tanggung jawab dan kerja sama terintegrasi dalam perkuliahan ilmu pendidikan. *Jurnal Pendidikan Karakter*, *5*(2).

Saleh, M., Prahmana, R. C. I., & Isa, M. (2018). Improving the Reasoning Ability of Elementary School Student through the Indonesian Realistic Mathematics Education. *Journal on Mathematics Education*, *9*(1), 41–54.

Sari, I. P., Suwandi, I. K., & Setyowati, S. (2018). Pengaruh Metode Storytelling Terhadap Karakter Kerjasama Pada Siswa Kelas Iii Sd Pujokusuman Yogyakarta. *Taman Cendekia: Jurnal Pendidikan Ke-SD-An*, *2*(2), 231–238.

Saw, K. G. (2017). Cognitive load theory and the use of worked examples as an instructional strategy in physics for distance learners: A preliminary study. *Turkish Online Journal of Distance Education*, *18*(4), 142–159.

Semin, F. K. (2019). Competencies of Principals in Ensuring Sustainable Education: Teachers' Views. *International Journal of Evaluation and Research in Education*, *8*(2), 201–212.

Setiawan, D. W., Suharno, S., & Triyanto, T. (2019). The influence of active learning on the concept of mastery of sains learning by fifth grade students at primary school. *International Journal of Educational Methodology*, *5*(1), 177–181.

Soraya, Z. (2020). Penguatan Pendidikan Karakter untuk Membangun Peradaban Bangsa. *Southeast Asian Journal of Islamic Education Management*, *1*(1), 74–81.

Sugiyono, P. (2015). Metode penelitian kombinasi (mixed methods). *Bandung: Alfabeta*, *28*, 1–12.

Sumargo, B. (2020). *Teknik sampling*. Unj press.

Sumiati, E., Septian, D., & Faizah, F. (2018). Pengembangan modul fisika berbasis Scientific Approach untuk meningkatkan Keterampilan Proses Sains siswa. *Jurnal Pendidikan Fisika Dan Keilmuan (JPFK)*, *4*(2), 75–88.

Syafmen, W., Fajriah, N., Citra, Y. D., Rivani, P. A., & Widodo, R. I. (2022). Investigating the Role of Traditional Games in Developing Students' Process Skills and Interest in Learning mathematics. *Eurasian Journal of Educational Research*, *97*(97), 216–234.

Tari, D. P. (2019). *Penerapan Model Cooperative Learning dalam Pembelajaran Tari Berpasangan Untuk Meningkatkan Karakter Sosial Siswa di SMPN 19 Bandung*.

Wulandari, S. R. (2020). Pendidikan Karakter Kerjasama dalam Pembelajaran Matematika. *Widya Wacana: Jurnal Ilmiah*, *15*(1).

Yulianti, S. D., Djatmika, E. T., & Santoso, A. (2017). Pendidikan karakter kerja sama dalam pembelajaran siswa sekolah dasar pada kurikulum 2013. *Jurnal Teori Dan Praksis Pembelajaran IPS*, *1*(1), 33–38.

Yurika, J., Suyatna, A., & Viyanti, V. (2014). Pemanfaatan Media Teknologi Informasi Dan Komunikasi Tutorial Sebagai Suplemen Eksperimen. *Jurnal Pembelajaran Fisika Universitas Lampung*, *2*(1), 117885.