The Character of Perseverance and Mathematical Processing Skills in Learning Numeracy Operations in Elementary Schools

Noor Fajriah[1*], Kamid[2] iD

[1]Faculty of Teaching and Education, Universitas Lambung Mangkurat, Kalimantan Selatan, Indonesia
[2]Faculty of Teaching and Education, Universitas Jambi, Jambi, Indonesia
*Corresponding author: kamid.math@unja.ac.id

Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh karakter ketekunan terhadap keterampilan proses matematis siswa sekolah menengah atas pada operasi hitung. Kemudian untuk mengetahui perbedaan ketekunan belajar siswa dan keterampilan proses matematika sekolah dasar. Metode penelitian ini menggunakan mixed method dengan desain explanatory. Sampel penelitian dikelompokkan menjadi tiga sekolah yaitu SDN Basirih 5 dari Kalimantan selatan, SDN 64 Muara Bulian, dan SDN 131 Muara Bulian berasal dari provinsi Jambi, yang akan kami gunakan dengan jumlah sampel sebanyak 60 siswa. Pengambilan sampel menggunakan teknik simple random sampling. Hasil analisis data dengan menggunakan independent sample t-test diperoleh nilai sig < 0,05, sehingga dapat dikatakan bahwa karakter ketekunan siswa pada setiap sekolah dasar berbeda-beda, dan untuk variabel keterampilan proses matematis sig. adalah < 0,05 sehingga KPM tiap sekolah berbeda. Hasil uji regresi linier sederhana diperoleh nilai sig sebesar 0,025 pada kelas tinggi SDN Basirih 5, SD Negeri 64, dan SD Negeri 131 Muara Bulian diperoleh nilai sig sebesar 0,030, dimana nilai sig < 0,05, yang berarti kegigihan karakter berpengaruh terhadap keterampilan proses matematis siswa. Simpulan dari penelitian ini adalah ketekunan belajar merupakan faktor penting yang mempengaruhi keterampilan proses matematis siswa, dengan implikasi bahwa penguatan karakter ketekunan dapat meningkatkan hasil belajar matematis.

Kata Kunci: Karakter Ketekunan; Keterampilan Proses Matematika, Siswa.

Abstract

This study aims to determine the effect of the persistence character on the mathematical processing skills of high school students in arithmetic operations. Then, find out the differences in student learning persistence and elementary school math processing skills. This research method uses a mixed practice with an explanatory design. The research sample was grouped into three schools, namely elementary school Basirih 5 from South Kalimantan, elementary school 64 Muara Bulian, and elementary school 131 Muara Bulian from Jambi province, which we will use with a total sample of 60 students—sampling using a simple random sampling technique. The results of data analysis using the independent sample t-test obtained a value of sig <0.05, so it can be said that the character of the persistence of students in each elementary school is different, and for the mathematical processing skills variable sig is <0.05 so that the KPM for each school is different. The results of a simple linear regression test obtained a sig value of 0.025 in the high class of elementary school Basirih 5, elementary school 64, and elementary school 131 Muara Bulian received a sig value of 0.030, where the sig value <0.05, which means that the persistence of character affects the students' mathematical process skills. The conclusion of this study is that learning persistence is an important factor affecting students' mathematical process skills, with the implication that strengthening the character of perseverance can improve mathematical learning outcomes.

Keywords: Mathematics Process Skills, Perseverance, Students.

1. INTRODUCTION

Mathematics is a basic learning that every individual must learn. Learning mathematics basically has characteristics that are abstract, systematic, as well as tiered concepts and principles (Adrian, 2019; Kamid, Rohati, et al., 2022; Wiryanto, 2020). Learning mathematics is one of the compulsory subjects in elementary school which is an interesting learning to develop, elementary school age children are experiencing developments in thinking and learning (Anggraini, 2021; Kamid, K., Winarni, et al., 2022; Kenedi et al., 2019). The process of learning mathematics in elementary schools will discuss

basic mathematical concepts and materials that will help students in their mathematics material at a further level (Fauzi et al., 2020; Kamid, Sabil, et al., 2021; Mutlu, 2019). To have the knowledge and intelligence in understanding mathematics, it is important for students to have the character of perseverance. Perseverance is a character that supports students to be able to understand a lesson. Perseverance is the desire of students to continuously achieve goals (Amin, Alimni, Kurniawan, Triani, et al., 2022; Rahmawati & Hasanah, 2021; Septiana et al., 2017). The persistence of students in an effort to continue to pursue their academic goals results in high confidence in their own academic abilities which will also increase their chances of achieving (Agus et al., 2021; Allen et al., 2021; Ramos Salazar & Meador, 2023). Study persistence is determined by the interaction of several variables including student interest in the learning process, and goals in responding to challenges as well as by providing students with an understanding of the importance of study persistence in obtaining the best learning achievement (Mahmodi & Ebrahimzade, 2015; Opinsi & Kurniah, 2022; Ramli et al., 2022). In addition to perseverance in learning, process skills in learning mathematics are also needed.

Process skills in mathematics are important for students to have. Student process skills are one of the important efforts to obtain optimal student learning success (Kamid, K., Sabil, et al., 2022; Kamid, Anwar, et al., 2021; Rizqi et al., 2022). Five principles in process skills in learning mathematics, namely observing, classifying, analyzing, measuring, and presenting (Astuti et al., 2021; Kamid, K., Iriani, D., et al., 2022; Septian & Monariska, 2021). Process skills in this learning become something that supports the implementation of good learning (Darmaji, D., Astalini, A., et al., 2022; Darmaji, D., Kurniawan, et al., 2022; Kamid, Rohati, et al., 2022). These process skills are important to enable students to directly apply what they have learned to their daily lives (Astalini, A. et al., 2021; Kamid, Winarni, et al., 2022). Process skills in the set of rational numbers, especially the set of fractional numbers, there are still many students and students who make mistakes in fraction arithmetic operations, both addition, subtraction, multiplication, and division operations. According to previous research which stated that the one solution is to apply a process skills approach that allows for an effective and efficient process of teaching and learning activities (Anjarwani et al., 2020; Yampap & Bay, 2020). In line with previous research that mathematics lessons in elementary schools are needed, where students will acquire skills in explaining their actions rationally, accurately, and concisely (Fauzi et al., 2020; Veronica et al., 2022).

Previous research stated that student persistence in learning is related to the skills possessed by students and also the learning outcomes obtained by students (Chen et al., 2021; Teimouri et al., 2018). Then the previous research relevant to the research that will be conducted by the current researcher. Previous research explained that having the character of persistence will make someone have good performance (Schunk & DiBenedetto, 2020; Wentzel & Skinner, 2022). In line with previous research, this study was conducted as a generalization of previous studies. This study was conducted to determine the impact of student process skills on the persistence characteristics of student learning, particularly at the primary school level as it pertains to mathematics and number operations. Previous research found that to obtain high mathematics learning outcomes students must not only have perseverance but also have good mathematical skills (Ardiyani, 2018; Rahayu & Suningsih, 2018). Students who have the character of persistence in learning mathematics tend to be curious, then understand then be skilled or have mathematical processing skills (Rai & Fahmi, 2021; Rusli & Putri, 2023). These mathematical process skills accompanied by the character of persistence will make students accustomed and able to apply them during the learning process, quizzes and exams. So that students can obtain maximum learning outcomes and apply them in everyday life. The novelty of this study lies in its unique focus on examining the relationship between mathematical process skills and learning persistence

of primary school students in the context of arithmetic operations. This research is very important to know because education now requires students to have good skills and attitudes (Kamid, Anwar, et al., 2021; Kamid, Rohati, et al., 2022; Syafmen, W. et al., 2022). One of the skills of the mathematical process and student learning perseverance as a form of effort to deal with the times. This study aims to determine the effect of mathematical process skills and learning persistence of elementary school students on arithmetic operations material, to determine differences in learning persistence and students' mathematical processing skills.

2. METHODS

This study uses a mixed methods study with a sequential explanatory study design. The mix methods method is a mixed method between quantitative and qualitative research methods (Edmonds & Kennedy, 2016; Kurniawan & Widodi, 2022). The steps were carried out using a sequential explanatory design and collecting qualitative and quantitative data which prioritized qualitative emphasis as an explanation of the main quantitative data. This research was conducted in elementary schools in Jambi Province, Muara Bulian District and South Kalimantan Province, South Banjarmasin District. The sampling technique is simple random sampling. Simple random sampling is a method of sampling in which all members of the population have the same opportunity as the research sample (Arieska & Herdiani, 2018; Sugiyono, 2017). The population in this study were high school mathematics students in elementary schools in Jambi Province, Muara Bulian District (State Elementary School 64 Muara Bulian, and State Elementary School 131 Muara Bulian) and South Kalimantan Province, South Banjarmasin District (Basirih State Elementary School 5). The research sample was grouped into three schools, we will use a total sample of 60 students. Sampling using a simple random sampling technique.

This study used tools in the form of a mathematical process skills observation sheet and student persistence questionnaires and interviews to enhance the qualitative data. The questionnaire in this study was to measure the persistence of student learning using a 5-point Likert scale. The scale consists of 5 being very good, 4 being good, 3 being fair, 2 being bad and 1 being very bad. On the other hand, it measures skills in mathematical processes in the form of a mathematics observation sheet using material arithmetic operations using the Likert scale 4. The scale consists of (4 for very good, 3 for good, 2 for bad, 1 for very bad). The results obtained from the question and observation sheets were corroborated by interviews with teachers teaching these subjects. Indices of perseverance and mathematical process ability in this study are shown in Table 1.

Tabel 1. Indicators of Perseverance and Mathematical Process Skills

Variable	Indicator	Statement Item Number
Perseverance	No delay in completing work	P1, P2, P3, P4
	Always take advantage of the opportunities that exist	P5, P6, P7, P8, P9, P10
Mathematical Process Skills	Observation	O1, O2, O3, O4, O5, O6, O7
	Communication	C8, C9, C10, C11, C12, C13, C14
	Measure	M15, M16, M17, M18, M19, M20, 21

In addition, the categories of student learning persistence indicators are presented in Table 2.

Tabel 2. Perseverance Indicator Category

Category	Not Delaying the Time of Completion of Work.	Always Take Advantage of The Opportunities That Exist
Very Not Good	4 - 7.2	6 – 10.8
Not good	7.23 – 10.4	10.9 – 15.6
Enough	10.5 – 13.6	15.7 – 20.4
Good	13.7 – 16.8	20.5 – 25.2
Very good	16.9 – 20	25.3 – 30

In addition, the categories of students' mathematical process observation sheets are presented in Table 3.

Tabel 3. Mathematical Process Skills Category

Category	Observation, Communication and Measuring
Very Not Good	7.0 – 12.25
Not good	12.26 – 17.5
Good	17.6 – 22.75
Very good	22.76 – 28.0

As for the grid of interviews conducted with thematic teachers in each school, namely to find out how the character of persistence and student process skills is and how the teacher's efforts are in improving the character of perseverance and student process skills. As well as how the relationship between the character of persistence with process skills. The data obtained is in the form of quantitative and qualitative data. Quantitative data can be obtained from observation sheets of mathematical process skills and questions on students' learning persistence which is reinforced by the results of interviews with educators who are in charge of mathematics in elementary schools. Quantitative data were analyzed using statistics, namely descriptive statistics and parametric inferential statistics. Furthermore, descriptive analysis is presented in tables of frequency, percentage, average, median, min and max. For descriptive parametric reasoning in the form of ANOVA and regression tests. Before running a parametric test, the data must meet the acceptance test requirements. That is, the data are typically normally distributed, uniform, and linear. An ANOVA test was performed to determine differences in persistence characteristics and process abilities in each school. Next, Sig. 0.05 works. The Miles and Huberman model was used for qualitative data analysis. The model is processed in three stages: data reduction, data display, inference and validation.

3. RESULTS AND DISCUSSION

Result

The results of the data analysis that has been obtained are processed using statistics. The first data processing analysis is descriptive statistics. Table 4 and Table 5 show the descriptive statistics results for each indicator variable of students' mathematical performance and learning perseverance in mathematics involving arithmetic operations.

Tabel 4. Perseverance in Learning Indicators Do Not Delay the Time of Completion of Work

School	Interval	F	%	Category	Mean	med	Min	Max
Basirih	4.0 - 72	0	0.00	Very Not Good				
State	7.23 – 10.4	2	10.00	Not Good	13.05	13.0	9.0	17.0
Elementar	10.5 – 13.6	11	55.00	Enough				

School	Interval	F	%	Category	Mean	med	Min	Max
y School 5	13.7 – 16.8	6	30.00	Good				
	16.9 – 20.0	1	5.00	Very Good				
State	4.0 - 72	0	0,00	Very Not Good				
Elementar	7.23 – 10.4	2	10.00	Not Good	13.1	12.5	9.0	20.0
y School	10.5 – 13.6	10	50.00	Enough				
64 Muara	13.7 – 16.8	7	35.00	Good				
Bulian	16.9 – 20.0	1	5.00	Very Good				
State	4.0 - 72	0	0.00	Very Not Good				
Elementar	7.23 – 10.4	2	10.00	Not Good	13.05	13.0	8.0	16.0
y School	10.5 – 13.6	9	45.00	Enough				
131 Muara	13.7 – 16.8	9	45.00	Good				
Bulian	16.9 – 20.0	0	0.00	Very Good				

Based on Table 4, it can be seen that in Basirih State Elementary School 5, the students' study perseverance has the index of not delaying the time to finish their work, a percentage of 55.00% and an average of 13.05 is sufficient. It can be seen that it is dominant in the 64 Muara Bulian State Primary School dominates in the middle category with a percentage of 50.00% and an average grade of 13.1. State Elementary School 131 Muara Bulian dominates in the Fair and good percentage category of 45.00% and an average grade of 13.05. Thus, the students' perseverance in learning at Basirih State Elementary School 5 is more important than those at No. 131 and No. 64 Muara Bulian State Primary Schools. In addition, there is Table 5 with indicators of continued use of existing opportunities.

Tabel 5. Perseverance Learning Indicators Always Take Advantage of the Opportunities That Exist

School	Interval	F	%	Category	Mean	med	Min	Max
Basirih State Elementary School 5	6.0 – 10.8	0	0.00	Very Not Good				
	10.9 – 15.6	1	5.00	Not Good				
	15.7 – 20.4	9	45.00	Enough	20.65	20.5	15.0	26.0
	20.5 – 25.2	9	45.00	Good				
	25.3 – 30.0	1	5.00	Very Good				
State	6.0 – 10.8	0	0.00	Very Not Good				
Elementary	10.9 – 15.6	1	5.00	Not Good				
School 64	15.7 – 20.4	11	55.00	Enough	19.6	19.5	15.0	25.0
Muara	20.5 – 25.2	8	40.00	Good				
Bulian	25.3 – 30.0	0	0.00	Very Good				
State	6.0 – 10.8	0	0.00	Very Not Good				
Elementary	10.9 – 15.6	0	0.00	Not Good				
School 131	15.7 – 20.4	13	65.00	Enough	19.45	20.0	16.0	23.0
Muara	20.5 – 25.2	7	35.00	Good				
Bulian	25.3 – 30.0	0	0.00	Very Good				

Based on Table 5, we know that students' perseverance in learning has indicators of consistently taking advantage of the opportunities that exist in the Basirih State Elementary School 5. This category is dominated by a percentage of 45.00% and one average. of 20.65. 64 Muara Bulian State Primary School dominates the middle category with a percentage of 55.00% and an average grade of 19.6. State Elementary School 131 Muara Bulian dominates in the middle category with a share of 65.00%. Thus, the learning persistence of students in

No. 131 Muara Bulian State Primary School is more important than that in No. 5 Basirih State Primary School and No. 64 Muara Bulian State Primary School. In addition, descriptive statistics on mathematical process skills were performed. Table 6 shows the skills related to the observed indices of material arithmetic operations.

Tabel 6. Mathematical Process Skills Observation Indicator

School	Interval	F	%	Category	Mean	med	Min	Max
Basirih State Elementary School 5	7.0 – 12.25	0	0.00	Very Not Good				
	12.26 – 17.5	2	10.00	Not Good				
	17.6 – 22.75	12	60.00	Good	21.05	21.0	13.0	27.0
	22.76 – 28.0	6	30.00	Very Good				
State Elementary School 64 Muara Bulian	7.0 – 12.25	0	0.00	Very Not Good				
	12.26 – 17.5	5	25.00	Not Good				
	17.6 – 22.75	14	70.00	Good	19.05	19.0	16.0	24.0
	22.76 – 28.0	1	5.00	Very Good				
State Elementary School 131 Muara Bulian	7.0 – 12.25	0	0.00	Very Not Good				
	12.26 – 17.5	3	15.00	Not Good				
	17.6 – 22.75	12	60.00	Good	20.6	20.5	13.0	28.0
	22.76 – 28.0	5	25.00	Very Good				

From Table 6, we can see that Mathematics Process Skills dominated with a share of 60.0% in Basirih State Elementary School 5 Observation Index, with an average of 21.05 being a good category. In 64 Muara Buryan State Primary Schools, the dominant category was good with a percentage of 70.0% against an average of 19.05. Similarly, 131 Muara Buryan State Primary Schools dominate in the good category with a percentage of 60.0%, an average of 20.6%. This puts 64 state primary schools ahead of Muara Brian. In addition, Table 7 provides a summary of the descriptive statistics of the communication index mathematical process ability.

Tabel 7. Mathematical Process Skills Communication Indicator

School	Interval	F	%	Category	Mean	Med	Min	Max
Basirih State Elementary School 5	7.0 – 12.25	1	5.00	Very Not Good				
	12.26 – 17.5	9	45.00	Not Good				
	17.6 – 22.75	9	45.00	Good	17.65	17.5	11.0	23.0
	22.76 – 28.0	1	5.00	Very Good				
State Elementary School 64 Muara Bulian	7.0 – 12.25	4	20.00	Very Not Good				
	12.26 – 17.5	4	20.00	Not Good				
	17.6 – 22.75	10	50.00	Good	17.45	18.5	7.0	23.0
	22.76 – 28.0	2	10.00	Very Good				
State Elementary School 131 Muara Bulian	7.0 – 12.25	3	15.00	Very Not Good				
	12.26 – 17.5	6	30.00	Not Good				
	17.6 – 22.75	8	40.00	Good	17.5	18.0	7.0	26.0
	22.76 – 28.0	3	15.00	Very Good				

Based on Table 7, it shows that the mathematical process skills in the communication indicator at Basirih State Elementary School 5 are dominant in the bad and good categories with a percentage of 45.0% with an average of 17.65. While State Elementary School 64 Muara Bulian is dominant in the good category with a percentage of 50.0% with an average of 17.45. Then State Elementary School 131 Muara Bulian is dominant in the good category with a percentage of 40.0% with an average of 17.5. The superior school is State Elementary School 131 Muara Bulian. Furthermore, a descriptive statistical description of students' science process skills in measuring indicators is presented in Table 8.

Tabel 8. Mathematical Process Skills Indicator Measure

School	Interval	F	%	Category	Mean	Med	Min	Max
Basirih State Elementary School 5	7.0 – 12.25	3	15,00	Very Not Good				
	12.26 – 17.5	9	45,00	Not Good				
	17.6 – 22.75	7	35,00	Good	16.7	16.5	9.00	24.0
	22.76 – 28.0	1	5,00	Very Good				
State Elementary School 64 Muara Bulian	7.0 – 12.25	1	5,00	Very Not Good				
	12.26 – 17.5	6	30,00	Not Good				
	17.6 – 22.75	11	55,00	Good	18.25	18.0	11.0	24.0
	22.76 – 28.0	2	10,00	Very Good				
State Elementary School 131 Muara Bulian	7.0 – 12.25	1	5,00	Very Not Good				
	12.26 – 17.5	12	60,00	Not Good				
	17.6 – 22.75	5	25,00	Good	17.2	17.0	10.0	25.0
	22.76 – 28.0	2	10,00	Very Good				

Table 8 shows that Mathematics Processing Skills in the Basirih State Elementary School 5 metric is not very dominant with an average of 16.7 for this category with a share of 45.0%. On the other hand, 64 Muara Bulian in public elementary school dominated the good category with a percentage of 55.0% with an average of 18.25. Next, 131 Muara Briang State Primary Schools monopolized the poor with a percentage of 60.0%, an average of 17.2%. The parent school is State Elementary School 64 Muara Bulian. Analysis of acceptance test data consists of normality tests, uniformity tests, and the persistence of linearity in student learning and mathematics performance. Prerequisites for parametric statistical testing in the form of regression tests were met, as shown in Table 9.

Tabel 9. Normality test

Variable	School	Sig.	Distributing
Study Perseverance	Basirih State Elementary School 5	0.200	Normal
	State Elementary School 64 Muara Bulian	0.200	Normal
	State Elementary School 131 Muara Bulian	0.200	Normal
Mathematical Process Skills	Basirih State Elementary School 5	0.200	Normal
	State Elementary School 64 Muara Bulian	0.200	Normal
	State Elementary School 131 Muara Bulian	0.220	Normal

Based on Table 10, the Kolmogorov-Smirnov test yielded a normality test with a significance value greater than 0.05. As shown in Table 10, we can conclude that the data for the homogeneity test results are normally distributed. Next, the results of the homogeneity test for the variables of student learning persistence and students' mathematical processing

skills on the material for arithmetic operations at Basirih State Elementary School 5, State Elementary School 64 Muara Bulian and State Elementary School 131 Muara Bulian.

Tabel 10. Homogeneity Test Results

Variable	School	Sig.	Distributing
Study Perseverance	Basirih State Elementary School 5	0.200	Homogen
	State Elementary School 64 Muara Bulian	0.200	Homogen
	State Elementary School 131 Muara Bulian	0.210	Homogen
Mathematical Process Skills	Basirih State Elementary School 5	0.200	Homogen
	State Elementary School 64 Muara Bulian	0.180	Homogen
	State Elementary School 131 Muara Bulian	0.210	Homogen

Based on Table 10, the uniformity test results were obtained, ie a significance value of >0.05. It can be concluded that the data used in this study are homogeneous. Table 11 then presents the analysis of sustained linearity tests on student learning and mathematics processing skills. Next, the results of the linearity test for the variables of student learning persistence and students' mathematical processing skills on the material for arithmetic operations At Basirih State Elementary School 5, State Elementary School 64 Muara Bulian and State Elementary School 131 Muara Bulian.

Tabel 11. Tes Linearitas

Variable	School	Sig.	distributing
Study Perseverance	Basirih State Elementary School 5	0.020	Linear
	State Elementary School 64 Muara Bulian	0.020	Linear
	State Elementary School 131 Muara Bulian	0.022	Linear
Mathematical Process Skills	Basirih State Elementary School 5	0.021	Linear
	State Elementary School 64 Muara Bulian	0.020	Linear
	State Elementary School 131 Muara Bulian	0.032	Linear

Based on the linearity test in Table 11, it is known that the deviation from the linearity value of Sig. < 0.05, it was found that the variable data on learning persistence and math processing skills at each elementary school in Batanghari were linear. Thus, the data obtained meets the requirements of normal distribution, homogeneity, and linear. Then it can be continued with hypothesis testing in the form of a t test and regression test. The results of the t-test for the character of student learning persistence and mathematical processing skills are presented in Table 12.Next, t-test variable results for student learning persistence and students' mathematical processing skills in the material for arithmetic operations at Basirih State Elementary School 5, State Elementary School 64 Muara Bulian and State Elementary School 131 Muara Bulian.

Tabel 12. T-test Results for Character of Students' Learning Persistence At Basirih State Elementary School 5, State Elementary School 64 Muara Bulian and State Elementary School 131 Muara Bulian

Variable	Class	Sig. (2-tailed)
Study Perseverance	Basirih State Elementary School 5 / State Elementary School 64 Muara Bulian	0.022
	Basirih State Elementary School 5 / State Elementary School 131 Muara Bulian	0.021

Variable	Class	Sig. (2-tailed)
	State Elementary School 64 Muara Bulian State Elementary School 131 Muara Bulian	0.020

Based on the t-test table for student learning persistence at Basirih State Elementary School 5, State Elementary School 64 Muara Bulian, And State Elementary School 131 Muara Bulian it is known that there are differences in student learning persistence between students at Basirih State Elementary School 5 and students at State Elementary School 64 Muara Bulian which is indicated by a two- tailed 0.022. Furthermore, between Basirih State Elementary School 5 and State Elementary School 131 Muara Bulian there is also a difference in student learning persistence as indicated by a two-tailed significance value of 0.021. And there is also a difference in the learning persistence of students at State Elementary School 64 Muara Bulian and State Elementary School 131 Muara Bulian which is indicated by a two-tailed significance value of 0.020.

Tabel 13. The Results of the t-test for the Math Process Skill Variable at Basirih State Elementary School 5, State Elementary School 64 Muara Bulian and State Elementary School 131 Muara Bulian

Variable	School	Sig. (2-tailed)
Mathematical process skills	Basirih State Elementary School 5 State Elementary School 64 Muara Bulian	0.031
	Basirih State Elementary School 5 State Elementary School 131 Muara Bulian	0.029
	State Elementary School 64 Muara Bulian State Elementary School 131 Muara Bulian	0.024

Based on the t-test table presented in Table 13 states that the mathematics performance Basirih State Elementary School 5, State Elementary School 64 Muara Bulian, and State Elementary School 131 Muara Bulian it is known that there are differences in students' math processing skills between students at Basirih State Elementary School 5 and students at State Elementary School 64 Muara Bulian which are indicated by the scores two-tailed significance 0.031. Furthermore, between Basirih State Elementary School 5 and State Elementary School 131 Muara Bulian there are also differences in students' mathematical processing skills which are indicated by a two-tailed significance value of 0.029. two-tailed 0.024. Selanjutnya hasil uji regresi linear sederhana variabel ketekunan belajar siswa dan keterampilan proses matematika siswa pada materi operasi hitung bilangan di Basirih State Elementary School 5, State Elementary School 64 Muara Bulian dan State Elementary School 131 Muara Bulian.

Tabel 14. Simple Linear Regression Test Results: ANOVA Variables of Learning Perseverance and Mathematical Processing Skills at Basirih State Elementary School 5, State Elementary School 64 Muara Bulian and State Elementary School 131 Muara Bulian

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	803.297	1	803.297	7.392	0.007
	Residual	10775.223	98	109.033		
	Total	11531.176	99			

The ANOVA test is used to determine whether process skills have a significant effect on the character of student learning persistence. Based on the Table 14, it shows that variable

X (process skills) has a significant effect on variable Y (persistence character). It was shown that the significant value obtained was 0.007 which means <0.05.

Tabel 15. Simple Linear Regression Test Results: Summary Model of Learning Perseverance and Mathematical Processing Skills at Basirih State Elementary School 5, State Elementary School 64 Muara Bulian and State Elementary School 131 Muara Bulian

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.213	0.045	0.061	10.43169	0.045	7.392	1	98	0.075

The summary model is used to see the percentage contribution of the process skills variable that influences the persistence of students. Based on the Table 15, it is known that the R Square value is 0.75 which implies that 75% of students' mathematical process skills affect the character of students' learning persistence.

Tabel 16. Coefficients Regression Test Results for Learning Perseverance and Process Skills

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	22.992	12.683		1.890	0.073
KP	0.496	0.203	0.259	2.697	0.075

Based on the table of coefficients used to create the equation (Y= a+ bX). Based on Table 16 Simple Linear Regression Test Results: Coefficients of the variables Mathematical Processing Skills and Study Perseverance at Basirih State Elementary School 5, State Elementary School 64 Muara Bulian and State Elementary School 131 Muara Bulian, the regression equation is Y = 22,992 + 0.496X.

Discussions

The results of the descriptive statistical test showed that student learning diligence as an indicator did not delay the completion of work at SD Negeri Basirih 5 was in the middle group with a percentage of 55.00% and an average score of 13.05. SD Negeri 131 Muara Bulian dominates in the Sufficient and Good category with a percentage of 45.00% and an average score of 13.05. SD Negeri 64 Muara Bulian dominates the middle level with a percentage of 55.00% and an average score of 19.6. The results of the descriptive statistical test showed that students' mathematical processing skills in the index observed at SD Negeri Basirih 5 were dominant with a rate of 60.0%, with an average of 21.05 which was in the good category. In addition, the communication index at SD Negeri Basirih 5 dominates the bad and good categories with a percentage of 45.0% and an average of 17.65. In addition, the measurement index at SD Negeri Basirih 5 dominates the bad category with an average of 16.7 and a percentage of 45.0%. Hypothesis test results using normality, linearity, and homogeneity tests at the 5% significance level indicated that the data used in the study met the assumptions. The normality test declares the data to be normal because the significance value is greater than 5%. Additionally, the data were declared linear in the linearity test because the significance values obtained were less than 5%. A test for homogeneity is performed because the significance value obtained is greater than or equal to 5%. Allow

hypothesis testing to continue in the form of t-tests and simple linear regression tests. From the results of hypothesis testing using an independent sample t test, it is known that there are differences in student learning perseverance between SD Negeri 5 Basirih and students at SD Negeri 64 Muara Bulian, between SD Negeri 5 Basirih and SD Negeri 131 Muara Bulian, and between SD Negeri 64 Muara Bulian and SD Negeri 131 Muara Bulian, which is indicated by the significance value of two tails of 0.022 each, 0.021, and 0.020.

Then from the simple linear regression test between mathematical process skills on the persistence of student learning it is known from the ANOVA table that variable X (processing skills) has a significant effect on variable Y (student learning persistence). It can be seen that the significant value obtained is 0.007 which means <0.05. Then from the model summary table it is known that the value of R Square is 0.75, which means 75% of students' mathematical processing skills affect the character of student learning persistence. Table of coefficients used to create the equation (Y=a+bX). The results of a simple linear regression test: The variable coefficients of Mathematical Process Skills and Learning Perseverance at Public Elementary School 5 Basirih, Public Elementary School 64 Muara Bulian and Public Elementary School 131 Muara Bulian obtained a regression equation that is Y = 22.992 + 0.496X. Based on the results of interviews conducted with elementary school teachers, it is known that students tend to have good process skills and persistence in learning thematic material for arithmetic operations. This is seen by the teacher when the learning process takes place, namely by giving assignments and questions to solve. The teacher also said that students' process skills and student learning persistence were interconnected. Where by having student learning persistence will train student process skills. For example, if students diligently work on multiplication calculations, they will be more skilled in solving them.

Previous research it is known that the type of school has a significant effect on the potential use of basic process skills (Aydogdu, 2015; Gürses et al., 2015). These previous studies are consistent with the current study of: examines students' process skills. The difference is that previous studies have looked at the effect of school type on the potential use of basic process skills. So that the current research was carried out as an update from the previous research which examined the influence of students' process skills on thematic subjects more specifically on arithmetic operations material. With As a result of research, students' process skills on student learning persistence in the thematic subjects of arithmetic operations. Then the students' process skills have an influence on the development of student learning in mathematics which shows the importance of students' mathematical process skills (Ernawati et al., 2021; Kurniawan & Widodi, 2022; Sabil et al., 2021). A student's persistence is of course important for a student because a hard-working student consistently achieves a higher level even when faced with challenges, obstacles, or failures (Amin, Alimni, Kurniawan, Perdana, et al., 2022; Maison et al., 2021; Teimouri et al., 2018). Observation is an appropriate data collection method used to measure the attitudes and behavior of a person or group of people (Mekarisce, 2020; Surayya, 2018). Observation can help students develop their persistence character because through observation it can foster a strong sense of curiosity in students so that students are challenged to increase activity in the learning process (Darmaji, D., Kurniawan, et al., 2022; Ernawati et al., 2022; Joesyiana, 2018). Good communication helps students become more motivated and more enthusiastic about completing school assignments (Amin, Alimni, Kurniawan, Triani, et al., 2022; Gülburnu & Gürbüz, 2022; Suherman, 2021). Good communication in the learning process can build a pleasant learning atmosphere so that students are more concentrated and active in the learning process, which means that students' enthusiasm for learning will also increase (Nasri, 2022; Suryawati & Osman, 2017).

So that it can be said through the statement above that students' communication skills are very influential in increasing the character of student perseverance. Student measuring

skills are one of the most important skills in several indicators of process skills. This measuring skill is very important because it requires students' perseverance and accuracy so that measurement results are more accurate (Coştu & Bayram, 2021; Purwanti, E. & Heldalia, 2023). Measuring skills are related to the character of perseverance because measuring can foster students' persistence in doing something (Asrial et al., 2022; Syamsuriyanti & Amalia, 2022). The implications of this research are one of the solutions in carrying out innovations in learning mathematics in elementary schools based on character education. So, it can be part of taking further action on problems faced in elementary schools. It is hoped that mathematic process skills can be further improved so that they can have a positive impact on students' learning persistence. A limitation of this study is that it only examined three measures of mathematical process capacity: observation, transmission and measurement. Recommendations for further research are that further research can be carried out by measuring students' learning persistence in other subjects. In addition, it can provide directions and references in further research

4. CONCLUSION

The students' learning persistence and math processing skills in each school in Batang Hari are different. Furthermore, students' mathematical process skills have an influence on their students' learning persistence. This can be seen when in the learning process students can take part in learning actively, happily, and diligently in learning. With students' mathematical process skills, it will be better to produce students who are capable and skilled at solving mathematical problems. Recommendations for further research are that this research can be carried out by measuring the ability and skills of opinion in other subjects. This research can also have a positive influence and can be used as reference material in further research.

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