

The Persistence Character and Math Processing Skills of Elementary School Students in Thematic Learning

Kamid^{1*}, Dwi Agus Kurniawan², Rahmat Perdana³, Bob Widodi⁴, Elza Triani⁵, Dila Yathasya⁶, Putri Fadillah⁷ 

^{1,2,3,4,5,6,7} Faculty of Teaching and Education, Universitas Jambi, Jambi, Indonesia

ARTICLE INFO

Article history:

Received December 09, 2022

Accepted April 30, 2023

Available online May 25, 2023

Kata Kunci:

Keterampilan Proses,
Pembelajaran Inovatif,
Pembelajaran Matematika

Keywords:

Process Skills, Innovative
Learning, Mathematics Learning



This is an open access article under the
[CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.

Copyright © 2023 by Author. Published by
Universitas Pendidikan Ganesha.

ABSTRAK

Keterampilan proses matematika dan ketekunan belajar menjadi indikator keberhasilan belajar siswa. Kurangnya ketekunan dan keterampilan proses matematika dapat menghambat terselurnya ilmu pengetahuan dalam proses pembelajaran sampai kepada siswa. Sehingga penting untuk melakukan penelitian ini dengan tujuan utama mengukur pengaruh keterampilan proses matematik terhadap karakter ketekunan siswa. Metode survei menggunakan mixed method dengan desain sequential explanatory. Teknik simple random sampling digunakan sebagai metode pengambilan sampel dalam penelitian ini. Dalam penelitian ini pengujian hipotesis dengan uji *t* dan uji regresi linier sederhana digunakan sebagai metode analisis data. Metode pengumpulan menggunakan Instrumen penelitian lembar observasi, angket dan wawancara. Hasil penelitian ini menemukan bahwa terdapat perbedaan keterampilan proses matematis dan karakter ketekunan siswa pada mata pelajaran faktor perkalian dan perkalian dimasing-masing sekolah dasar. Selanjutnya terdapat pengaruh yang signifikan antara keterampilan proses matematik terhadap karakter ketekunan siswa pada pembelajaran tematik materi faktor kelipatan dan bilangan. Disimpulkan bahwa dengan mengetahui pengaruh keterampilan proses matematik siswa terhadap karakter ketekunannya maka tenaga pendidik mesti lebih memaksimalakan lagi proses pembelajaran guna melatih keterampilan proses matematik siswa.

ABSTRACT

Mathematical process skills and study persistence are indicators of student learning success. Lack of persistence and mathematical process skills can hinder the distribution of knowledge in the learning process to students. So, it is important to conduct this research to measure the effect of mathematical process skills on students' persistence character. The survey method uses a mixed method with a sequential explanatory design. A simple random sampling technique was used as the sampling method in this study. In this study, hypothesis testing with a *t*-test and simple linear regression test is used as a method of data analysis. The collection method uses observation sheet research instruments, questionnaires, and interviews. This study found differences in students' mathematical processing skills and persistence in the multiplication and multiplication factor subjects in each elementary school. Furthermore, there is a significant influence between mathematical process skills on the character of student persistence in the thematic learning of the material factors of multiples and numbers. It was concluded that by knowing the effect of students' mathematical processing skills on their persistence character, educators should further maximize the learning process to train students' mathematical processing skills.

1. INTRODUCTION

Mathematics is a science that studies the logic of a concept that is interconnected with each other gradually to complex (Kamid et al., 2022; McFeetors et al., 2021; Laurent et. al., 2022). Mathematics is a science that is divided into three areas, namely algebra, analysis, and geometry (Kamid, Winarni, Rohati, Rivani, et al., 2022; Nasution & Sukmawarti, 2022; Turgut & Turgut, 2020). Thematic learning in elementary schools integrates the values of attitudes, skills, knowledge and thinking skills by using themes in the

learning process (Ghunu, 2022; Kamid, Mujahidawati, et al., 2022; Nurlaily et al., 2019). Mathematical material multiples and factors of a number is included in the algebraic group. In learning mathematics, students are not only taught formulas and theories, but students must also be able to use the information obtained as best as possible in the learning process.

Creativity and activity are emphasized in process skills especially in learning so that it can be implemented in students' daily lives. Process Skills help children improve their student skills and develop their experience and abilities (Kamid, Rohati, et al., 2022 ; Kamid et al., 2021). A very important effort for optimal student learning success is to improve students' process skills (Kamid, Kurniawan, et al., 2022; Tyera et al., 2022). Mathematical process skills include indicators such as classification, observation, and measurement (Kamid et al., 2022; Kamid, Anwar, et al., 2021). The purpose of the mathematical process skills is for students to be able to develop concepts and organize these concepts.

Student learning perseverance is included in a scientific attitude as an investigative effort or action to solve a problem or problem (Amin et al., 2021; Fang et al., 2017; Ilma et al., 2021). Perseverance in independent learning has a strong impact on the level of achievement achieved by students, by increasing the relationship between motivation and the learning process of students (Amin et al., 2022; Kirbas, 2018; Tamardiyah, 2017). Perseverance is an effort that refers to an individual's to be able to optimize the use of energy in the long term (Amin et al., 2022; Kirbas, 2018; Sharafi, 2022). The character of student perseverance encourages students to continue to work and get maximum results. In line with previous research it was found that students' mathematical processing abilities can be improved through a fun learning environment, namely with a digital game-based learning approach (Gök & İnan, 2021). By increasing students' mathematical processing abilities, it will improve students' mathematics learning outcomes. In previous studies, students' arithmetic processing abilities increased their learning outcomes. measure the impact on the process capability index examined in this study: classification and interpretation.

Previous research was found that the character of persistence is important for students to have and the character of persistence is influenced by motivation and situation (Halperin & Regev, 2021). Consistent with previous studies, that the character of student persistence is important to have. So that in the current research a study was carried out to find out whether the character of persistence is influenced by mathematical processing skills, especially in the thematic lessons on multiples and number factors. As an update from previous research, this research uses indicators of student learning persistence which consist of continue to want to try challenging activities, individual expectations of abilities, and working according to top priorities. Based on previous research, it was found that the success of the mathematics process lies in the teaching materials used and the learning model applied by the teacher (Simamora, et al., 2019; Çiftçi & Yildiz, 2019; Peteros et al., 2019). The use of appropriate teaching materials and learning models will certainly contribute to adding and honing students' mathematical processing skills as well. In line with previous research that student learning persistence is important to measure. Where the results of previous research found that student learning persistence had a good and significant impact on the learning outcomes of elementary school students (Kang et al., 2019). The difference between the previous research and the current research lies in the variable that is paired with the learning persistence of elementary school students. In this study, the focus was on finding out the effect of students' math processing skills on student learning persistence. Given that mathematical process skills are a behavior that supports student success, it does not rule out the possibility of being related to student learning persistence.

The similarities with previous research are that they both examined the process skills approach. The difference with previous research is that previous research examined science process skills, while the current research is a mathematical process skills approach. Then in the previous study the variables studied were 3 indicators of science process skills and 6 argumentation abilities (Darmaji, Astalini, Kurniawan, & Triani, 2022). In the current study the variables studied were mathematical process skills with indicators of compiling tables and conclusions and persistence character with the indicator of continuing to want to try challenging activities, individual expectations of ability ind, and working according to top priorities. The hypothesis used in previous research is using the regression hypothesis, while the current research uses the correlation hypothesis. The novelty of this study is to analyze the influence of mathematical process skills on the character of student learning persistence. Where in previous research has not been done.

Considering that learning mathematics is the basis and subject for students, it is important to examine the mathematical processing skills and character of students' perseverance. By knowing the effect of mathematical process skills on student learning persistence, it is hoped that the teacher as a facilitator can choose the right learning strategy so that the learning process can be maximized. The urgency of this research is that considering the results of previous research it was found that the character of persistence is related to peer victimization. So that research is needed related to measuring the character of student learning persistence and also what influences the character of persistence. with students having the character of persistence students tend to be wiser and do positive things repeatedly. Based on this

explanation, this study aims to determine differences in the character of student learning persistence in thematic lessons on multiples and number factors and to determine differences in student processing skills on multiples and number factors at SD Negeri 14 Batanghari, SDN 55 Batanghari, and SDN 80 Batanghari. Furthermore, knowing the effect of mathematical processing skills on the persistence character of elementary school students in the thematic learning of the material factors of multiples and numbers.

2. METHOD

This study uses a mixed method with sequential explanatory Design (Darmaji, Kurniawan, et al., 2021; Ramli et al., 2022; Syahril et al., 2020). Sequential explanatory design is a research method that combines quantitative methods followed by qualitative methods. Population in this study were high school students in 3 elementary schools in Batanghari district, consisting of 90 students. The population in this study was grouped into three samples, namely State Elementary School 14 Batanghari, State Elementary School 55 Batanghari, and State Elementary School 80 Batanghari. With a total sample of 18 students from each elementary school as a sample of high-grade students at each elementary school. Sampling In this study, using a simple random sampling method (Abari & Rejoice, 2021; Astalini et al., 2021). Simple random sampling technique is taking a random sample from the population (Ernawati et al., 2022; Kamid, Rohati, et al., 2021). The research instruments used were observation sheets, questionnaires and interviews. The questionnaire used was aimed at measuring the character of students' persistence in learning mathematics on multiples and factors of a number with a four Likert scale (very good, good, bad and very bad) as well as observation sheets to measure students' mathematical processing skills. The persistence category scale consists of five categories (very well, well, fair, bad, and very bad). The results obtained are supported by the results of interviews with high grade mathematics teachers. The indicators of each variable in this study are presented in Table 1.

Table 1. Table of Indicators of Perseverance and Mathematical Process Skills

Variable	Indicator	Statement item
Perseverance	Always wanted to try a more challenging job	1,3,4, 5,6
	Individual expectations of ability	7, 8, 9, 10, 11, 12
	Work according to top priority	13, 14, 15
Mathematical Process Skills	Classification	1, 2, 3, 4, 5
	Interpretation	6, 7, 8, 9

Then the student persistence category is shown in Table 2.

Table 2. Perseverance Category

Category	Always wanted to try a more challenging job	Individual expectations of ability	Work according to top priority
Very Bad	6-10.8	6-10.8	3-5.4
Bad	10.9-15.6	10.9-15.6	5.5-7.9
fair	15.7-20,4	15.7-20.4	8-10.3
Well	20.5-25,2	20.5-25.2	10.4-12.7
Very Well	25.3-30	25.3-30	12.8-15.1

Then the category of mathematical process skills in Table 3.

Table 3. Mathematical Process Skills Category

Category	Classification	Interpretation
Very Not Good	6-10.8	6-10.8
Not good	10.9-15.6	10.9-15.6
Good	20.5-25.2	20.5-25.2
Very good	25.3-30	25.3-30

Interview grids with elementary school teachers for thematic subjects in each school consisted of students' mathematical processing skills and student learning persistence, especially in thematic subjects. the interview grid consists of lesson planning, learning implementation, and evaluation results. The research procedure begins with a field study, namely school observations and literature study and then formulates the problem. Followed by data collection, data collection, data processing and data analysis so

that research results and conclusions can be obtained. hypothesis test with a significance level of 5% with the prerequisite data being normally distributed, homogeneous and linear (Astalini et al., 2022; Darmaji, Astalini, et al., 2021; Dwi et al., 2022).

3. RESULT AND DISCUSSION

Result

The results in Table 4 explain the description of the persistence variable and the process skill variable in learning mathematics in the matter of multiples and factors of a number of elementary school high school students.

Table 4. Descriptive Statistical Results of Student Persistence on Always Want to Try A More Challenging Job

School	Category	Interval	Freq	%	Mean	Med	Min	Max
State	Very Bad	6-10.8	0	0				
Elementary	Bad	10.9-15.6	0	0				
School 14	fair	15.7-20.4	11	61.11%	19.72	19	16	24
Batanghari	Well	20.5-25.2	7	38.88%				
	Very Well	25.3-30	0	0				
State	Very Bad	6-10.8	0	0				
Elementary	Bad	10.9-15.6	1	5.55%				
School 55	fair	15.7-20.4	4	22.22%	21.88	21	15	27
Batanghari	Well	20.5-25.2	11	61.11%				
	Very Well	25.3-30	2	11.11%				
State	Very Bad	6-10,8	0	0				
Elementary	Bad	10.9-15.6	0	0				
School 80	fair	15.7-20.4	8	44.44%	20.83	21	18	27
Batanghari	Well	20.5-25.2	9	50%				
	Very Well	25.3-30	1	5.55%				

Table 4 show that in persistence variable students always want to try more challenging work at State Elementary School 14 Batanghari is better in well category with number of 61.11%, for State Elementary School 55 Batanghari is better in the well category with a percentage of 61.11%, and for State Elementary School 80 Batanghari it is better in the well category with number of 50%.

Table 5. Descriptive Statistical Results of Student Persistence Individual Expectations of Ability

School	Category	Interval	Freq	%	Mean	Med	Min	Max
State	Very Bad	6-10.8	0	0				
Elementary	Bad	10.9-15.6	0	0				
School 14	fair	15.7-20.4	7	38.88%	19.72	19	16	24
Batanghari	Well	20.5-25.2	11	61.11%				
	Very Well	25.3-30	0	0				
State	Very Bad	6-10.8	0	0				
Elementary	Bad	10.9-15.6	0	0				
School 55	fair	15.7-20.4	8	44.44%	21.88	21	15	27
Batanghari	Well	20.5-25.2	9	50%				
	Very Well	25.3-30	1	5.55%				
State	Very Bad	6-10,8	0	0				
Elementary	Bad	10.9-15.6	1	5.55%				
School 80	fair	15.7-20.4	4	22.22%	20.83	21	18	27
Batanghari	Well	20.5-25.2	11	61.11%				
	Very Well	25.3-30	2	11.11%				

Based on Table 5, the student persistence variable is stronger in the category 'good' in 14 Batanghari provincial primary schools by 61.11%, and dominates in the category 'good' category more

strongly in 55 Batanghari provincial primary schools. I understand this. With a share of 50% and 80 Batanghari in State Elementary Schools he dominated the good category with a share of 61.11%.

Table 6. Descriptive Statistical Results of Student Persistence on the Work Indicator According to the Main Priority

School	Category	Interval	freq	%	Mean	Med	Min	Max
State	Very Bad	3-5.4	0	0				
Elementary	Bad	5.5-7.9	0	0				
School 14	fair	8-10.3	8	44.44%	11.27	11	8	15
Batanghari	Well	10.4-12.7	6	33.33%				
	Very Well	12.8-15.1	4	22.22%				
State	Very Bad	3-5.4	0	0				
Elementary	Bad	5.5-7.9	0	0				
School 55	fair	8-10.3	7	38.88%	11.11	12	8	13
Batanghari	Well	10.4-12.7	8	44.44%				
	Very Well	12.8-15.1	3	16.66%				
State	Very Bad	3-5.4	0	0				
Elementary	Bad	5.5-7.9	1	5.5%				
School 80	fair	8-10.3	7	38.88%	10.77	11	7	5
Batanghari	Well	10.4-12.7	5	27.77%				
	Very Well	12.8-15.1	5	27.77%				

Table 6 show that the persistence variable of students working according to the top priority at State Elementary School 14 Batanghari is better in well category with number of 44.44%, for State Elementary School 55 Batanghari is better in the well category with number of 44.44%, and for in State Elementary School 80 Batanghari is better in the quite well category with number of 38.88%.

Table 7. Descriptive Statistical Results of Mathematical Process Skills Compiling Tables

School	Category	Interval	freq	%	Mean	Med	Min	Max
State	Very Not Good	5-8.75	4	22.22%				
Elementary	Not good	8.76-12.5	4	22.22%	12.38	13	5	20
School 14	Good	12.6-16.25	6	33.33%				
Batanghari	Very good	16.26-20	4	22.22%				
State	Very Not Good	5-8,75	4	22.22%				
Elementary	Not good	8.76-12.5	1	5.55%	12.72	13,5	5	16
School 55	Good	12.6-16.25	12	66.66%				
Batanghari	Very good	16.26-20	0	0				
State	Very Not Good	5-8,75	1	5.55%				
Elementary	Not good	8.76-12.5	3	16.66%	14.05	14	8	17
School 80	Good	12.6-16.25	10	55.55%				
Batanghari	Very good	16.26-20	4	22.22%				

Table 7 show that in the Mathematical Process Skills variable the indicators for compiling tables at State Elementary School 14 Batanghari are better in the well category with percentage of 33.33%, for State Elementary School 55 Batanghari are better in the well category with number of 66.66%, and for State Elementary School 80 Batanghari is better in the well category with number of 55.55%.

Table 8. Descriptive Statistical Results of Mathematical Process Skills make Conclusions

School	Category	Interval	Freq	%	Mean	Median	Min	Max
State	Very Not Good	4-7	3	16.66%				
Elementary	Not good	8-10	7	38.88%	8.22	8.5	5	13
School 14	Good	11-13	8	44.44%				
Batanghari	Very good	14-16	0	0				
State	Very Not Good	4-7	0	0				
Elementary	Not good	8-10	5	27.77%				
School 55	Good	11-13	12	66.66%	10.33	10	8	14
Batanghari	Very good	14-16	1	5.55%				

School	Category	Interval	Freq	%	Mean	Median	Min	Max
State Elementary School 80 Batanghari	Very Not Good	4-7	3	16.66%				
State Elementary School 55 Batanghari	Not good	8-10	5	5.55%	10.61	11	6	15
State Elementary School 14 Batanghari	Good	11-13	7	38.88%				
State Elementary School 80 Batanghari	Very good	14-16	3	16.66%				

Table 8 show that the index of the variable 'Mathematical Ability' is predominant in Batanghari Provincial Primary School 14 with 44.44% and in Batang Hari Provincial Primary School 55. In the category of good category with number 66.66%, for State Primary School 80, Batanghari dominates in the good category with number 38.88%.

The next step is to carry out prerequisite tests in the form of normality, homogeneity and linearity tests which are presented in Table 9, Table 10, and Table 11.

Table 9. Normality test results

Variable	School	Sig.	Distributing
Study Perseverance	State Elementary School 14 Batanghari	0,114	Normal
	State Elementary School 55 Batanghari	0.200	Normal
	State Elementary School 80 Batanghari	0.179	Normal
Mathematical Process Skills	State Elementary School 14 Batanghari	0.200	Normal
	State Elementary School 55 Batanghari	0.180	Normal
	State Elementary School 80 Batanghari	0.200	Normal

Table 10. Homogeneity Test

Variable	School	Sig.	Characteristic
Study Perseverance	State Elementary School 14 Batanghari	0.200	Homogen
	State Elementary School 55 Batanghari	0.190	Homogen
	State Elementary School 80 Batanghari	0.179	Homogen
Mathematical Process Skills	State Elementary School 14 Batanghari	0.200	Homogen
	State Elementary School 55 Batanghari	0.190	Homogen
	State Elementary School 80 Batanghari	0.200	Homogen

Table 11. Linearity Test Results

Variable	School	Sig.	Characteristic
Study Perseverance*	State Elementary School 14 Batanghari	0.020	Linear
Mathematical Process Skills	State Elementary School 55 Batanghari	0.019	Linear
	State Elementary School 80 Batanghari	0.017	Linear

Based on Table 9, Table 10, and Table 11, the data obtained meets the requirements of normal and uniform and linear distribution. You can then proceed with hypothesis testing in the form of t-tests and regression tests.

Table 12. t-test Results of Students' Learning Persistence

Variable	Class	Sig. (2-tailed)
Learning Persistence	State Elementary School 14 Batanghari	0.020
	State Elementary School 55 Batanghari	
	State Elementary School 14 Batanghari	0.021
	State Elementary School 80 Batanghari	
	State Elementary School 55 Batanghari	0.020
	State Elementary School 80 Batanghari	

Based on Table 12, it can be seen that there are differences in the math processing skills of students at State Elementary School 14 Batanghari and State Elementary School 55 Batanghari, students at State Elementary School 14 Batanghari and State Elementary School 80 Batanghari, and students at State Elementary School 55 Batanghari and State Elementary School 80 Batanghari. Furthermore, the results of the t-test of students' process skills in mathematics are presented in Table 13.

Table 13. t-test Results of Mathematical Process Skills

Variable	Class	Sig. (2-tailed)
Mathematical Process Skills	State Elementary School 14 Batanghari	0.032
	State Elementary School 55 Batanghari	
	State Elementary School 14 Batanghari	0.020
	State Elementary School 80 Batanghari	
	State Elementary School 55 Batanghari	0.020
	State Elementary School 80 Batanghari	

Based on Table 13, it can be seen that there is a difference between the math processing skills of students At State Elementary School 14 Batanghari and State Elementary School 55 Batanghari, Process skills of students at Batang Hari State Primary School 14 and State Primary School 80 Batanghari; Process Skills of students at State Primary School 55 Batanghari and State Primary School 80 Batanghari.

The ANOVA test is used to determine whether process skills have a significant effect on the character of student learning persistence. From the data analysis results, 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 0.008, which means <0.05. The summary model is used to see the percentage contribution of the process skills variable that influences the persistence of students. From the data analysis results, it is known that the R Square number is 0.70 which implies that 70% of the students' process skills affect the students' persistence character. Simple Linear Regression Test Results for the Coefficient of Learning Perseverance and Mathematical Processing Skills at SDN 14 Batanghari, SDN 80 Batanghari and SDN 55 Batanghari, the regression equation is $Y = 23.492 + 0.546X$. Furthermore, the interview results obtained in this study are presented in Table 14.

Table 14. Interview Results

Questions	Answers
How to measure students' mathematical processing abilities?	<p>Teacher 1: I measure the measurement of students' mathematical processing skills by looking at the achievement status of the skills mastered by students such as measuring and classifying numbers</p> <p>Teacher 2: I saw from the process of finding the results of the questions that were completed by the students</p> <p>Teacher 3: I measure it by observing students when students discuss and do assignments</p>
How to measure the character of student deviation?	<p>Teacher 1: I observe students directly, namely during the learning process students who are diligent will tend to focus and will ask questions when something is not understood</p> <p>Teacher 2: I approach students so that it is easy to get to know students</p> <p>Teacher 3: I measure student persistence by making several working groups and providing case studies, from which it will be seen which students are serious or not</p>
In your opinion, is there a relationship between mathematical processing skills and the character of deviation?	<p>Teacher 1: Of course there is a relationship because students who have process skills will be more diligent</p> <p>Teacher 2: I think there is, because usually students who are already skilled are definitely enthusiastic about learning, they will be challenged when given assignments</p> <p>Teacher 3: in general there is, but to see the relationship in detail further research is needed</p>
How are your efforts in training students' mathematical processing skills?	<p>Teacher 1: Namely by giving examples of problem solving, and giving independent assignments</p> <p>Teacher 2: There are many things that can be used to train students' process skills such as the use of appropriate learning models, one of which is the discovery learning model</p> <p>Teacher 3: by making the learning process more interesting and fun through math games while studying</p>

Discussion

The results of the interviews that already done, it was found that the measurement of mathematical process skills and student persistence characters was only carried out based on teacher observation without using valid instruments. This makes the students' mathematical process skills and persistence

character not optimally measured. The teacher considers that mathematical process skills and persistence character are related. So that the teacher makes efforts in terms of improving the skills of the mathematical process and the character of the student's persistence. The importance of the character of perseverance is because students who are diligent will persistently struggle in achieving their dreams, tend to never give up (Asrial et al., 2021; Hidayah et al., 2022). Likewise with students' mathematical process skills such as compiling tables and making important conclusions to be trained and possessed by students (Darmaji, Astalini, Kurniawan, & Widodi, 2022; Kaymakçı & Can, 2021; Maison et al., 2021).

Prior research was found that LKPD based on process skills was very effective for the development of student learning (Husniyatun et al., 2021). Previous studies are consistent with this study in which process capability is the subject of discussion. However, what distinguishes this research from previous research is that this research measures the influence of students' mathematical process skills on persistence character. Whereas the previous research examined the development of process skills-based worksheets to increase student learning independence. Then in previous research that by encouraging students to conceptualize mathematical situations before solving problems can encourage mathematical productive efforts which are restarted and maintained after reaching an impasse. so that it can make students diligent in learning. This shows that an understanding of mathematical concepts is needed when learning and this understanding will be more easily obtained through direct experience which requires process skills within students. As a generalization from previous research, this research was conducted to examine the effect of mathematical process skills on the character of student learning persistence. So that it can have implications for the learning process in the classroom, namely the teacher as a facilitator can plan and carry out learning based on a process skills approach to increase student learning persistence. The novelty of this study is the place where research is conducted and there is an investigation related to the influence of mathematical processing skills on student learning persistence.

In previous studies it was found that between male and female students there were significant differences in processing skills in private Islamic elementary schools (Kamid, Fajriah, Kurniawan, et al., 2022). By doing this research it will have an impact on explaining the level of differences in the processing skills of male and female students between public and private schools. As an update from previous research, this study analyzed differences in students' mathematical processing abilities based on their schools, then this research also focused on multiples and number factors. Student perseverance is developed in a person through several things, one of which is the school environment. The impact of this research is that it can be used as a teacher's reference in the next learning process both in terms of process skills and persistence character. So that the teacher knows the importance of process skills and the character of perseverance. that someone who has a diligent nature is shown by seriousness in trying and enthusiasm in carrying out or doing something. Student perseverance is developed in a person through several things, one of which is the school environment. The impact of this research is that it can be used as a teacher's reference in the next learning process both in terms of process skills and persistence character. So that the teacher knows the importance of process skills and the character of perseverance (Tyera et al., 2022).

4. CONCLUSION

The conclusion of this study is that there are differences in students' mathematical processing skills and students' persistence in learning in each elementary school. Then it can be concluded that the mathematical process skills contribute to improving the character of student learning persistence. So it is important to develop mathematical process skills and perseverance characters from elementary school so that they can be carried into the future. The researcher recommends that further research be carried out regarding efforts to improve the character of perseverance and students' mathematical processing skills.

5. REFERENCES

- Abari, M. T., & Rejoice, C. (2021). Influence of Students Self-Made Model on Senior Secondary School Students' Interest towards Learning of Mathematics. *International Journal of Research Publication and Reviews*, 2(11), 1212–1215.
- Amin, A., Alimni, A., Perdana, R., Zannah Azzahra, M., & Eka Septi, S. (2021). Associative and Comparative Study on Students' Perseverance and Religious in Islamic Education Subject. *Jurnal Pendidikan Progresif*, 11(3), 676–691. <https://doi.org/10.23960/jpp.v11.i3.202119>.
- Amin, A., Kurniawan, D. A., Perdana, R., & Pratama, W. A. (2022). Analysis of the Relationship of Religious Character, Perseverance and Learning Motivation of Junior High School Students. *Journal of Innovation in Educational and Cultural Research*, 3(4), 536–547. <https://doi.org/10.46843/jiecr.v3i4.233>.

- Asrial, A., Syahrial, S., Kurniawan, D. A., & Zulkhi, M. D. (2021). The Relationship Between the Application of E-Modules Based on Mangrove Forest Ecotourism on The Peace-Loving Character of Students. *Journal of Education Technology*, 5(3), 331. <https://doi.org/10.23887/jet.v5i3.34043>.
- Astalini, Darmaji, Kurniawan, D. A., & Chen, D. (2021). Investigating Student Perceptions Based on Gender Differences Using E-Module Mathematics Physics in Multiple Integral Material. *Jurnal Pendidikan Sains Indonesia*, 9(4), 602–619. <https://doi.org/10.24815/jpsi.v9i4.21297>.
- Astalini, Darmaji, Kurniawan, D. A., & Ramadhanti, A. (2022). Mathematical Physics E- Module : Study of Students ' Perception Based on Gender. *Journal of Education Technology*, 6(1), 91–101. <https://dx.doi.org/10.23887/jet.v6i1.42233>.
- Busro, M. 2018. *Teori-Teori Manajemen Sumber Daya Manusia*. Prenada Media Group.
- Çiftçi, S. K., & Yildiz, P. (2019). The Effect of Self-Confidence on Mathematics Achievement: The Metaanalysis of Trends in International Mathematics and Science Study (TIMSS). *International Journal of Instruction*, 12(2), 683–694. <https://files.eric.ed.gov/fulltext/EJ1210999.pdf>.
- Darmaji, Astalini, Kurniawan, D. A., & Putri, W. A. (2021). Rural Student Analysis : Correlation Science Process Skills and Critical Thinking at a State Senior High School in Jambi Province. *JURNAL TA'DIB*, 24(2). <http://ecampus.iainbatungkar.ac.id/ojs/index.php/takdib/index>.
- Darmaji, Astalini, Kurniawan, D. A., & Triani, E. (2022). The effect of science process skills of students argumentation skills. *Jurnal Inovasi Pendidikan IPA*, 8(1), 78–88. <https://doi.org/10.21831/jipi.v8i1.49224>.
- Darmaji, Astalini, Kurniawan, D. A., & Widodi, B. (2022). The relationship between science process skills and students' creative thinking skills at the Nurul Ilmi 1 Islamic Junior High School on Magnetism material. *Jurnal Pedagogi Dan Pembelajaran*, 5(3). <https://ejournal.undiksha.ac.id/index.php/JP2/article/view/48636>.
- Darmaji, D., Kurniawan, D. A., Astalini, A., & Dari, R. W. (2021). Description of Students Critical Thinking Ability in Temperature and Calor Material. *JIPF (Jurnal Ilmu Pendidikan Fisika)*, 6(2), 98. <https://doi.org/10.26737/jipf.v6i2.1895>.
- DiNapoli, J., & Miller, E. K. (2022). Recognizing, supporting, and improving student perseverance in mathematical problem-solving: The role of conceptual thinking scaffolds. *The Journal of Mathematical Behavior*, 66, 100965. <https://doi.org/10.1016/j.jmathb.2022.100965>.
- Dwi, M., Ernawati, W., Sanova, A., Kurniawan, D. A., & Triani, E. (2022). Students ' Attitude Towards Science and Its Implications on Science Learning Outcomes of Junior High School Students. *Jurnal Pendidikan Progresif*, 12(2), 898–911. <https://doi.org/10.23960/jpp.v12.i2.20223>.
- Ernawati, M. D. W., Sudarmin, S., Asrial, A., Haryanto, H., Azzahra, M. Z., & Triani, E. (2022). A study of attitude and interest in the student's lessons. *Cypriot Journal of Educational Sciences*, 17(6), 1901–1913. <https://doi.org/10.18844/cjes.v17i6.7484>.
- Fang, Y., Nye, B., Pavlik, P., Xu, Y. J., Graesser, A., & Hu, X. (2017). Online learning persistence and academic achievement. *Proceedings of the 10th International Conference on Educational Data Mining, EDM 2017*, 312–317. <https://files.eric.ed.gov/fulltext/ED596608.pdf>.
- Halperin, O., & Regev, O. E. (2021). Predicting academic success based on perseverance and passion for long-term goals (grit) among nursing students: Is there a cultural context?. *Nurse Education Today*, 100, 104844. <https://doi.org/10.1016/j.nedt.2021.104844>.
- Ghunu, N. M. S. (2022). The Challenges of Remote Area Elementary Schools in Thematic Curriculum Implementation. *International Journal of Instruction*, 15(2), 19–36. <https://doi.org/10.29333/iji.2022.1522a>.
- Gök, M., & İnan, M. (2021). Sixth-grade students' experiences of a digital game-based learning environment: A didactic analysis. *JRAMathEdu (Journal of Research and Advances in Mathematics Education)*, 6(2), 142–157. <https://doi.org/10.23917/jramathedu.v6i2.13687>.
- Hidayah, Y., Zannah, F., & Lestari, N. C. (2022). Perbandingan Motivasi Belajar Bahasa Inggris Antara Siswa Kelas X-IPA dan Kelas X-IPS. *Al Qalam: Jurnal Ilmiah Keagamaan Dan Kemasyarakatan*, 16(1), 286. <https://doi.org/10.35931/aq.v16i1.843>.
- Husniyatun, Nahdi, K., & Mohzana. (2021). Pengembangan Lkpd Bahasa Indonesia Berbasis Keterampilan Proses Untuk Meningkatkan Kemandirian Belajar Siswa Sekolah Dasar. *GENNTA MULIA: Jurnal Ilmiah Pendidikan*, 12(2), 322–331. <https://ejournal.stkipbbm.ac.id/index.php/gm/article/view/688/613>.
- Ilma, A. Z., Budiharti, R., & Ekawati, E. Y. (2021). Eksperimen Model Discovery Learning dan Problem Based Learning Didukung Modul LCDS Ditinjau dari Ketekunan Belajar Siswa SMA Materi Hukum Newton tentang Gerak. *Jurnal Materi Dan Pembelajaran Fisika*, 11(1), 17. <https://doi.org/10.20961/jmpf.v11i1.47358>.
- Kamid, Fajriah, N., Kurniawan, D. A., & Widodo, R. I. (2022). Elementary School Students ' Mathematical

- Process Skills in Gender Perspective. *International Journal of Elementary Education*, 6(2), 223–231. <https://doi.org/10.23887/ijee.v6i2.45219>.
- Kamid, K., Anwar, K., Iriani, D., & Nawahdani, A. M. (2021). Analysis of interest and process skills in learning mathematics. *Jurnal Riset Pendidikan Matematika*, 8(2), 244–258. <https://doi.org/10.21831/jrpm.v8i2.42640>.
- Kamid, K., Kurniawan, D. A., & Nawahdani, A. M. (2022). Scientific Learning Model: Analytical Thinking and Process Skills in Mathematics. *Journal of Education Research and Evaluation*, 3(6).
- 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. <https://doi.org/10.29333/iji.2022.15352a>.
- Kamid, K., Rohati, R., Rahmalisa, Y., Anggo, M., Septi, S. E., Azzahra, M. Z., & Nawahdani, A. M. (2021). Engklek Game " in mathematics : How difference and relationship student attitude towards science process skills? *Cypriot Journal of Educational Sciences*, 16(6), 3109–3123. <https://doi.org/10.18844/cjes.v16i6.6500> Received.
- Kamid, K., Rohati, R., Rahmalisa, Y., Anggo, M., Septi, S. E., Azzahra, M. Z., & Nawahdani, A. M. (2021). Engklek Game in Mathemtics: How Differences and Relationship Students Toward Science Process Skills? *Cypriot Journal of Educational Sciences*, 16(6), 3109–3123. <https://eric.ed.gov/?id=EJ1321497>.
- Kamid, K., Winarni, S., Rohati, R., Rivani, P. A., & Azzahra, M. Z. (2022). The Comparison of Jigsaw Cooperative Learning Model with STAD on Mathematics Subjects in Junior High School. *Journal of Education Research and Evaluation*, 6(1), 118–130. <https://doi.org/10.23887/jere.v6i1.40425>.
- Kamid, Mujahidawati, Iriani, D., & Nawahdani, A. M. (2022). Scientific Learning and Process Comparison and Relationship Skills Mathematics: *Jurnal Pendidikan Indonesia*, 11(2), 228–239. <https://doi.org/10.23887/jpiundiksha.v11i2.37158>.
- Kamid, 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*, 2022(97), 216–234. <https://doi.org/10.14689/ejer.2022.97.12>.
- Kamid, Winarni, S., Rohati, Pratama, W. A., & Triani, E. (2022). Student Team Achievement Division Learning Model and Student Process Skills. *Jurnal Ilmiah Sekolah Dasar*, 6(1), 1–10. <https://doi.org/https://dx.doi.org/10.23887/jisd.v6i1.42456>.
- Kang, C. Y., Duncan, G. J., Clements, D. H., Sarama, J., & Bailey, D. H. (2019). The roles of transfer of learning and forgetting in the persistence and fadeout of early childhood mathematics interventions. *Journal of Educational Psychology*, 111(4), 590–603. <https://doi.org/10.1037/edu0000297>.
- Kaymakçı, G., & Can, Ş. (2021). Investigation of the Effects of Some Variables on Middle School Students' Problem-Solving Skills, Science Process Skills and Learning Styles. *Educational Policy Analysis and Strategic Research*, 16(1), 394–426. <https://doi.org/10.29329/epasr.2020.334.21>.
- Kirbas, A. (2018). The effect of interactive whiteboard applications supported by visual materials on middle school students' listening comprehension and persistence of learning. *Universal Journal of Educational Research*, 6(11), 2552–2561. <https://doi.org/10.13189/ujer.2018.061120>.
- Laurent, M., Crisci, R., Bressoux, P., Chaachoua, H., Nurra, C., de Vries, E., & Tchounikine, P. (2022). Impact of programming on primary mathematics learning. *Learning and Instruction*, 82, 101667. <https://doi.org/10.1016/j.learninstruc.2022.101667>.
- Maison, M., Darmaji, D., Kurniawan, D. A., Astalini, Kuswanto, & Ningsi, A. P. (2021). Correlation Of Science Process Skills On Critical Thinking Skills In Junior High School In Jambi City. *Jurnal Penelitian Fisika Dan Aplikasinya (JPFA)*, 11(01), 29–38. <https://doi.org/10.26740/jpfa.v11n1.p29-38>.
- McFeetors, J., Marynowski, R., & Candler, A. (2021). Generative unit assessment: Authenticity in mathematics classroom assessment practices. *Education Sciences*, 11(7). <https://doi.org/10.3390/educsci11070366>.
- Nasution, N. U. H., & Sukmawarti. (2022). Pengembangan Bahan Ajar Matematika Sd Bernuansa Melayu. *JIP Jurnal Inovasi Penelitian*, 3(4), 5953–5962. <https://stp-mataram.e-journal.id/JIP/article/view/2022>.
- Nurlailiy, V. A., Soegiyanto, H., & Usodo, B. (2019). Elementary school teacher's obstacles in the implementation of problem-based learning model in mathematics learning. *Journal on Mathematics Education*, 10(2), 229–238. <https://doi.org/10.22342/jme.10.2.5386.229-238>.
- Peteros, E., Columna, D., Etcuban, J. O., Almerino Jr, P., & Almerino, J. G. (2019). Attitude and academic achievement of high school students in mathematics under the conditional cash transfer program. *International Electronic Journal of Mathematics Education*, 14(3), 583-597. <https://www.iejme.com/download/attitude-and-academic-achievement-of-high-school-students-in-mathematics-under-the-conditional-cash-5770.pdf>.

- Ramli, S., Novanda, R., Sobri, M., Triani, E., & Septi, S. E. (2022). The Effect of Student Responses on Environmental Care Characters and Student Learning Outcomes. *Eurasian Journal of Educational Research*, 99, 112–126. <https://doi.org/10.14689/ejer.2022.99.007>.
- Sharafi, Z. (2022). Poverty and perseverance: The detrimental effect of poverty on effort provision. *Journal of Development Economics*, 103040. <https://doi.org/10.1016/j.jdeveco.2022.103040>.
- Simamora, R. E., & Saragih, S. (2019). Improving Students' Mathematical Problem Solving Ability and Self-Efficacy through Guided Discovery Learning in Local Culture Context. *International Electronic Journal of Mathematics Education*, 14(1), 61-72.
- Syahrial, Kurniawan, D. A., Perdana, R., Ikhlas, M., & Kuswanto. (2020). *Jurnal Pendidikan Progresif Teachers' Interests and Competencies in Doing Research: Sequential*. 10(1), 199–214. <https://doi.org/10.23960/jpp.v10.i2.202006>.
- Tamardiyah, N. D. (2017). Minat Kedisiplinan dan Ketekunan Belajar terhadap Motivasi Berprestasi dan Dampaknya pada Hasil Belajar Matematika SMP. *Manajemen Pendidikan*, 12(1), 26. <https://doi.org/10.23917/jmp.v12i1.2972>.
- Turgut, S., & Turgut, İ. G. (2020). Me while i am learning mathematics: Reflections to elementary school students' drawings. *International Electronic Journal of Elementary Education*, 13(1), 139–154. <https://doi.org/10.26822/iejee.2020.179>.
- Tyera, L., Megawati, M., & Rusli, M. (2022). Penerapan Keterampilan Proses Dasar Berbasis Lingkungan Untuk Meningkatkan Hasil Belajar Siswa. *Educativo: Jurnal Pendidikan*, 1(1), 112–123. <https://doi.org/10.56248/educativo.v1i1.18>.
- Wicaksono, A. (2019). Penerapan Pendekatan Keterampilan Proses untuk Meningkatkan Hasil Belajar Siswa pada Materi Keliling dan Luas Lingkaran di Kelas VIII Al Biruni SMP Islam Terpadu Al Fahmi Palu. *Guru Tua: Jurnal Pendidikan dan Pembelajaran*, 2(1), 17-28. <https://unisa-palu.ejournal.id/gurutua/article/download/17/11>.