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The Impact of Student Motivation on Students' Science Process Skills

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ABSTRAK

Motivasi belajar merupakan suatu dorongan bagi seseorang untuk lebih aktif dalam mencapai sesuatu. Namun motivasi setiap orang berbeda-beda sehingga mempengaruhi keterampilan proses sains siswa. Penelitian ini bertujuan untuk mendeskripsikan pengaruh motivasi belajar siswa terhadap keterampilan proses sains siswa dalam pembelajaran IPA. Penelitian ini menggunakan pendekatan sequential explanatory. Subyek penelitian adalah 175 siswa kelas VIII yang dipilih dengan teknik total sampling. Instrumen pengumpulan data yang digunakan adalah lembar observasi keterampilan proses sains siswa, angket motivasi belajar siswa, dan lembar wawancara. Data kualitatif dianalisis menggunakan Miles dan Hubarman sedangkan data kuantitatif dianalisis menggunakan statistik deskriptif dan inferensial dengan menggunakan uji asumsi dan hipotesis (uji regresi) untuk melihat pengaruh motivasi belajar terhadap keterampilan proses sains siswa. Hasil penelitian ini menyimpulkan bahwa terdapat pengaruh yang signifikan motivasi belajar siswa terhadap keterampilan proses sains siswa dengan nilai signifikansi 0,001. Hasil belajar berimplikasi pada proses pembelajaran yaitu sebagai bahan evaluasi untuk menciptakan pembelajaran yang efektif. Keterampilan proses sains siswa akan meningkat seiring dengan tingginya motivasi siswa dalam belajar. Hasil penelitian ini dapat memberikan kontribusi bagi dunia pendidikan pada khususnya dan masyarakat pada umumnya. Melalui hasil penelitian ini diketahui bagaimana motivasi belajar siswa dan tingkat keterampilan proses sains siswa dalam pembelajaran IPA, serta mengetahui hubungan motivasi belajar dengan keterampilan proses sains siswa.

ABSTRACT

Learning motivation is an encouragement for someone to be more active in achieving something. However, everyone's motivation is different so that it affects students' science process skills. This study aims to describe the effect of students' learning motivation on students' science process skills in learning science. This study uses a sequential explanatory approach. The research subjects were 175 class VIII students who were selected by total sampling technique. The data collection instruments used were observation sheets for students' science process skills, student learning motivation questionnaires, and interview sheets. Qualitative data were analyzed using Miles and Hubarman while quantitative data were analyzed using descriptive and inferential statistics using assumption and hypothesis testing (regression test) to see the effect of learning motivation on students' science process skills. The results of this study conclude that there is a significant effect of students' learning motivation on students' science process skills with a significance value of 0.001. Learning outcomes have implications for the learning process, namely as an evaluation material to create effective learning. Science process skills of students will increase along with the high motivation of students in learning. The results of this study can contribute to the world of education in particular and society in general. Through the results of this study, it is known how students' learning motivation and the level of students' science process skills in science learning, as well as knowing the relationship between learning motivation and students' science process skills.

1. INTRODUCTION

Natural science is a science that studies the universe and its contents and all events that occur in the surrounding environment (Arieshandy et al., 2022; Jamaluddin et al., 2019; Mutmainnah et al., 2021). Science is a compulsory subject taught at the junior high school level. Literally learning science is learning about nature scientifically and providing a learning experience that can improve thinking skills, have scientific learning motivation, and improve skills in the process (Citrawathi et al., 2016). Because basically, learning science is not only aimed at encouraging students to get maximum learning outcomes, but also encouraging students to have knowledge, understanding, experience, theory and skills including science process skills.

Science process skills are the abilities that students have in terms of applying the scientific method in order to be able to understand, develop, and discover a science (Lestari & Diana, 2018). Every student

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must be trained in their science process skills in learning activities, this is because science process skills are able to shape students' personalities who are creative, critical, innovative, and competitive (D. Chen et al., 2020; Fitriani, Maryani, et al., 2021). Through science process skills activities, a student will be able to learn about science using the scientific method through observing, classifying, conducting experiments, and so on (Putra, 2015). Science process skills are divided into two types, namely basic and integrated. Activities in basic science process skills are observing, classifying, communicating, measuring, giving conclusions, and predicting (Darmaji et al., 2019; Rezba et al., 2007; Senisum, 2021). While the activities in integrated science process skills are identifying variables, tabulating data, presenting data into graphs, describing relationships between variables, collecting and processing research data, analyzing research data, compiling a hypothesis, defining variables operationally, designing research, and implementing experiments (Lepiyanto, 2017; Rosidi, 2016). One aspect that affects students' science process skills in the science learning process is learning motivation.

Learning motivation is the encouragement given by someone to be more active in achieving something they want (Azizaturredha et al., 2019; Matsun et al., 2018; Putri et al., 2021; Ramadhanti et al., 2022). Learning motivation plays an important role in increasing students' enthusiasm in carrying out the learning process (Sitompul et al., 2018). The lack of student motivation in understanding learning materials will greatly affect the learning outcomes obtained by students (Dani et al., 2019; Putri et al., 2021). A student who has high motivation will perform the duties of the teacher as well as possible (Jufrida et al., 2019) and vice versa. So that student learning motivation is something that requires more attention from educators so that students are enthusiastic in learning science.

Research that is relevant to this research has been conducted on science process skills (Fitriani, Maryani, et al., 2021). The similarity between the research and this study is both to measure the science process skills possessed by students. The difference between this study and the research is in the material used, that is, this study examines the reflecting material, while the previous research examines the viscosity material. Another difference is also found in the indicators of science process skills studied, namely this study examines basic and integrated science process skills, while the previous research only examines basic science process skills. Furthermore, another relevant research was conducted regarding the effect of student learning motivation on student learning outcomes (Putri et al., 2021). The similarity of this research with the previous research is that they both examine students' learning motivation in science learning with the research subjects both junior high school students. The difference is that in this study, researchers examined the effect of student learning motivation on science process skills which was not carried out by previous research.

Based on these gaps, the researchers conducted a study to see the effect of learning motivation on students' science skills. This research is important to do because motivation has a very important role in the learning process. Without motivation, it is impossible for students to have the will to learn. So that students have a strong learning motivation, in its place an encouraging learning atmosphere is created. Motivation has a close influence on students' science process skills. Science process skills are skills that must be possessed by children as the basic capital to understand science. Through these science process skills, students are expected to be able to maximize their role so that they can be directly and actively involved in the learning process so that the basic abilities possessed and mastered can be understood by themselves by searching for and finding concepts and principles based on their experience. Based on the description above, this study aims to describe students' learning motivation in science learning, describe students' science process skills in science learning, and see the effect of students' learning motivation on students' science process skills in science learning.

2. METHODS

Natural science is a science that studies the universe and its contents and all events that occur in the surrounding environment (Arieshandy et al., 2022; Jamaluddin et al., 2019; Mutmainnah et al., 2021). Science is a compulsory subject taught at the junior high school level. Literally learning science is learning about nature scientifically and providing a learning experience that can improve thinking skills, have scientific learning motivation, and improve skills in the process (Citrawathi et al., 2016). Because basically, learning science is not only aimed at encouraging students to get maximum learning outcomes, but also encouraging students to have knowledge, understanding, experience, theory and skills including science process skills.

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Based on Table 1, it can be seen that the student science process skill observation sheet consists of 4 indicators with a total of 17 statements. As for the grid of interview sheets used in this study, it is presented in Table 2.

Table 1. The Grid of Students' Science Processes in Science Learning

No	Indicator	Total Item
1	Observation	4
2	Measure	2
3	Defining Variables Operationally	4
4	Doing Experiments	7

Table 2. Grid of Interview Sheets

No	Component	Sub-Cmponent	No Item
1	Student learning motivation in science learning	Persistence of student learning in science learning about reflection material	1,2,3

No	Component	Sub-Cmponent	No Item
2	Student learning motivation and its relation to students' science process skills in science learning	Encouragement to excel in science learning	4,5
		Students are more motivated in learning with the practice of reflecting material	6
		Students study in groups	7,8
		Students dare to ask questions to educators and friends	9,10

Based on Table 2, it can be seen that the grid of observation sheets used as a data collection tool amounted to 10 questions related to students' learning motivation and students' science process skills in learning the science of reflection material. After all the data collection instruments have been prepared, the researcher can use the instrument to a sample of the population specified in the study. The population of this research is all students of junior high school 8th grade in 1 Muaro Jambi. The number of research samples as many as 175 students of class 8 A, class 8 B, class 8 C, class 8 D, and class 8 E were selected by total sampling technique. Total sampling technique is the selection of samples by taking all the totals from the existing population. The criteria for selecting the sample itself are SMP 8 students who have studied science lessons, especially physics on reflection material.

All data that has been collected will be analyzed using IBM SPSS Statistic 23. Qualitative data is analyzed using Miles and Huberman, namely by reducing data, presenting data, and concluding data. While quantitative data were analyzed by descriptive statistics and parametric inferential statistics in the form of assumption testing and hypothesis testing (simple linear regression test) (Syahrial et al., 2019). Descriptive statistics were carried out to obtain the average (mean), frequency, percentage and so on from each distribution table (Fitriani, Kholilah, et al., 2021; Ismajli & Imami-Morina, 2018; Yalçın, 2017). As for inferential statistics, the assumption test used is the normality test, homogeneity test, and linearity test. In the assumption test, if the significance value is greater than 0.05, then the data can be continued in hypothesis testing (Chen et al., 2018; Ong et al., 2021; Ozdemir et al., 2018). The hypothesis test used is a simple linear regression test to determine the effect of the independent variable on the dependent variable, if a significance value is obtained below 0.05 then the tested variable has an influence on other variables (Buchori & Cintang, 2018; Ertikanto et al., 2018; Fitriani, Putri, et al., 2021; Pan, 2017).

3. RESULT AND DISCUSSION

Results

Based on the research conducted, the novelty of this research is to see the effect of learning motivation on students' science process skills in science learning. Meanwhile, the results of data analysis on the learning motivation questionnaire for descriptive statistical tests can be seen in Table 3.

Table 3. Descriptive Test Results of Student Learning Motivation

Interval	Category	f	%
20.00 – 35.00	Very not Good	0	0
35.01 – 50.00	Not Good	28	16
50.01 – 65.00	Good	98	56
65.01 – 80.00	Very Good	49	28

Based on Table 3, it is known that the data from the questionnaire on student learning motivation in science learning has an average of 16.81 with a very good percentage of 28%, the percentage in the good category is 56%, and the percentage in the bad category is only 16%. The minimum score obtained is 10.00 and the maximum score is 20.00. Furthermore, the descriptive test results from the observation sheet data on students' science process skills in science learning can be seen in Table 4.

Table 4. Descriptive Test Results of Student Science Process Skills

Interval	Category	f	%
17.00 – 29.75	Very not Good	0	0 %
29.86 – 42.50	Not Good	27	15.4
42.51 – 55.25	Good	86	49.2
55.26 – 68.00	Very Good	60	34.3

Based on Table 4 which is a descriptive test of the results of students' science process skills in science learning, it is known that the dominant students have good skills in science with a percentage of 49.2% or as many as 86 students out of 175 students have good skills. The students' average score was 60.48, the minimum score was 22.00 and the maximum score was 68.00. As for the percentage of students' science process skills for each indicator, it can be seen in Table 5.

Table 5. Descriptive Test Results of Student Science Process Skills Observation Sheet per Indicator

Indicator	Category			
	Very Not Good (%)	Not Good (%)	Good (%)	Very Good (%)
Observe	0	0	7.5	92.5
Measure	3.7	6.7	8.3	81.3
Define variables operationally	3.5	7.9	65.5	23.1
Doing an Experiment	2.2	7.7	55.5	34.6

Based on Table 5, it appears that the percentage of students' science process skills on the observing indicator is in the very good category with a percentage of 92.5%, the measuring indicator is 81.3%, the indicator defines operational variables is 65.5% with a good category, and the indicator doing the experiment was 55.5% with good category. After conducting a descriptive test, then a normality test was carried out with the results as shown in Table 6.

Table 6. Normality Test Results of Learning Motivation and Science Process Skills in Science Learning

Variable	Kolmogorov-Smirnov		
	Statistic	Df	Sig
Learning Motivation	0.062	175	0.095
Science Process Skills	0.065	175	0.068

Based on Table 6, the significance value of the student learning motivation questionnaire in science learning is 0.95. Because the significance value obtained is greater than 0.05, the data distribution is normal. As for the significance value on students' science process skills of 0.68, it means that the distribution of the data has also been normal.

Furthermore, the homogeneity test was carried out with the results that can be seen in the significance value. The significance value obtained is 0.298, so according to the basis for making decisions on the homogeneity test, it can be concluded that the data is homogeneous because the significance value obtained is greater than 0.05.

After the homogeneity test has been carried out, the next step is to perform a linearity test. The significance value obtained is 0.437, according to the basis for making decisions on the linearity test, it can be concluded that the data is linear because the significance value obtained is greater than 0.05. After all the assumption tests have been carried out and meet the requirements, the next step is to test the hypothesis, namely the regression test with the results which can be seen in Table 7.

Table 7. Regression Test Results

Model	Unstandardized Coefficient		Standardized Coefficient	T	Sig
	B	Std. Error	Beta		
(Constant)	50.797	2.385		21.298	0.000
Science Process Skills	0.272	0.031	0.552	8.710	0.001

Based on Table 7 it is known that the significance value obtained is 0.001. In accordance with the basis for decision making in the regression test, because the significance value obtained is smaller than 0.05, it is concluded that there is an effect of student learning motivation on students' science process skills in science learning. Furthermore, to find out how big the percentage of the influence of student learning motivation on science process skills can be seen by looking at R Square results. Based on the R Square column, the results are 0.511. This figure implies that the influence of students' learning motivation on students' science process skills is 51.1% while 48.9% of students' learning motivation is influenced by other variables not examined.

After all quantitative data has been analyzed, the researcher then analyzes the qualitative data based on the results of interviews that have been conducted. Based on the results of interviews, it is known that students' learning perseverance in learning science reflection material is that students are more diligent in learning so that students' motivation to learn also increases, as for the results of the interviews. The results of these interviews indicate that students have high motivation and are diligent in learning science due to a learning process based on direct experience where students learn science by directly practicing in practical activities. Through practical activities, students will gain real learning experiences and can experience learning directly. Based on the results of interviews, it is known that students are increasingly encouraged/motivated to excel in science learning, as for the results of the interviews. Based on the results of interviews, it is known that the existence of practicum activities makes students more motivated to excel which is shown by their enthusiasm in carrying out practicum activities and their high curiosity in the learning process through practicum activities.

Through interviews, it was also known that students became more motivated in learning in science learning material reflections so that students' science process skills in science learning were getting better, as for the results of the interviews. Based on the results of interviews, it is known that by doing practical activities students are more motivated and enthusiastic to learn. Students are serious in doing practicum and focus on obtaining practicum results and the practicum implementation process is carried out with appropriate procedures so as to improve students' science process skills. Furthermore, based on the results of the interviews, it is known that the students' ability to work in groups is getting better during the practicum activities carried out in science learning. Based on the results of these interviews, it is known that students in doing practicum have followed the correct steps according to the practical guide. Students cooperate with each other in completing the tasks given through practicum activities and students together provide conclusions based on the results of the practicum that has been carried out and the literature study that has been carried out.

In addition, through the results of interviews, it was also known that students' courage increased to express their opinions in group discussions and dared to ask teachers about confusing things in science learning, as for the results of the interviews. Based on the results of these interviews, it is known that during the practicum students have formed and trained students' communication skills between friends and with teachers. During practicum activities, students will think and try to express their opinions regarding the practicum results that have been obtained. And students will be more daring to ask the teacher about things that are still confusing.

Discussion

Based on the results of data analysis that has been presented in table 6, table 7, and table 8, it is known that the results of the questionnaire on student learning motivation in science learning in general have a good percentage of 56% with an average of 16.81. As for the science process skills of students in science learning, it is known that the percentage of students' science process skills on the observing indicator is in the very good category with a percentage of 92.5%, the measuring indicator is 81.3%, the operational variable defining indicator is 65.5% with good category, and 55.5% on the indicator doing experiments with good category. In general, the dominant students have good skills in science with a percentage of 49.2% with an average of 60.48 which can be seen in table 6.

Furthermore, based on the results of the assumption test that has been carried out, it is known that the data on the learning motivation questionnaire and the science process skill observation sheet are normal, homogeneous, and linear. With a significance value on the normality test obtained, namely 0.95 on the learning motivation questionnaire, and 0.68 on the results of students' science process skills. Furthermore, the homogeneity test obtained a significance value of 0.298. And the linearity test obtained a significance value of 0.437. Thus, according to the basis of decision making on the assumption test, it can be concluded that the data is normal, homogeneous, and linear because the significance value obtained is greater than 0.05, so that the data can be continued in the next stage, namely hypothesis testing.

The results of hypothesis testing obtained through regression testing to see whether or not there is an influence of student learning motivation on students' science process skills, it is known that the significance value obtained is 0.001. In accordance with the basis of decision making in the regression test, because the significance value obtained is smaller than 0.05, it means that there is an influence of student learning motivation on students' science process skills in science learning with the magnitude of the influence of student learning motivation on students' science process skills is 51, 1% while 48.9% students' learning motivation is influenced by other variables not examined. Students' learning motivation has an effect on students' science process skills, supported by the results of interviews, which show that high student learning motivation affects students' high level of science process skills in science learning. Students are more motivated in learning science, especially with the practicum activities carried out so that students

are more enthusiastic and diligent in learning, practice group cooperation between friends and also train students' courage to express opinions and ask teachers about confusing things in learning IPA especially on the material of reflection.

The results of this study are in line with and relevant to the research who studied science process skills of junior high school students (Fitriani, Maryani, et al., 2021). It's just that the difference between this study and previous study is in the material used, that is, this study examines the reflecting material, while previous study examines the viscosity material. Another difference is also found in the indicators of science process skills studied, namely this study examines basic and integrated science process skills, while previous study only examines basic science process skills. Furthermore, this study combines two variables, namely the variable of learning motivation and the variable of students' science process skills which were not examined by the previous study. So, the update of this research is on the materials used, the variables studied, and the indicators studied. The update is in the form of a study on reflecting materials, with the variables studied namely learning motivation and students' science process skills, and the indicators studied are basic and integrated science process skills that have never been done by previous researchers. Based on previous research that is relevant to this research, the researcher conducted a study by examining the effect of student learning motivation on students' science process skills that had not been carried out by previous researchers as the renewal of the research carried out. In this study, the researchers wanted to see how students' learning motivation in science learning is, how students' science process skills in science learning, and how the influence of students' learning motivation on students' science process skills is seen through practical activities. material reflection by studying the indicators of observing/observing, measuring, operationally defining variables, and conducting experiments.

The results of this study are expected to contribute to the world of education in particular and society in general. Through the results of this study, it will be known how the students' learning motivation and the level of students' science process skills in learning science, as well as knowing the relationship between learning motivation and students' science process skills. A student who has high motivation will carry out the duties of the teacher as well as possible and vice versa. High learning motivation will also make students more enthusiastic in science practicum activities because of great curiosity about science learning. This is supported by the expression that students' scientific research skills can be improved through direct experience in learning. One of these experiences is obtained through practical activities. Through direct experience, students will appreciate the process they do in learning. During the direct learning experience, it will be known how the students' learning motivation in these activities will be. Positive learning motivation can have a good impact on students while poor learning motivation can have a bad impact on students.

Therefore, the researcher provides recommendations for further researchers to make this research a source of reference and complete all existing deficiencies by providing innovations that are in accordance with the times to improve the quality of an education in the learning process. Further researchers can examine other variables and other indicators that this research has not done. Not only in learning science, especially physics, further researchers can examine other subjects that also require evaluation in learning as an effort to create active learning with high learning motivation from students and teachers.

Science process skills are the abilities that students have in terms of applying the scientific method in order to be able to understand, develop, and discover a science (Lestari & Diana, 2018). Every student must be trained in their science process skills in learning activities, this is because science process skills are able to shape students' personalities who are creative, critical, innovative, and competitive (D. Chen et al., 2020; Fitriani, Maryani, et al., 2021). Through science process skills activities, a student will be able to learn about science using the scientific method through observing, classifying, conducting experiments, and so on (Putra, 2015). Science process skills are divided into two types, namely basic and integrated. Activities in basic science process skills are observing, classifying, communicating, measuring, giving conclusions, and predicting (Darmaji et al., 2019; Rezba et al., 2007; Senisum, 2021). While the activities in integrated science process skills are identifying variables, tabulating data, presenting data into graphs, describing relationships between variables, collecting and processing research data, analyzing research data, compiling a hypothesis, defining variables operationally, designing research, and implementing experiments (Lepiyanto, 2017; Rosidi, 2016). One aspect that affects students' science process skills in the science learning process is learning motivation.

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vice versa. So that student learning motivation is something that requires more attention from educators so that students are enthusiastic in learning science.

4. CONCLUSION

The conclusion of this study is that there is an effect of student learning motivation on students' science process skills with a significance value of 0.001. the higher the motivation of students, the higher the influence on students' science process skills, and vice versa. These science process skills can be trained and improved through hands-on experience such as conducting experiments or practicums. Science process skills of students will increase along with the high motivation of students in learning. The results of this study can contribute to the world of education in particular and society in general. Through the results of this study, it is known how students' learning motivation and the level of students' science process skills in science learning, as well as knowing the relationship between learning motivation and students' science process skills. So that it can be used as a teacher evaluation material in creating effective learning.

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6. REFERENCES

Arieshandy, R. A., Angganing, P., & Riyadi, S. (2022). Peningkatan Motivasi dan Hasil Belajar Ilmu Pengetahuan Alam Melalui Penggunaan Media Audio Visual. *Educatif : Journal of Education Research*, *4*(3), 47–56. https://doi.org/10.36653/educatif.v4i3.114.

Azizaturredha, M., Fatmawati, S., & Yuliani, H. (2019). Korelasi Motivasi Dan Hasil Belajar Ipa Siswa Kelas Viii Di Smp Negeri Se-Kecamatan Jambi Selatan. *Jurnal Pendidikan Fisika*, *4*(1), 1–5. https://doi.org/10.22437/edufisika.v4i01.3996.

Bahrun, S., Alifah, S., & Mulyono, S. (2018). Rancang Bangun Sistem Informasi Survey Pemasaran Dan Penjualan Berbasis Web. *TRANSISTOR Elektro Dan Informatika*, *2*(2), 81–88.

Buchori, A., & Cintang, N. (2018). The Influence of Powtoon-Assisted Group to Group Exchange and Powtoon-Assisted Talking Chips Learning Models in Primary Schools. *International Journal of Evaluation and Research in Education (IJERE)*, *7*(3), 221. https://doi.org/10.11591/ijere.v7i3.14378.

Chen, D., Fitriani, R., Maryani, S., Setiya Rini, E. F., Putri, W. A., & Ramadhanti, A. (2020). Deskripsi Keterampilan Proses Sains Dasar Siswa Kelas VIII Pada Materi Cermin Cekung. *PENDIPA Journal of Science Education*, *5*(1), 50–55. https://doi.org/10.33369/pendipa.5.1.50-55.

Chen, Y. F., Luo, Y. Z., Fang, X., & Shieh, C. J. (2018). Effects of the application of computer multimedia teaching to automobile vocational education on students' learning satisfaction and learning outcome. *Eurasia Journal of Mathematics, Science and Technology Education*, *14*(7), 3293–3300. https://doi.org/10.29333/ejmste/91245.

Citrawathi, D. M., Adnyana, P. B., & Santiasa, M. P. A. (2016). Analisis Kebutuhan Untuk Pengembangan Modul Inkuiri Berbasis Pertanyaan (MIBP) Di SMP. *JPI (Jurnal Pendidikan Indonesia)*, *5*(1), 1–11. https://doi.org/10.23887/jpi-undiksha.v5i1.8289.

Dani, R., Latifah, N. A., & Putri, S. A. (2019). Penerapan Pembelajaran Berbasis Discovery Learning Melalui Metode Talking Stick Untuk Meningkatkan Pemahaman Konsep Gerak Lurus. *EduFisika*, *4*(02), 24–30. https://doi.org/10.22437/edufisika.v4i02.6058.

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. https://doi.org/10.11591/ijere.v8i2.28646.

Ertikanto, C., Rosidin, U., Distrik, I. W., Yuberti, Y., & Rahayu, T. (2018). Comparison of mathematical representation skill and science learning result in classes with problem-based and discovery learning model. *Jurnal Pendidikan IPA Indonesia*, *7*(1), 106–113. https://doi.org/10.15294/jpii.v6i2.9512.

Fitriani, R., Astalini, & Kurniawan, D. A. (2020). Studi Ekploratif: Pengembangan Modul Elektronik pada Mata Kuliah Fisika Matematika 1. *Al Ulum Sains Dan Teknologi*, *7*(1), 1–9. https://doi.org/10.31602/ajst.v7i1.5462.

Fitriani, R., Kholilah, K., Rini, E. F. S., Pratiwi, M. R., Safitri, H., Syiarah, H., & Ramadhanti, A. (2021). Analisis Karakter Kerja Keras Siswa Kelas XI IPA di SMAN 1 Kota Jambi. *PENDIPA Journal of Science Education*, *5*(2), 188–194. https://doi.org/10.33369/pendipa.5.2.188-194.

Fitriani, R., Maryani, S., Chen, D., Aldila, F. T., Br.Ginting, A. A., Sehab, N. H., & Wulandari, M. (2021). Mendeskripsikan Keterampilan Proses Sains Siswa melalui Kegiatan Praktikum Viskositas di SMAN 1 Muaro Jambi. *PENDIPA Journal of Science Education*, *5*(2), 173–179. https://doi.org/10.33369/pendipa.5.2.173-179.

Fitriani, R., Putri, W. A., Rini, E. F. S., Sehab, N. H., & Pratiwi, M. R. (2021). Pengaruh Kerja Keras Terhadap Hasil Belajar Siswa IPA di SMAN 1 Kota Jambi. *SAP (Susunan Artikel Pendidikan)*, *5*(3), 213–220. https://doi.org/10.30998/sap.v5i3.7750.

Hamdani, M. (2018). Penerapan Metode Membaca Alquran Pada Tpa Di Kecamatan Amuntai Utara (Studi pada metode Iqra dan metode Tilawati). *Al Qalam: Jurnal Ilmiah Keagamaan Dan Kemasyarakatan*, *11*(24), 89–106. https://doi.org/10.35931/aq.v0i0.12.

Ismajli, H., & Imami-Morina, I. (2018). Differentiated instruction: Understanding and applying interactive strategies to meet the needs of all the students. *International Journal of Instruction*, *11*(3), 207–218. https://doi.org/10.12973/iji.2018.11315a.

Jamaluddin, J., Jufri, A. W., Ramdhani, A., & Azizah, A. (2019). Profil Literasi Sains dan Keterampilan Berpikir Kritis Pendidik IPA SMP. *Jurnal Penelitian Pendidikan IPA*, *5*(1), 120–130. https://doi.org/10.29303/jppipa.v5i1.185.

Jufrida, J., Basuki, F. R., Pangestu, M. D., & Djati Prasetya, N. A. (2019). Analisis Faktor Yang Mempengaruhi Hasil Belajar Ipa Dan Literasi Sains Di Smp Negeri 1 Muaro Jambi. *EduFisika*, *4*(02), 31–38. https://doi.org/10.22437/edufisika.v4i02.6188.

Kejzlarova, N., & Mladkova, L. (2021). Student stories as source of knowledge for decision-making–mix method study from the university. *Knowledge Management Research and Practice*, *00*(00), 1–18. https://doi.org/10.1080/14778238.2020.1855088.

Kholilah, Ramadhanti, A., Fitriani, R., Febri, E., & Pratiwi, M. R. (2020). Hubungan Kerja Keras Dan Hasil Belajar Fisika Di Sma Negeri 1 Kota Jambi. *Journal of Science Education And Practice*, *4*, 41–48.

Lepiyanto, A. (2017). Analisis Keterampilan Proses Sains pada Pembelajaran Berbasis Praktikum. *BIOEDUKASI (Jurnal Pendidikan Biologi)*, *5*(2–161), 156. https://doi.org/10.24127/bioedukasi.v5i2.795.

Lestari, M. Y., & Diana, N. (2018). Keterampilan Proses Sains (KPS) pada Pelaksanaan Praktikum Fisika Dasar I. *Indonesian Journal of Science and Mathematics Education*, *01*(1), 49–54. https://doi.org/https://doi.org/10.24042/ijsme.v1i1.2474.

Matsun, Ramadhani, D., & Lestari, I. (2018). Pengembangan Bahan Ajar Listrik Magnet Berbasis Android di Program Studi Pendidikan. *Jurnal PMIPA*, *9*(1), 99–107.

Mustafa, P. S., Gusdiyanto, H., Victoria, A., Masgumelar, N. K., Lestariningsih, N. D., Maslacha, H., Ardiyanto, D., Hutama, H. A., Boru, M. J., Fachrozi, I., Rodriquez, E. I. S., Prasetyo, T. B., & Romadhana, S. (2020). *Metodologi Penelitian Kuantitatif, Kualitatif, dan Penelitian Tindakan Kelas dalam Pendidikan Olahraga*. Fakultas Ilmu Keolahragaan Universitas Negeri Malang.

Mutmainnah, S. L., Suhartono, & Suryandari, K. C. (2021). Hubungan Antara Kemampuan Berpikir Kritis Aspek Menganalisis dan Aspek Menarik Kesimpulan terhadap Hasil Belajar IPA Siswa Kelas V SDN Sekecamatan Klirong Tahun Ajaran 2020/2021. *Kalam Cendekia: Jurnal Ilmiah Kependidikan*, *9*(3), 860–866.

Ong, E. T., Govindasamy, D., Singh, C. K. S., Ibrahim, M. N., Wahab, N. A., Borhan, M. T., & Tho, S. W. (2021). The 5E inquiry learning model: Its effect on the learning of electricity among malaysian students. *Cakrawala Pendidikan*, *40*(1), 170–182. https://doi.org/10.21831/cp.v40i1.33415.

Ozdemir, B., Cakir, O., & Hussain, I. (2018). Prevalence of Nomophobia among university students: A comparative study of Pakistani and Turkish undergraduate students. *Eurasia Journal of Mathematics, Science and Technology Education*, *14*(4), 1519–1532. https://doi.org/10.29333/ejmste/84839.

Pan, W. T. (2017). A newer equal part linear regression model: A case study of the influence of educational input on gross national income. *Eurasia Journal of Mathematics, Science and Technology Education*, *13*(8), 5765–5773. https://doi.org/10.12973/eurasia.2017.01026a.

Pranatawijaya, V. H., Widiatry, W., Priskila, R., & Putra, P. B. A. A. (2019). Penerapan Skala Likert dan Skala Dikotomi Pada Kuesioner Online. *Jurnal Sains Dan Informatika*, *5*(2), 128–137. https://doi.org/10.34128/jsi.v5i2.185.

Putra, E. A. (2015). Anak Berkesulitan Belajar di Sekolah Dasar Se-Kelurahan Kalumbuk Padang. *Jurnal Ilmiah Pendidikan Khusus*, *1*(3), 71–76.

Putri, W. A., Fitriani, R., Rini, E. F. S., Aldila, F. T., & Ratnawati, T. (2021). Pengaruh Motivasi Terhadap Hasil

Belajar Siswa Sekolah Menengah Pertama. *Jurnal Pembelajaran Dan Matematika Sigma (Jpms)*, *7*(1), 7–11. https://doi.org/10.36987/jpms.v7i1.1942.

Qamardhani, N. A., & Surya, E. (2018). Efektivitas Penggunaan Metode Guided Discovery dalam Meningkatkan Kemampuan Pemecahan Masalah Matematika. *Seminar Nasional SINASTEKMAPAN (E-Journal) 2018*, *I*(November), 1242–1249.

Ramadhanti, A., Natalia, N., Febri, E., & Fitriani, R. (2022). Deskripsi Motivasi Belajar Fisika Siswa Kelas X MIPA di SMAN 1 Kota Jambi. *Journal Evaluation in Education (JEE)*, *3*(3), 82–86. https://doi.org/10.37251/jee.v3i3.245.

Rezba, R. J., Sprague, C. R., McDonnough, J. T., & Matkins, J. J. (2007). *Learning & Assessing Science Process Skills*. Kendall/Hunt Publishing Company.

Rini, S. E. F., Fitriani, R., Matondang, M. M., Yolviansyah, F., Putri, N. D., Agatha, F. L., & Lolita, N. (2021). Pengaruh Karakter Kerja Keras Terhadap Hasil Belajar Fisika di SMA Negeri 1 Kota Jambi. *PENDIPA Journal of Science Education*, *5*(2), 256–261. https://doi.org/10.33369/pendipa.5.2.256-261.

Rosidi, I. (2016). Pengembangan Lembar Kegiatan Siswa Berorientasi Pembelajaran Penemuan Terbimbing (Guided Discovery Learning) Untuk Melatihkan Keterampilan Proses Sains. *Jurnal Pena Sains*, *3*(1), 55–63.

Saputra, P. A., & Nugroho, A. (2017). Perancangan Dan Implementasi Survei Kepuasan Pengunjung Berbasis Web Di Perpustakaan Daerah Kota Salatiga. *JUTI: Jurnal Ilmiah Teknologi Informasi*, *15*(1).

Senisum, M. (2021). Keterampilan Proses Sains Siswa SMA dalam Pembelajaran Biologi. *Jurnal Pendidikan Dan Kebudayaan Missio*, *13*(1), 76–89. https://doi.org/10.36928/jpkm.v13i1.661.

Sitompul, Sari, R., Astalini, & Alrizal. (2018). Deskripsi Motivasi Belajar Fisika Siswa Kelas X Mia Di Sman 9 Kota Jambi. *EduFisika*, *3*(2), 22–31. https://doi.org/https://doi.org/10.22437/edufisika.v3i02.5395.

Sumual, M. Z. I. (2017). Evaluation of Primary School Teachers' Competence in Implementing 2013 Curriculum: a Study in Tomohon City. *Journal of Education and Learning*, *11*(3), 343–350.

Syahrial, S., Asrial, A., Kurniawan, D. A., & Pratama, R. A. (2019). Towards improving the critical thinking skills of pre-service teachers in Indonesia. *Journal of Education and Learning (EduLearn)*, *13*(4), 575–582. https://doi.org/10.11591/edulearn.v13i4.13613.

Tanti, Astalini, Darmaji, Kurniawan, D. A., & Fitriani, R. (2022). Student Perception Review from Gender : Electronic Moduls of Mathematical Physics. *Jurnal Pendidikan Indonesia*, *11*(1), 125–132.

Walsh, I. (2015). Using quantitative data in mixed-design grounded theory studies: An enhanced path to formal grounded theory in information systems. *European Journal of Information Systems*, *24*(5), 1–27. https://doi.org/10.1057/ejis.2014.23.

Yalçın, S. (2017). Teacher Behaviours Explaining Turkish and Dutch Students' Mathematic Achievements. *International Journal of Evaluation and Research in Education (IJERE)*, *6*(2), 174–182.