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The Effect of Inquiry Model on Science Learning Outcomes Reviewed from Self-Regulated Learning in Elementary School

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Abstract
The low results of science learning are one of the things that underlie this research. This study aims to determine the effect of the inquiry model on science learning outcomes in terms of students' self-regulated learning. The type of research used in this study is a quasi-experimental design with a posttest-only control group design. The population of the study is all fifth-grade students of SDN Gugus II Gianyar, totaling 180 students. Sampling used a random sampling technique and obtained two classes, with total 65 students. Data collection used test and non-test methods. Data were analyzed using ANOVA AB analysis. The results of the study showed: 1) The science learning outcomes of students who were taught with the inquiry model were better than those of students who were taught with the conventional model; 2) There was an interactive effect between the inquiry model and self-regulated learning on science learning outcomes; 3) In students with high self-regulated learning, there was a difference in science learning outcomes between students who were taught with the inquiry model and students who were taught with the conventional model; 4) In students with low self-regulated learning, there was a difference in science learning outcomes between students who were taught using the inquiry model and students who were taught using the conventional model. Based on the findings obtained, it can be concluded that the inquiry model has an effect on the results of science learning in terms of students' self-regulated learning.

Keywords: Inquiry model, science learning outcomes, self-regulated learning

INTRODUCTION

Science is studies of natural and social as interrelated phenomena (Wijayanti & Ekantini, 2023). In science learning, students are encouraged to get used to observing, researching and doing activities that encourage other inquiry skills. This kind of habit is very important to achieve optimal learning outcomes. In assessing student learning outcomes, teachers need to pay attention to factors that can affect learning outcomes. One factor that can affect student learning outcomes is student self-regulation learning. Self-regulation learning is an active and independent effort by students in their learning process by monitoring, regulating and controlling cognition, motivation, and behavior, which are oriented or directed towards learning goals (Harahap, 2020). Self-regulation learning is also defined as a person's ability to properly manage their own learning experiences in numerous ways in order to get maximum learning results (Musliha & Revita, 2021). Self-regulated learning plays an important role in learning because it helps direct students towards independent learning, namely setting study schedules, setting study targets and seeking needed information independently. Self-regulated learning provides encouragement for students to be enthusiastic about learning (Salsabila & Muchlis, 2024).

Someone who has high learning independence will also have high creativity so that students tend to have a high curiosity about a problem so that it can have an impact on their learning outcomes. This is in line with the findings Ghimby (2022) which examines the influence of self-regulated learning on critical thinking skills and student learning outcomes, namely self-regulated learning has a positive influence on critical thinking skills and student learning outcomes. Through self-regulated learning, students will seek information about knowledge and learning materials from various sources, such as utilizing existing technology, and if they do not find what they are looking for, teachers at school or tutors can be their references so that they can improve their learning outcomes. But the facts on the ground are in stark contrast to this. There are still many students who rely on teachers at school alone without utilizing other learning resources, this has a significant impact on student learning outcomes.

Based on observations that have been conducted on fifth grade students at SD Gugus II Gianyar, it is seen that the science learning related to student learning outcomes has not been in accordance with expectations. On average, students have not been able to understand the learning delivered, in learning activities students are still unable to organize how their learning activities are carried out properly and are unable to operate themselves in the learning process in other words, students tend to just be quiet and wait for direction from the teacher to do something related to their learning goals. Students tend not to be able to analyze information, evaluate, and conclude their lessons well because of the lack of students' ability to solve their problems, in addition, the student learning activities that are carried out tend not to involve direct experimental activities so that students are only taught through analogies. Some of the problems above have an impact on student learning outcomes, namely the average results of the odd semester mid-term assessment of students are below the criteria for achieving student learning objectives (*Kriteria Ketercapaian Tujuan Pembelajaran/KKTP*).

Learning that is carried out using analogies alone results in students having a poor understanding of the material given by the teacher, resulting in low student learning outcomes (Naibaho & Hoesein (2021). Based on the problems above, in the learning process, learning innovations need to be carried out to improve student learning

outcomes. The solution provided to improve students' science learning outcomes at SD Gugus II Gianyar is to apply the inquiry learning model. The inquiry learning model is a conceptual framework in the learning process that includes exploring problems, creating hypotheses, designing experimental activities, collecting and analyzing data, and making conclusions (Sari & Lahade, 2022). According to Datu et al. (2020) states that the syntax of the inquiry learning model consists of 6 phases, namely: a) asking questions about observed/experienced symptoms, b) formulating problems, c) designing investigation/experimental activities, d) conducting experiments, e) conducting analysis/synthesis, f) making conclusions.

The inquiry learning model invites students to solve their own problems through the experiment process, so that they can improve their learning outcomes. This is in line with the findings made by Zain et al. (2022) which examines the influence of the inquiry learning model on students' critical thinking skills, the results show that the inquiry learning model has a positive influence on students' critical thinking skills. The findings of the research conducted by Siahaan et al., (2020) which examines the influence of guided inquiry learning models with multiple representations on students' science process skills also obtained positive results, namely that guided inquiry learning models with multiple representations have an influence on students' science process skills. Furthermore, research conducted by Asni et al., (2020) which examined the influence of the guided inquiry learning model on students' chemistry learning outcomes also obtained positive results, namely that learning with the guided inquiry model had a better influence than the conventional learning model on students' chemistry learning outcomes.

Based on these findings, it can be said that the inquiry learning model has a good impact on student learning outcomes, this is because in the learning process students are invited directly to investigate ideas, questions, or problems. In previous studies, the application of the inquiry learning model to students' science learning outcomes has not been seen and has not considered self-regulated learning. Therefore, this study has a novelty, namely to determine the effect of the inquiry learning model on science learning outcomes as reviewed from students' self-regulated learning.

METHOD

The study to determine the effect of the inquiry learning model on science learning outcomes in terms of students' self-regulated learning was conducted in Cluster II Gianyar. This study used a quasi-experimental research type. The research plan was a posttest only control group design. In this design, there were two groups, each of which was selected randomly. The first group was given treatment (X) and the other group was not. The population of this study was all fifth-grade students of Elementary School Cluster II Gianyar District, totaling 180 people. Sampling was carried out using random sampling techniques. Before random sample selection, an equivalence test was carried out based on the results of the Mid-Semester Assessment (PTS) 1 students' science using one-way ANOVA statistics with the help of the SPSS 26.00 for Windows program at a significance level of 5%, with the condition that the group could be said to be equivalent if $0.05 < \alpha$. The selected samples were fifth-grade students of SDN 3 Abianbase. In this study, not all students in the class were used as samples. The sample members were selected based on the level of self-regulated learning obtained from the students' self-regulated learning questionnaire scores. The results of the students' self-regulated learning questionnaire scores were then sorted to obtain students with 3,33% self-regulated learning in the high SLR category and 3,33% in the low SLR category.

Data collection was conducted using multiple-choice objective test methods to measure students' science learning outcomes and non-test methods in the form of questionnaires to measure the level of self-regulated learning possessed by students. Objective tests were compiled based on the focus of the science material in this study, namely magnets, electricity, and technology contained in Chapter III, grade 5, semester I, while the questionnaire was compiled based on the aspects measured in self-regulated learning, namely metacognition, motivation, and behavior. The results of the validation of the learning outcome test instrument and the self-regulated learning questionnaire obtained 30 valid test items. Treatment was given 6 times in the experimental class, and 1 post-test was given in the experimental class and in the control class. The results of the post-test data obtained were then analyzed using a two-way Anova test with the help of the SPSS-26.00 for Windows program to answer the hypothesis. Null hypothesis testing was carried out with a significance level of 5%. The research data were analyzed in stages, including the data description stage, analysis prerequisite test, and hypothesis testing. Hypothesis testing was carried out on students' science learning outcome data. Hypothesis testing 1 and 2 were conducted using two-way Anova (Anova AB) analysis, while hypothesis testing 3 and 4 were conducted using Tukey's test analysis. Tukey's test was conducted on the condition that the results of hypothesis testing 2 obtained a significance number below 0,05.

FINDINGS AND DISCUSSION

Findings

In this study, the data collected were data in the form of student science learning outcome scores and self-regulated learning. The study was conducted on one experimental group by implementing an inquiry learning model and one control group by implementing a conventional learning model by reviewing students' self-regulated learning in each group. The data that has been collected will be analyzed descriptively first so that a description of the research data is obtained which explains the maximum, minimum, range, average (mean), and standard deviation values of the post-test data presented in Table 1.

Table 1. Recapitulation of Results of Calculation of Description of Students' Science Learning Outcomes

Group	A_1	A_2	A_1B_1	A_2B_1	A_2B_1	A_2B_2
Sample (N)	22	22	11	11	11	11
Mean	22,32	16	23,09	21,55	18,45	13,55
Median	22	15,5	22	22	18	13
Modus	22	15	22	22	19	10
Standar Deviation	2,46	3,90	2,51	2,25	2,98	3,14
Range	10	14	7	8	9	10
Minimum	17	10	20	17	15	10
Maximum	27	24	27	25	24	20
Sum	491	352	254	237	203	149

Information

A_1 = Description of data on students' science learning outcomes following the inquiry learning model

A_2 = Description of data on students' science learning outcomes following the conventional learning model

YA_1B_1 = Description of data on the results of students' science learning who follow the inquiry learning model with high self-regulated learning

YA_2B_1 = Description of data on the results of students' science learning who follow the inquiry learning model with low self-regulated learning

YA_2B_1 = Description of data on the results of students' science learning who follow the conventional learning model with high self-regulated learning

YA_2B_2 = Description of data on students' science learning outcomes following conventional learning models with low self-regulated learning

The results of the data description obtained the results that the average learning outcomes of students who followed the inquiry learning model were 22,32, the average learning outcomes of students who followed the inquiry learning model were 16, the average learning outcomes of students who followed the inquiry learning model with high self-regulated learning were 23,09, the average learning outcomes of students who followed the inquiry learning model with low self-regulated learning were 21,55, the average learning outcomes of students who followed the conventional learning model with high self-regulated learning were 18,45, and the average learning outcomes of students who followed the conventional learning model with low self-regulated learning were 13,55.

Furthermore, the results of the analyst prerequisite test were carried out using the SPSS-26.00 for Windows program. First, the normality test obtained the Kolmogorov-Smirnova and Shapiro Wilk significance values of 0,173 and 0,773 for the experimental class and the Kolmogorov-Smirnova and Shapiro Wilk significance values of 0,200 and 0,598 for the control class. The acquisition of these values indicates that the sig. value > 0,05, thus it can be concluded that the research data is normally distributed. Second, the homogeneity test of variance using the Levene's Test of Equality of Error Variances obtained the Levene's significance value of 0,808. The acquisition of these values indicates that the sig. value > 0,05, thus it can be concluded that the data comes from homogeneous data and can be continued to the hypothesis test. The results of testing hypotheses 1 and 2 through the ANOVA AB test are available in Table 2.

Table 2. Summary of Results of ANOVA AB Test Analysis

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	594,614[a]	3	198,205	25,863	0,000
Intercept	16227,841	1	16227,841	2117,512	0,000
A	108,205	1	108,205	14,119	0,001
B	451,841	1	451,841	58,959	0,000
A * B	34,568	1	34,568	4,511	0,040
Error	306545	40	7,664		
Total	17129,000	44			
Corrected Total	901,159	43			

Information
A = Learning model
B = Self-regulated Learning

Based on the summary of the results of the ANOVA AB test analysis in Table 2, the F coefficient between models (F_A) was obtained at 14,119 with a significance level of 0,001 and the F coefficient for the A*B variation or F interaction (F_{AB}) was obtained at 34,568 with a significance level of 0,040. This significance value is smaller than 0.05 so that the F_A and F_{AB} values are significant. The results of the hypothesis test 2 obtained a significance figure below 0,05, which was 0,040 so that the analysis test of hypotheses 3 and 4 were continued with the Tukey test. The presentation of the summary of the results of the further test analysis with the Tukey test to help draw conclusions is available in Table 3.

Table 3. Tukey Test Results Summary

(I) Post Hoc	(J) Post Hoc	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
	A_1B_2	1.55	1.170	.555	-1.59	4.68
A_1B_1	A_2B_1	4.64*	1.170	.002	1.50	7.77
	A_2B_2	9.55*	1.170	.000	6.41	12.68
	A_1B_1	-1.55	1.170	.555	-4.68	1.59
A_1B_2	A_2B_1	3.09	1.170	.055	-.04	6.23
	A_2B_2	8.00*	1.170	.000	4.86	11.14
	A_1B_1	-4.64*	1.170	.002	-7.77	-1.50
A_2B_1	A_1B_2	-3.09	1.170	.055	-6.23	.04
	A_2B_2	4.91*	1.170	.001	1.77	8.04
	A_1B_1	-9.55*	1.170	.000	-12.68	-6.41
A_2B_2	A_1B_2	-8.00*	1.170	.000	-11.14	-4.86
	A_2B_1	-4.91*	1.170	.001	-8.04	-1.77

Information
A_1B_1 = Group of students who follow the inquiry learning model with high self-regulated learning
A_1B_2 = Group of students who follow the inquiry learning model with low self-regulated learning
A_2B_1 = Group of students who follow the conventional learning model with high self-regulated learning
A_2B = Group of students who follow the conventional learning model with low self-regulated learning

The results of the further test calculations available in Table 3 obtained the results of the comparison of the group of students who have high self-regulated learning who are taught using the inquiry model with the group of students who have high self-regulated learning who are taught using the conventional model obtained a significance figure below 0,05, which is 0,002, and the results of the comparison of the group of students who have low self-regulated learning who are taught using the inquiry model with the group of students who have low self-regulated learning who are taught using the conventional model obtained a significance figure below 0.05, which is 0,000.

Discussion

The inquiry learning model is a learning model that provides opportunities for students to discover their own knowledge by asking questions (Said, in Bakri et al., 2021). The inquiry learning model is effective in helping students to gain meaningful knowledge, especially in science subjects because students are directly involved, such as asking questions in an informal atmosphere, testing hypotheses, and building explanations related to the problems given in the learning process (Prasetyo, 2021). Learning will be more meaningful if students are given the opportunity to learn and be actively involved in discovering concepts from existing phenomena in the environment (Siahaan et al., 2020). Science is a science that teaches students about natural and social phenomena around them. The inquiry learning model in science learning, students are invited directly into a relatively short scientific process, including activities of observing, researching and carrying out activities that encourage other inquiry skills to achieve optimal learning outcomes (Bakri et al., 2021). This is certainly in line with the characteristics of the inquiry learning model which provides students with the opportunity to carry out a learning process that involves inquiry activities (discovery) so that they can solve the problem correctly, thus the inquiry learning model provides better results for student learning outcomes (Sugianto et al., 2020). In the experimental class with the application of the inquiry learning model, it emphasizes the active work of students in finding their own knowledge through the presentation of problems to actively practicing in working on Student Worksheets (*Lembar Kerja Peserta Didik/LKPD*). These activities can create an academic atmosphere that supports the ongoing learning centered on students (Enda et al., 2024). This is inversely proportional to the learning process applied to the control class through the application of conventional learning models. In the control class, student learning activities are carried out by the teacher providing an explanation of the material being studied, then the teacher gives assignments to students and at the end of the learning the teacher gives an assessment. This gives rise to teacher-centered learning activities. Learning activities by implementing conventional learning models involve a more dominant role for teachers compared to student activities, this tends to make students passive in the learning process, so this has an impact on low student learning outcomes (Maryam et al., 2020). The conventional learning model provides learning activities in the form of monotonous lectures so that students cannot improve their science skills due to boredom and saturation in the learning process (Sudarto, 2022).

Studies related to the implementation of the model in the review of self-regulated learning need to be carried out in order to perfect the application of a model in the learning process. The inquiry learning model is a learning approach that encourages students to actively find out and find their own answers to the questions they have or the questions presented (Said, in Bakri et al., 2021). In this model, students act as mini scientists who carry out a series of scientific steps, starting from formulating problems, collecting data, analyzing data, to drawing conclusions. Sari & Lahade (2022) states that this learning model does not only emphasize obtaining or finding answers, but also encourages students' curiosity in conducting searches, research, and developing further studies and analysis.

This ability achieves maximum results when paying attention to student learning independence or student self-regulation learning (Rahmawati & Wulandari, 2021). Self-regulated learning is a person's ability to effectively manage their own learning experiences in various ways to achieve maximum learning outcomes (Friska, et al., 2021). Students who have good self-regulation learning skills will be able to determine what they

want to learn and how they will achieve it so that it will have a positive impact on their learning outcomes. This is in line with the opinion of Latifah et al. (2022) which reveals that students with good self-regulation in their learning process will have high learning outcomes because they achieve the goals that have been set. Conversely, those with low levels of self-adjustment learning will have low achievement.

There are three aspects of student self-regulation learning which include metagonition, motivation, and behavior. In the metagonition aspect, students begin to plan, set goals, and evaluate tasks. When associated with the inquiry learning model, this aspect will be seen when students formulate hypotheses, design experiments, and analyze data. Metagonition will encourage students' ability to solve problems and develop higher thinking skills (Purnamawati, in Syukur et al., 2021). Next is the motivation aspect, in this aspect, students have high confidence and enthusiasm in doing a task or solving the problems they face. Motivation has a very important role in growing students' passion or enthusiasm in carrying out the learning process so that their learning goals can be achieved properly (Putri et al., 2021). Lastly, the behavioral aspect, this aspect refers to students' efforts to create an environment that optimizes the learning process. This is reflected in the application of the inquiry learning model, students will use their learning experiences to solve the problems given so that students will gain new knowledge (Gaol & Sirait, in Zain et al., 2022).

The level of self-regulation learning is one of the factors that causes differences in students' science learning outcomes. Science as a subject that studies natural phenomena and interactions around students is certainly expected to obtain maximum learning outcomes considering that the learning contained in science learning is not far from students' daily lives. Self-regulation learning is the ability of students to regulate their own learning activities so that they find new knowledge through time management, physical and social arrangements. Musliha & Revita (2021). states that high self-regulated learning can organize student work, set goals, seek help when needed, use effective work strategies, manage their time to study and have self-efficacy. Students who have high self-regulated learning will manage learning activities well, so that students always have the hope that the results obtained are satisfactory, interest from within/internal approach, and orientation towards goals (Fajarwati & Maryani, 2023). Based on the explanation, it is clear that high self-regulated learning will have a positive impact. However, the suitability between the conditions of high self-regulated learning and the application of learning models such as the application of the inquiry model will provide results that are still different if the students are taught with conventional learning models. This is in accordance with the findings of Hidayat (2022) namely the inquiry learning model is superior in improving student learning outcomes than conventional learning. In addition, it is also supported by the findings Salsabila & Muchlis (2024) that, students with high self-regulated learning are able to actively regulate their learning activities so that they have a significant influence on students' science learning outcomes.

In learning activities by implementing the inquiry learning model, students who have low self-regulated learning will still be invited to solve a problem or issue actively by using the self-regulated learning abilities that students have so that their learning outcomes can be improved. This is because the inquiry learning model is a learning model that directs students to conduct an experiment independently according to their learning experience so that new knowledge is obtained. Inquiry learning is a form of student-oriented learning. The application of the right learning model will build students' knowledge appropriately. Conversely, if students are taught with an inappropriate

learning model, the construction of students' knowledge cannot be built properly. One of the learning models that slows down the construction of students' knowledge is the conventional learning model (Maryam et al., 2020). Conventional learning models are learning models that do not actively invite students to find new knowledge. Students only become passive recipients of knowledge from teachers so that there is no meaningful learning for students.

In the application of conventional learning models, students' self-regulated learning cannot be realized properly, this is because students are not involved in an experimental activity, so that students who have low self-regulated learning will have an increasingly negative impact on their learning outcomes. This is in line with the findings Friska et al. (2024) students with low self-regulated learning will still be able to make representations and identify problems given if they are taught with a relevant and student-centered learning model. So that it produces results that there are differences in science learning outcomes between students who are taught with an inquiry learning model and students who are taught with a conventional model in students who have low self-regulated learning.

Based on the above explanation, it can be seen that there is a difference in the results of learning science, that the results of learning science of students who are taught using the inquiry learning model are better when compared to students who are taught using the conventional learning model. Another study that is in line with the results of this study is that conducted by Relisma et al., (2022) where in this study it was also found that the inquiry learning model had a positive influence on the learning outcomes of the cognitive domain of science. The research conducted by Mardianti et al., (2020) also obtained positive results, namely the inquiry learning model has an effect on students' science abilities. Next, the existence of a relationship between the application of the inquiry learning model and self-regulation learning possessed by students can achieve positive results, namely increasing student learning outcomes. This is supported by Musliha & Revita (2021) findings which states that the inquiry learning model is able to stimulate students' curiosity, train students to investigate phenomena and solve scientific problems through self-regulation learning so that it can have a positive influence on students' learning outcomes. Likewise, the results of learning science in this study were proven to increase after being treated with inquiry learning models, so that the inquiry model needs to be applied in a learning process because it provides a more meaningful learning experience for students.

The strength of this study from previous studies is that students are invited to become mini scientists in the learning process by involving their self-regulation skills. The provision of learning activities through discovery produces optimal learning outcomes, in addition, self-regulation learning owned by students makes students find their own learning beliefs so that it has a positive impact on themselves and their environment. The weakness of this study is that learning activities are only limited to elementary school students, so it is necessary to expand the use of inquiry learning models at a higher level.

CONCLUSION

Based on the analysis and discussion of the results of the hypothesis test that has been carried out, the conclusions obtained from the results of the study are first, the results of the science learning of students who are taught with the inquiry learning model are

better than students who are taught with the conventional learning model in grade V elementary school students in Cluster II, Gianyar District with a sig value = 0.001 (sig <0.05). Second, there is an interactive influence between the inquiry learning model and self-regulated learning on the results of science learning in grade V elementary school students in Cluster II, Gianyar District with a sig value = 0.040 (sig <0.05). Third, there is a difference in the results of science learning between students who are taught with the inquiry learning model and students who are taught with the conventional model in grade V elementary school students in Cluster II, Gianyar District who have high self-regulated learning with a sig value = 0.002 (sig <0.05). Fourth, there is a difference in the results of learning science between students who are taught using the inquiry learning model and students who are taught using the conventional model in grade V elementary school students in cluster II, Gianyar District who have low self-regulated learning with a sig value = 0.000 (sig < 0.05).

Based on the findings of the results obtained in this study, suggestions can be submitted to class teachers, principals, and other researchers. First, teachers are advised to prepare more learning plans and increase insight into the application of learning with the inquiry model, one of which is by designing teaching modules properly. Furthermore, teachers are expected to be able to use the inquiry model while still considering students' self-regulated learning. From the finding of students' self-regulated learning, teachers can use a questionnaire sheet according to the appropriate dimensions and indicators so that in the learning process teachers can form homogeneous groups. Second, principals are expected to be able to use the results of this study as a reference for the application of innovative learning models and be able to guide and direct teachers to be more optimal in applying learning models, especially with the application of the inquiry learning model so that learning objectives can be achieved optimally. Third, further researchers are advised to be able to use a qualitative approach or a combination of quantitative and qualitative approaches to obtain more in-depth and descriptive data regarding the influence of the inquiry learning model as reviewed from students' self-regulated learning and use more diverse data collection tools such as observation, interviews, and document analysis. This is because the approach used in this study is a quantitative approach, where the data presented is only limited to numbers in assessing the influence of the inquiry learning model reviewed from students' self-regulated learning and only uses data collection tools in the form of tests and questionnaires. In this study, the population used was limited to elementary school students only, so it is recommended that further researchers expand further research to the Junior High School, Senior High School and college levels, so that the influence of the inquiry learning model reviewed from self-regulated learning can be known in more detail and in depth at each level of education.

REFERENCES

Asni, A., Wildan, W., & Hadisaputra, S. (2020). Pengaruh Model Pembelajaran Inkuiri Terbimbing terhadap Hasil Belajar Kimia Siswa Materi Pokok Hidrokarbon. *Chemistry Education Practice, 3*(1), 17-22. https://doi.org/10.29303/cep.v3i1.1450

Bakri, A., Syahputra, E., (2022). Pengaruh Model Pembelajaran Inkuiri terhadap Kemampuan Beprikir Kritis dan Karakter Siswa Kelas VII SMP Negeri 3 Langsa. *Paradikma*, 14(2), 56-64. https://doi.org/10.24114/paradikma.v14i2.32030

Dafrita, I. E., & Nawawi, N. (2022). The Influence of Inquiry Models with a STEM Approach on Critical Thinking Ability in Low-Level Plant Structure Courses. *Edunesia: Jurnal Ilmiah Pendidikan*, *3*(3), 240–251. https://doi.org/10.51276/edu.v3i3.273

Datu, A. R., Tumurang, H. J., & Sumilat, J. M (2020). Pengaruh Motivasi Belajar terhadap Hasil Belajar Siswa di Tengah Pandemi Covid-19. *Jurnal Basicedu, 6*(2), 1959–1965. https://doi.org/10.31004/basicedu.v6i2.2285

Enda, O. L., Bano, V. O., & Ndjoeroemana, Y. (2024). Penerapan Model Pembelajaran Inkuiri Terbimbing Berbantuan LKPD Word Square untuk Meningkatkan Hasil Belajar IPA di SMP Negeri 2 Umbu Ratu Nggay Barat. *JCI Jurnal Cakrawala Ilmiah* 4(4), 285–296. http://bajangjournal.com/index.php/JCI

Fajarwati, A., & Maryani, I. (2023). Pengaruh Self-Regulated Learning Terhadap Hasil Belajar IPA Siswa Kelas V Sekolah Dasar. *Jurnal MIPA dan Pembelajarannya*, *3*(4), 173–182. https://doi.org/10.17977/um067v3i4p173-182

Friska, D., Sukestiyarno, S., & Kartono, K. (2024). Analisis Literasi Matematis Siswa Ditinjau dari Self-regulated Learning pada Pembelajaran Problem Based Learning (PBL) Berbasis E-Modul. *Euclid*, *11*(1), 33-54. https://doi.org/10.33603/cpt2nq30

Ghimby, A. B. D. (2022). Pengaruh Self-regulated Learning terhadap Kemampuan Berpikir Kritis dan Hasil Belajar. *JOEL: Journal of Educational and Language Research, 1*(12), 2091–2104. https://doi.org/10.53625/joel.v1i12.3014

Harahap, A. C. P. (2020). Covid 19: Self-regulated Learning Mahasiswa. *Al-Irsyad: Jurnal Pendidikan dan Konseling*, *10*(1), 26-42. http://dx.doi.org/10.30829/al-irsyad.v10i1.7646

Hidayat, N. (2022). Pengaruh Model Pembelajaran Inkuiri Terbimbing Terhadap Hasil Belajar IPA Ditinjau Dari Keterampilan Metakognitif. Jurnal Pendidikan Dasar Indonesia. *JPDI: Jurnal Pendidikan Dasar Indonesia*, *7*(2), 58-64. http://dx.doi.org/10.26737/jpdi.v7i2.3339

Latifah, K. N., Sukriwan, S., & Santosa, C. A. H. F. (2022). Meta-Analisis Kualitatif Kajian Ilmiah Self-regulated Learning dalam Pembelajaran Matematika. *Jurnal Matematika dan Pendidikan Matematika*, *9*(2), 136-144. https://doi.org/10.31316/jderivat.v9i2.3586

Mardianti, F., Yulkifli, & Asrizal. (2020). Metaanalisis Pengaruh Model Pembelajaran Inkuiri terhadap Keterampilan Proses Sains dan Literasi Saintifik Article History. *Sainstek : Jurnal Sains dan Teknologi*, *12*(2), 91-100. http://dx.doi.org/10.31958/js.v12i2.2435

Maryam, M., Kusmiyati, K., Merta, I. W., & Artayasa, I. P. (2020). Pengaruh Model Pembelajaran Inkuiri terhadap Keterampilan Berpikir Kritis Siswa. *Jurnal Pijar Mipa*, *15*(3), 206–213. https://doi.org/10.29303/jpm.v15i3.1355

Musliha, M., & Revita, R. (2021). Pengaruh Model Pembelajaran Problem Based Learning terhadap Kemampuan Pemecahan Masalah Matematis Ditinjau dari Self-regulated Learning Siswa. *JRPM: Jurnal Review Pembelajaran Matematika*, *6*(1), 68–82. https://doi.org/10.15642/jrpm.2021.6.1.68-82

Naibaho, M. R. U., & Hoesein, E. R. (2021). Meta Analisis Model Discovery Learning untuk Meningkatkan Hasil Belajar IPA Siswa SD. *JPDI: Jurnal Pendidikan Dasar Indonesia*, *6*(1), 19-25. http://dx.doi.org/10.26737/jpdi.v6i1.2290

Putri, W. A., Fitrini, R., Febri Setya Rini, E., Tia Aldila, F., & Ratnawati, T. (2021). Pengaruh Motivasi terhadap Hasil Belajar Siswa IPA di SMAN 6 Muaro Jambi. *SAP: Susunan Artikel Pendidikan*, *5*(3), 248-254. http://dx.doi.org/10.30998/sap.v5i3.7760

Rahmawati, A., Muhtarom, M., & Wulandari, D. (2021). Matematika Analisis Kemampuan Berpikir Kreatif Siswa dalam Menyelesaikan Soal Matematika Ditinjau dari Self-Regulated Learning. *Imajiner: Jurnal Matematika dan Pendidikan*, *3*(6), 513-519. https://doi.org/10.26877/imajiner.v3i6.8005

Relisma, R., Hendriana, E. C., & Mertika, M. (2022). Pengaruh Model Pembelajaran Inkuiri terhadap Hasil Belajar Kognitif IPA Siswa Kelas V SDN 2 Singkawang. *Orbita: Jurnal Pendidikan dan Ilmu Fisika*. 8(2), 212-217. https://doi.org/10.31764/orbita.v8i2.8574

Salsabila, M., & Muchlis, M. (2024). The Effect of Self-Regulated Learning Strategy on Student Learning Outcomes in Acid-Base Titration Material. *Lectura: Jurnal Pendidikan*, *15*(2), 380–390. https://doi.org/10.31849/lectura.v15i2.20230

Sari, F. F. K., & Lahade, S. M. (2022). Pengaruh Model Pembelajaran Inkuiri terhadap Sikap Ilmiah Rasa Ingin Tahu Peserta Didik Sekolah Dasar pada Pembelajaran IPA. *Jurnal Basicedu*, *6*(1), 797–802. https://doi.org/10.31004/basicedu.v6i1.1973

Siahaan, K. W. A., Lumbangaol, S. T. P., Marbun, J., Nainggolan, A. D., Ritonga, J. M., & Barus, D. P. (2020). Pengaruh Model Pembelajaran Inkuiri Terbimbing dengan Multi Representasi terhadap Keterampilan Proses Sains dan Penguasaan Konsep IPA. *Jurnal Basicedu*, *5*(1), 195–205. https://doi.org/10.31004/basicedu.v5i1.614

Sudarto, S. (2022). Perbandingan Hasil Belajar IPA Siswa yang diajar dengan Model Quantum dan yang diajar dengan Model Pembelajaran Konvensional. *Jurnal Cakrawala Ilmiah*, *2*(3), 1011–1016. https://doi.org/10.53625/jcijurnalcakrawalailmiah.v2i3.4038

Sugianto, I., Suryandari, S., & Age Larasati Diyas. (2020). Efektivitas Model Pembelajaran Inkuiri Terhadap Kemandirian Belajar Siswa di Rumah. *Jurnal Inovasi Penelitian*, 159–170. https://doi.org/doi.org/10.47492/jip.v1i3.63

Syukur, N., Bahtiar, & Sundari. (2021). Perngaruh Model *Inquiry Learning* terhadap Kemampuan Metakognisi dan Hasil Belajar IPA-Biologi Siswa Kelas III SMP. *Journal of Biology Learning*, *3*(2), 88–95. https://doi.org/doi:10.32585/jbl.v3i2.1658

Wijayanti, I., & Ekantini, A. (2023). Implementasi Kurikulum Merdeka pada Pembelajaran IPAS MI/SD. *Pendas: Jurnal Ilmiah Pendidikan Dasar*. 8(2), 2100-2112. https://doi.org/doi.org/10.23969/jp.v8i2.9597

Zain, U. N. I., Affandi, l. A., & Oktavianti, I. (2022). Pengaruh Model Pembelajaran Inkuiri terhadap Kemampuan Berpikir Kritis Siswa Kelas V pada Mata Pelajaran IPS. *Journal of Classroom Action Research*, *4*(2), 71–74. https://doi.org/10.29303/jcar.v4i2.1680