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Improving Students' Science Process Skills on The Concept of Science in Elementary School Through The Guided Inquiry Learning Model

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Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh antara pemahaman konsep IPA, sikap ilmiah, dan keterampilan proses sains. Keterampilan proses sains sangat dibutuhkan untuk kemampuan siswa dalam memecahkan masalah di masa depan. Desain penelitian ini adalah semu eksperimen. Populasi yang digunakan adalah siswa kelas VI SD Negeri 49 Kota Ternate tahun pelajaran 2020/2021. Data yang terkumpul melalui tes, kuesioner dan observasi. Hasil penelitian memberikan hasil bahwa tidak terdapat pengaruh yang signifikan antara keterampilan proses sains terhadap pemahaman konsep IPA; Ada pengaruh yang signifikan dan positif antara sikap ilmiah terhadap pemahaman konsep IPA dengan koefisien determinasi sebesar 65,4%; dan Ada pengaruh yang signifikan dan positif antara keterampilan proses sains dan sikap ilmiah terhadap pemahaman konsep IPA dengan koefisien determinasi sebesar 66,5%. Guru harus aktif memberikan bimbingan kepada siswa dan menggunakan konteks masalah kehidupan nyata untuk melatih keterampilan proses sains.

Kata Kunci: *Keterampilan Proses Sains, Pemahaman Konsep IPA, Inquiry Terbimbing, Sikap Ilmiah*

Improving Students' Science Process Skills on The Concept of Science in Elementary School Through The Guided Inquiry Learning Model

Abstract

This study aims to determine the effect of understanding science concepts, scientific attitudes, and science process skills. Science process skills are needed for students' ability to solve problems in the future. The research design is quasi-experimental. The population used is class VI students at SD Negeri 49 Kota Ternate for the 2020/2021 academic year. Data collected through tests, questionnaires and observation. The results of the study show that there is no significant effect between science process skills on understanding science concepts; There is a significant and positive influence between scientific attitudes towards understanding the concept of science with a coefficient of determination of 65.4%; and There is a significant and positive influence between science process skills and scientific attitudes towards understanding science concepts with a coefficient of determination of 66.5%. Teachers must actively provide guidance to students and use the context of real-life problems to practice science process skills.

Keywords*: Guided Inquiry, Science Concept Understanding, Science Process Skills, Scientific Attitude.*

Introduction

Learning is the process of developing knowledge, skills, and attitudes through interaction between teachers and students. The main goal of learning is to facilitate students' understanding of concepts and skills that are necessary in their daily lives (Putra, Syarifuddin, &

Zulfah 2018). Learning is a complex process that involves many factors, such as the learning environment, teaching methods, and student characteristics (Fajri, 2019). In the learning process, it is recommended to involve several stages such as observing, deductive reasoning (making hypotheses and identifying variables), trying (conducting experiments), inductive reasoning (analyzing data and drawing conclusions), and presenting (reporting experiment results), which can be used as science process skills (As, Arifuddin, & Miriam, 2017).

Science process skills play a crucial role in helping students understand natural phenomena and building stronger and sustainable scientific concepts (Hartini, Zainuddin, & Miriam, 2018). It is important to identify students' science process skill abilities to gain an overview of their understanding of science concepts acquired through the learning process (Primadian, Yulianto, & Astuti, 2018). This identification can be done through direct observation, observation of student work, or through written tests. With accurate identification, teachers can determine the type of assistance or support needed by students to develop their science process skills. Unfortunately, sometimes teachers only teach science content and convey scientific facts that are suitable for textbook materials, without training students' science process skills (Risnani, Harsution, & Deri, 2018). This can result in students only understanding science concepts theoretically, without a deep understanding of the underlying scientific processes.

The learning process involving science process skills (KPS) involves students in more active actions and management of their acquired discoveries from a skills perspective (Bidayah, 2019; Supandi, 2019). This is due to several factors. Firstly, the rapid development of science makes it difficult for teachers to teach all facts and concepts to students. Secondly, students are more easily able to understand complex and abstract concepts when accompanied by concrete examples experienced through their own practice, allowing them to find concepts through practicing science. Thirdly, the learning process should not be separated from the development of skills, attitudes, and values of students.

Therefore, the learning process is not just a transfer of knowledge from teachers to students. An effective teaching and learning process should involve students to actively participate in learning and develop their own science process skills (Kastawaningtyas & Martini, 2018). This will help students to gain a deeper understanding of science concepts and develop the skills necessary to create solutions to problems faced in daily life.

In the field of education, weak learning processes are one of the common issues encountered. Most science learning is still relying on lecture methods or conventional methods that are teacher centered (Permatasari 2022). As a result, students only listen to the teacher's explanation and take notes, without being included in the learning process. This results in passive student attitudes and a lack of opportunities to think and problem-solve. In conventional methods, the teacher plays the main role as the source of information, whereas students only play the role of information receivers. Therefore, it is important to improve the curriculum and incorporate learning models that can help students to directly practice science process skills.

The appropriate learning model to train science process skills is the guided inquiry learning model. In the guided inquiry learning model, students are given the opportunity to develop science process skills through scientific inquiry and data

collection (Suwardani, Asrial, & Yelianti, 2021). This allows students to actively participate in the learning process and develop critical and creative thinking abilities. By applying the guided inquiry learning model, students can gain a deeper understanding of science concepts and develop stronger science process skills. Additionally, students can become more independent and active in taking their own roles in the learning process (Prasetiyo & Rosy, 2020; Suwardani et al., 2021). Therefore, the guided inquiry learning model can be an appropriate alternative to improve the quality of science learning in schools.

The higher the level of inquiry applied, the higher the intellectual ability of the students and the less involvement of the teacher (Muliyani, Kurniawan, & Sandra, 2017). In other words, when the learning process is based on scientific inquiry, students will become more active in taking their own roles in the learning process. In the guided inquiry model, the teacher acts as a facilitator and provides guidance to students in the learning process (Yeritia, Wahyudi, & Rahayu, 2017). This allows students to become more independent and active in taking their own roles in the learning process. Therefore, the guided inquiry learning model can be an appropriate alternative to train science process skills in students. This model can help students to gain a deeper understanding of science concepts and develop stronger science process skills. Additionally, the guided inquiry model also provides opportunities for students to conduct experiments and analyze data independently or in groups (Amijaya, Ramdani, & Merta, 2018). This allows students to develop science process skills such as observing, deductive and inductive reasoning, trying, and presenting experimental results. Furthermore, students can also develop critical and creative thinking skills in problem-solving.

Method

This type of research is an experimental research, with a quasi-experimental design. The research population was class VI students at SD Negeri 49 Ternate City for the 2020/2021 academic year. The sampling technique used is purposive sampling. Data on science process skills was obtained through the observation method which was then converted into a scale. Indicators of science process skills include (1) collecting facts, (2) making conjectures, (3) carrying out procedures, (4) collecting data, (5) presenting data, and (6) communicating. The data collection instruments used in this study were science comprehension tests, inquiry model questionnaires, and science process skills observation assessment sheets. Data on understanding the concept of science was obtained through a learning achievement test. The data analysis technique applied is descriptive analysis and influence test (regression). The analysis used to describe students' science process skills during learning.

Result and Discussion

Science Process Skills Data

Data on science process skills was obtained from a literature review consisting of six literatures. From the results of the study of students' science process skills, the data obtained are as in Table 1. Meanwhile, the results of the data analysis of achievement indicators for each aspect of science process skills are presented in Table 2.

Table 2. Results of Data Recapitulation of Students' Science Process Skills

Score	Score	Average	Std. dev

min	max		
50	76	63,6	6,1

The results of the achievement of science process skills indicators in Table 2 show that the communicating aspect is the aspect of science process skills of students with the lowest achievement. This is because when making presentations only a few groups are willing to respond or ask questions about the results of experiments and concepts that have been discovered by other groups so that students' communication skills do not produce optimal results. This condition is because the usual routines for learning science are explaining the material by the teacher, giving examples related to the material, and doing practice questions.

Juanengsih (2006) that the very low achievement score for communication skills is because students are not used to being trained in these skills. As a result, the evaluation results of some students' science process skills did not give optimal results, but showed good conceptual understanding. Management of learning in the classroom is one of the teacher's expertise to achieve student understanding (Saluky, Riyanto & Rahmah, 2022).

Table 3. Data Summary of Achievement of Science Process Skills Indicators

No	Indicator	Achievement	Maximum	Percentage
1	Gather facts based on observations	437	496	88,1%
2	Make assumptions/hypotheses	328	372	88,2%
3	Carry out work procedures	319	372	85,8%
4	Collecting data	403	496	81,3%
5	Interpret tables, charts, or graphs	327	496	65,9%
6	Present orally	157	496	31,7%
	Average			73,5%

Based on Table 3, it can be seen that the highest indicators achieved by students are expressing conjectures that have occurred and gathering facts based on observations. Research by Adirahayu (2021) also states the same thing, the use of guided inquiry learning models improves students' skills in predicting. Students expressed an openness to change based on evidence as a strong basis for a scientific attitude that could improve their guessing skills. According to Pulungan & Nasution (2021) a high scientific attitude produces better science process skills. While the lowest indicator achieved by students is presenting orally which is an aspect of communicating. Students still experience language limitations and have little confidence in delivering results. On the other hand, self-confidence also causes low communication skills when presenting results (Sirazova, 2019). Confidence in all learning processes plays an important role for student understanding (Udin, Maufur & Riyanto, 2022).

Science Concept Understanding Data

Data on understanding the science concept was obtained using a test instrument consisting of ten questions. From the results of the assessment, data recapitulation of the understanding of the science concept was obtained which is presented in Table 4.

Table 4. Descriptive Understanding of Science Concepts

Total Subject	Score min	Score max	Average	Std. dev
14	40	100	77,7	14,8

Table 4 provides a description of the understanding of the science concept in this study. The minimum student score is 40 which means that there are still students who do not have a below average understanding of science concepts. On the

other hand, there are students who get a maximum score of 100. Students' understanding of science concepts is at a score of 77.7 with a standard deviation of 14.8. Of course, this condition can still be improved by finding and identifying some of the weaknesses experienced during learning which result in understanding the material.

First Hypothesis Test

The first hypothesis in this study, namely regarding the effect of science process skills on understanding science concepts, was tested using simple linear regression analysis. The results of a simple linear regression test between science process skills and understanding of science concepts are presented in the following table.

Table 5. Hypothesis Test 1

A	B	Tcount	Ttable	R2	Conclusion
68,5	0,15	0,32	1,7	0,04	H0 accepted

Based on Table 5 it is known that for data with df = 29 and a significant level of 0.05 the tcount value is 0.322 which is smaller than the ttable value which is 1.699, it can be concluded that H0 is accepted which means there is no significant influence of science process skills on understanding science concepts .

Second Hypothesis Test

The results of the second hypothesis test, namely about the influence of scientific attitudes on understanding the concept of science, are presented in Table 6.

Table 6. Hypothesis Test 2

df (N1)	df (N2)	Sig.	tcount	R2
2	28	0,000	7,397	0,654

Based on Table 6 it is known that for data with df (N1) = 2 and df (N2) = 28 and a significant level of 0.05 a significant value of 0.05 the tcount value is 7.397 greater than the ttable value which is equal to 1.699, it can be concluded that H0 is rejected which means there is a significant and positive effect of scientific attitude on the understanding of science concepts. The influence of the scientific attitude on understanding the concept of natural science is known based on the value of the coefficient of determination (R2). The coefficient of determination obtained is 0.654 or 65.4% so that it can be interpreted that the scientific attitude has a 65.4% contribution to understanding the concept.

The guided inquiry learning model is effective in improving science process skills in junior high school students in the middle category (Suwardani, Asrial & Yelianti, 2021). The use of guided inquiry learning models improves students' skills in predicting. (Adirahayu & Wulandari, 2021).

The results of the second hypothesis test show that partially there is a significant and positive effect of scientific attitudes on students' understanding of science concepts. This is because students who have a high scientific attitude are more enthusiastic in participating in the learning process, so they have a good understanding of the learning material. These results are in line with the results of research conducted by Veloo, et al. (2013) that the scientific attitude has a positive influence on conceptual understanding because the scientific attitude possessed by students is able to encourage them to be more interested and involved in learning science so that students' understanding of concepts also becomes better.

Meanwhile students who have a low scientific attitude tend to be unenthusiastic and have difficulty following the learning

process so that it is difficult to master the concept of simple machine material. This explains that the scientific attitude of students has a significant and positive influence on understanding the concept.

Third Hypothesis Test

The third hypothesis was analyzed using multiple linear regression tests. Multiple linear regression tests are used to determine or obtain an overview of the value and direction of the relationship between science process skills and scientific attitudes towards understanding science concepts. The results of multiple linear regression tests are presented in Table 7.

Table 7. Hypothesis Test Results 3

F	t	R2
3,34	27,828	0,665

From the data table 7 it is known that the tcount is 27.828 greater than the Ftable value which is equal to 3.34. It can be concluded that H0 is rejected and H1 is accepted, which means that science process skills and scientific attitude together have a significant and positive effect on understanding the concept of science. The coefficient of determination (R2) which shows how much influence science process skills and scientific attitudes have on understanding science concepts is obtained by a value of 0.665 or 66.5% so that it can be interpreted that scientific attitude has a contribution of 66.5% to understanding science concepts and 33, Another 5% is influenced by factors other than scientific attitude. The results of the first hypothesis test regarding the effect of science process skills on students' understanding of science concepts in Table 6, show that at a significant level of 5% science process skills have no effect on understanding of science concepts.

This result means that students who have high and low science process skills do not show differences in the results of understanding science concepts. This is because some students are not skilled at doing science experiments, so students have low science process skills but have good conceptual understanding. As the results of research conducted by Yuliani (2012) that although students are less skilled at carrying out science process activities, students are still able to master learning material by reading and working on practice questions outside the learning process. As a result, even though they have low science process skills, some students are able to demonstrate a good understanding of science concepts.

In contrast to the results of the test of the effect of science process skills on understanding science concepts, the third hypothesis about the influence of science process skills and scientific attitudes simultaneously has a positive and significant effect on students' understanding of science concepts. This can be known based on the results of the third hypothesis test presented in Table 7. Students with high science process skills and scientific attitudes have a better understanding of concepts. Likewise, students with low process skills and scientific attitudes tend to be less able to understand learning material so they have low conceptual understanding.

Science process skills that are elaborated in science learning can involve a variety of skills both intellectual, manual and social. With the formation of knowledge products through this scientific work process, scientific attitudes are formed. Students' scientific attitudes such as curiosity, critical thinking, open thinking, and honesty will emerge and develop through experimental activities and discussions between students so that students have a good and deep understanding of science concepts. This also supports the results of research by

Astuti, Sunarno & Suciati (2012) which states that the interaction between science process skills and scientific attitudes has a positive influence on students' understanding of concepts. Therefore it can be concluded that high science process skills and scientific attitudes have a positive influence on students' understanding of science concepts compared to low science process skills and scientific attitudes.

Based on the research that has been done, it is known that in the learning process, the teacher's ability as a mediator and facilitator in managing learning is an important part. Good classroom management can make the learning process run effectively, so that the lesson plans that have been set, both in providing stimulus, student discussion activities in groups, and class presentations can be carried out properly.

Conclusion

Based on the results of data analysis and discussion, it can be concluded that: (1) in the class VI research sample, science process skills in the form of observing skills, formulating hypotheses, conducting experiments, interpreting data, and communicating have no influence on understanding science concepts; (2) there is a significant and positive influence between scientific attitudes towards understanding the concept of science with a coefficient of determination of 65.4%; and (3) there is a significant and positive influence between science process skills and scientific attitude together on the understanding of the science concept with a coefficient of determination of 66.5%.

Researchers suggest teachers should actively guide their students, present problems related to real life, and encourage scientific communication. Inquiry learning should encourage students to think critically, formulate the right questions, and identify interesting problems to study.

References

[1] Adirahayu, M. F., & Wulandari, F. E. (2018). Model pembelajaran inkuiri terbimbing dan pengaruhya terhadap keterampilan proses sains siswa. *SEJ (Science Education Journal)*, *2*(2), 101-107. https://doi.org/10.21070/sej.v2i2.2244.

[2] Amijaya, Lalu Sunarya, Agus Ramdani, & I. Wayan Merta. 2018. "Pengaruh Model Pembelajaran Inkuiri Terbimbing Terhadap Hasil Belajar dan Kemampuan Berpikir Kritis Peserta Didik." Jurnal Pijar Mipa 13(2):94–99. https://doi.org/10.29303/jpm.v13i2.468.

[3] As, Berlinda Agustina, Muhammad Arifuddin, & Sarah Miriam. 2017. "Meningkatkan Keterampilan Proses Sains Siswa Kelas X IPA 1 SMA Negeri 1 Marabahan Menggunakan Model Pembelajaran Guided Inquiry." Berkala Ilmiah Pendidikan Fisika 5(1):109. https://doi.org/10.20527/bipf.v5i1.2899.

[4] Astuti, R., W. Sunarno, & Suciati S. 2012. Pembelajaran IPA dengan Pendekatan Keterampilan Proses Sains Menggunakan Metode Eksperimen Bebas Termodifikasi Dan Eksperimen Terbimbing Ditinjau dari Sikap Ilmiah dan Motivasi Belajar Siswa. *Jurnal Inkuiri.* Vol. 51, 51 – 59.

[5] Bidayah, Ii. 2019. "Upaya Meningkatkan Kemampuan Belajar Siswa Melalui Pendekatan Keterampilan Proses." Jurnal Educatio FKIP UNMA 5(2):107–14. https://doi.org/10.31949/educatio.v5i2.21.

[6] Fajri, Zaenol. 2019. "Model Pembelajaran Discovery Learning dalam Meningkatkan Prestasi Belajar Siswa SD." Jurnal IKA PGSD (Ikatan Alumni PGSD) UNARS 7(2):1. https://doi.org/10.36841/pgsdunars.v7i2.478.

[7] Harlen, W. 1992. *The Teaching of Science: Studies in Primary Education*. London: David Fulton Publishers.

[8] Hartini, Lisa, Zainuddin, & Sarah Miriam. 2018. "Pengembangan Perangkat Pembelajaran Berorientasi Keterampilan Proses Sains Menggunakan Model Inquiry Discovery Learning Terbimbing." Berkala Ilmiah Pendidikan Fisika 6(1):69. https://doi.org/10.20527/bipf.v6i1.4448.

[9] Juanengsih, N. (2006). Perbandingan Pengaruh Inkuiri Terbimbing dan Inkuiri Terstruktur Terhadap Peningkatan Penguasaan Konsep dan Kemampuan Kerja Ilmiah Siswa Kelas X pada Konsep Bioteknologi

[10] Kastawaningtyas, Ageng, & Martini Martini. 2018. "Peningkatan Keterampilan Proses Sains Siswa Melalui Model Experiential Learning pada Materi Pencemaran Lingkungan." Jurnal Penelitian Pendidikan IPA 2(2):45. https://doi.org/10.26740/jppipa.v2n2.p45-52.

[11] Muliyani, Riski, Yudi Kurniawan, & Desvika Annisa Sandra. 2017. "Peningkatan Keterampilan Proses Sains Terpadu Siswa Melalui Implementasi Levels of Inquiry (LoI)." Tadris: Jurnal Keguruan Dan Ilmu Tarbiyah 2(2):81. https://doi.org/10.24042/tadris.v2i2.1904.

[12] Niana, R., & Ekawati, E. Y. (2016). The Application of Guided Inquiry Model On Physic Learning To Improve Scientific Attitude And Students' Analysis Ability. In *Proceeding Of The International Conference On Teacher Training And Education* (Vol. 2, No. 1, pp. 605-615). Retrieved from https://jurnal.uns.ac.id/ictte/article/view/7168.

[13] Nurjanah, N., & Cahyana, U. (2021). Pengaruh Penerapan Online Project Based Learning Dan Berpikir Kreatif Terhadap Keterampilan Proses Sains Siswa Kelas IV Pada Pelajaran IPA Di SD Nasional 1 Kota Bekasi. *Buana Pendidikan: Jurnal Fakultas Keguruan dan Ilmu Pendidikan Unipa Surabaya*, *17*(1), 51-58. https://doi.org/10.36456/bp.vol17.no1.a3161

[14] Permatasari, Frida Intan. 2022. "Penerapan Metode Group Investigation Untuk Meningkatkan Hasil Belajar Pendidikan Kewarganegaraan." Lentera : Jurnal Kajian Bidang Pendidikan dan Pembelajaran 2(1):31–38.

[15] Prasetiyo, Mochammad Bagas & Brillian Rosy. 2020. "Model Pembelajaran Inkuiri Sebagai Strategi Mengembangkan Kemampuan Berpikir Kritis Siswa." Jurnal Pendidikan Administrasi Perkantoran (JPAP) 9(1):109–20. https://doi.org/10.26740/jpap.v9n1.p109-120.

[16] Primadian, Fatimah, Agus Yulianto, & Budi Astuti. 2018. "Profil Pencapaian Keterampilan Proses Sains Dan Peningkatan Kemampuan Kognitif Siswa Kelas X Dalam Pembelajaran Fisika Dengan Bantuan KLS Inquiry Activity Berbasis Model Pembelajaran Curious Note Program (CNP)." Phenomenon : Jurnal Pendidikan MIPA 8(1):13–25. https://doi.org/10.21580/phen.2018.8.1.2491.

[17] Pulungan, M. S., & Nasution, D. (2021, March). The effect of scientific inquiry learning model and scientific attitude on students' science process skills. In *Journal of Physics: Conference Series* (Vol. 1811, No. 1, p. 012003). IOP Publishing. https://doi.org/10.1088/1742-6596/1811/1/012003.

[18] Putra, Aan, Hendra Syarifuddin, & Zulfah. 2018. "Validitas Lembar Kerja Peserta Didik Berbasis Penemuan Terbimbing Dalam Upaya Meningkatkan Pemahaman Konsep Dan Kemampuan Penalaran Matematis." Edumatika : Jurnal Riset Pendidikan Matematika 1(2):56. https://doi.org/10.32939/ejrpm.v1i2.302

[19] Rampean, B., Roheti, E., & Lengkong, M. (2021, March). How Can Open Inquiry Enhancing Students' Scientific Attitude Through Chemistry Learning?. In *7th International Conference on Research, Implementation, and Education of Mathematics and Sciences (ICRIEMS 2020)* (pp. 238-245). Atlantis Press. https://doi.org/10.2991/assehr.k.210305.035

[20] Risnani, Listika Yusi, Vian Harsution, & Apri Restiana Deri. 2018. "Implementasi Model Guided Inquiry Melalui Lesson Study Untuk Meningkatkan Penguasaan Keterampilan Proses Sains (KPS) Di SMP Muhammadiyah 3 Purwokerto." *JURNAL BIOEDUKATIKA* 6(2):74. https://doi.org/10.26555/bioedukatika.v6i2.9607.

[21] 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

[22] Simbolon, D. H. (2015). Pengaruh model pembelajaran inkuiri terbimbing berbasis eksperimen riil dan laboratorium virtual terhadap hasil belajar fisika siswa. *Jurnal Pendidikan dan Kebudayaan*, *21*(3), 299-316. https://doi.org/10.24832/jpnk.v21i3.192

[23] Sirazova, L. S. (2019). The perceived influence of self-efficacy concerning oral presentations. *Revista San Gregorio*, (36). https://doi.org/10.36097/rsan.v0i36.1206

[24] Saluky, S., Riyanto, O. R., & Rahmah, S. (2022). Digital Competence of Post-Pandemic Teachers Based on Gender, Work Period, and Certification Factors. *Eduma: Mathematics Education Learning and Teaching*, *11*(2), 166-179. http://dx.doi.org/10.24235/eduma.v11i2.11751

[25] Sunardi, O., & Suchyadi, Y. (2020). Praktikum Sebagai Media Kompetensi Pedagogik Guru Sekolah Dasar. *Jurnal Pendidikan dan Pengajaran Guru Sekolah Dasar (JPPGuseda)*, *3*(2), 124-127. https://doi.org/10.55215/jppguseda.v3i2.2737

[26] Supandi. 2019. "Upaya Meningkatkan Keterampilan Proses Sains Siswa pada Konsep Pertumbuhan dan Perkembangan Tumbuhan Melalui Model Pembelajaran Guided Inquiri." BIODIDAKTIKA, JURNAL BIOLOGI DAN PEMBELAJARANNYA 14(1). https://doi.org/10.30870/biodidaktika.v14i1.4839.

[27] Suwardani, S., Asrial, A., & Yelianti, U. (2021). Analisis Model Pembelajaran Inkuiri Terbimbing Terhadap Keterampilan Proses Sains Siswa pada Mata Pelajaran IPA SMP:(Analysis of Guided Inquiry Learning Models on Students' Science Process Skills in Science Subjects in Junior High School). *BIODIK*, *7*(3), 185-194. https://doi.org/10.22437/bio.v7i3.13072

[28] Udin, T., Maufur, S., & Riyanto, O. R. (2022). Student's Self-Efficacy and Perceptions of Online Learning on the Use Learning Management System. *Journal of Education Technology*, *6*(1), 165-172. https://doi.org/10.23887/jet.v6i1.41884

[29] Veloo, A., Perumal, S., & Vikneswary, R. (2013). Inquiry-based instruction, students' attitudes and teachers' support towards science achievement in rural primary schools. *Procedia-Social and Behavioral Sciences*, *93*, 65-69. https://doi.org/10.1016/j.sbspro.2013.09.153

[30] Yeritia, Suci, Wahyudi, & Satutik, Rahayu. 2017. "Pengaruh Model Pembelajaran Inkuiri Terbimbing Terhadap Penguasaan Konsep Dan Kemampuan Berpikir Kritis Fisika Peserta Didik Kelas X SMAN 1 Kuripan Tahun Ajaran 2017/2018." Jurnal Pendidikan Fisika Dan Teknologi 3(2):181–87. https://doi.org/10.29303/jpft.v3i2.398.