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The Effect of Implementing the Guided Inquiry Learning Model on Students' Critical Thinking Skills at SMA Negeri 20 Bone

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ABSTRACT

Students tend to be unable to control their thinking processes as a result of students' critical thinking abilities being less than optimal. Teachers need to develop learning strategies so that the integration of the learning process in the classroom can take place optimally. This research aims to prove the effect of implementing the guided inquiry learning model on students' critical thinking skills at SMA Negeri 20 Bone. This research uses quantitative research methods with *Pre-Experimental Design* research type. The results of hypothesis testing using the t-test obtained a significance value smaller than the set significance level of 0.000, meaning a value of 0.000 < 0.05. Research shows that there is a positive influence of implementing the guided inquiry learning model on students' critical thinking skills at SMA Negeri 20 Bone. This research is indirectly able to improve and increase teacher creativity in developing effective learning models.

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INTRODUCTION

Education is an interaction between teachers and students with the aim of improving the student's mentality so that later the student will create progress for himself so that he can survive through the world of education (Hidayati & Yonata, 2019). The mission of education is to create superior human resources to improve the quality of education so that they are able to compete nationally and interactively throughout the world (Rahmadani & Qamariah, 2022). Apart from that, the mission of education in Indonesia is to increase the nation's competitiveness in all fields of science and technology and produce knowledgeable human resources (Rahman & Akbar, 2021). Education is one of the factors that influences the life of the nation and state. We can see the progress of a nation in this world by how they can appreciate, develop and prioritize education (Suciartini, 2017).

The current era of globalization has led to changes in all levels of society, including education. Education is one of the most important aspects in human development in the fields of science and technology and the

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challenges and demands in the future (Dewi, 2019). The educational process must be able to equip students with various skills such as attitudes, knowledge and critical thinking skills so that students are worthy and able to live in society.

Education consists of several components, one of the most important educational components is the teacher. Teachers play an important role in educational development, especially in the development of formal education held in schools (Ahmad, *et al.*, 2022). Teachers are the component that has the most influence on the creation of qualitative research processes and results. So , without the support of professional and qualified teachers, improvements made to improve the quality of education will not have a meaningful impact.

An important factor in student success is the learning process carried out by the teacher , however, the implementation of the learning process will not be able to be effective if it is not supported by the student's ability to follow the learning process. Currently, students tend to be unable to control their thinking processes, resulting in students' critical thinking abilities being less than optimal. Teachers need to compile these things to prepare learning plans so that the integration of the learning process in the classroom can take place optimally (Sudarsana, 2017).

This planning plays an important role in integrating teachers to fulfill their responsibilities as educators and meet students' learning needs. Quality teachers always organize and plan the learning process, so that teachers have no reason to teach in class without planning, namely the teacher prepares learning tools that will be used in the learning process (Jannah, *et al.*, 2021). Teachers have an important role in learning, teachers are directly responsible for the implementation of learning objectives (Wahid, 2018). Teachers are also responsible for compiling learning materials for learning levels, learning materials that are organized according to the teacher's function, which facilitates learning or leadership in the classroom (Jannati, *et al.*, 2023). The implementation of learning objectives needs to be supported by teacher creativity in developing appropriate learning strategies. One effort that can be made is to apply creative and innovative learning models. The learning model is an approach used to carry out the teaching process in the classroom which has certain learning stages (Pertiwi, *et al.,* 2022).

One learning model that can be used is the guided inquiry learning model. Lovisia (2018) guided inukiri learning model is a model that presents group and individual learning processes. The guided inquiry learning model is able to direct students to have the courage to express and analyze the problems they face logically and analytically. Apart from that, this model will guide students to be able to develop students' scientific thinking abilities and attitudes (Cahaya, *et al.*, 2023). The guided inquiry learning model is a model that applies an organized discussion process and fully involves the teacher in the student learning process. In this model the level of teacher guidance is quite large in the inquiry process carried out by students (Syamsu, 2017).

The results of observations carried out at SMA Negeri 20 Bone show that students' critical thinking skills are still minimal. This is because students are less able to express opinions, are unable to conclude thinking concepts and lack good strategies for controlling the learning process. This problem proves that the learning strategies previously implemented by teachers at the school have not been able to improve students' critical thinking skills. As a result, students experience difficulties in improving their thinking processes.

lhamdi, *et al.* (2020) found that to improve student learning outcomes it is very effective to use the guided inquiry learning model.

Therefore, as an update in this research, the author is interested in further researching the application of the guided inquiry learning model to students' critical thinking skills. Based on the problems that have been described, the author will conduct research with the title "The Effect of Implementing the Guided Inquiry Learning Model on Students' Critical Thinking Skills at SMA Negeri 20 Bone". This research aims to prove the effect of implementing the guided inquiry learning model on students' critical thinking skills at SMA Negeri 20 Bone.

METHOD

Types of research

The type of research used is *Pre-Experimental Design*. This research uses one class, namely the experimental class. In this research, *pre-test* and *post-test treatment will be given* in the learning process.

Research Population and Sample

The population of this study was class X students of SMA Negeri 20 Bone with a total of 136 people. Sample collection was carried out using *purposive sampling technique* with a sample size of 29 people.

Research Location and Time

The location of this research was carried out at SMA Negeri 20 Bone, Amali District, Bone Regency. The research was carried out in May of the 2022/2023 academic year, even semester.

Research Design

The research design used was *one group pre-test and post-test.*

Research Instrument

The instruments used in this research were critical thinking ability tests and documentation.

Data collection technique

The data collection technique uses a critical thinking skills test presented in *essay form*. Critical thinking skills tests will be given at the beginning of the treatment and at the end of the treatment. Meanwhile, documentation is carried out to obtain data that supports research.

Data analysis technique

The data analysis techniques used in this research are descriptive statistical analysis and inferential statistical analysis.

RESULTS AND DISCUSSION

Descriptive Statistical Analysis

Descriptive statistical analysis is used to view student learning outcome data. Based on the research that has been carried out, the results of descriptive statistical analysis are presented in Table 1.

Table 1. *Pre-Test* Statistical Data for Critical Thinking Skills

Descriptive statistics	Statistical Value
Number of Samples	29
Minimum Value	50
Maximum Value	78
Average	66.03
Range	28
Standard Deviation	8.64
Median	67
Mode	50

Based on Table 1, the average *pre-test score* for students' critical thinking skills was 66.03. The minimum value is 50 and the maximum value is 78. The middle value (median) is 67, the value that appears most often (mode) is 50, and the standard deviation is 8.64. Furthermore, the range that describes the distance between the lowest value and the highest value is 28. The frequency distribution and percentage of *pre-test results* are presented in Table 2.

Table 2. Frequency and Percentage Distribution of *Pre-Test Results*

No	Score	Percentage	Frequency	Category
1	>86	0	0	Very well
2	76 – 86	17,24%	5	Good
3	65 – 75	48,27%	14	Enough
4	55 – 64	20,70%	6	Not enough
5	<55	13,79%	4	Very less

Based on Table 2, it can be seen that the majority of *Pre-Test* scores are in the 65-75 interval with the sufficient category and the percentage of students is 48.27% (14 students). Furthermore, 5 students obtained scores in the good category with a percentage of 17.24%. Meanwhile, 6 students scored in the poor category (20.70%) and 4 people in the very poor category (13.79%). There are no students who get a score with an excellent percentage. The frequency distribution and percentage of students' *Pre-Test results* can be seen in Figure 1.

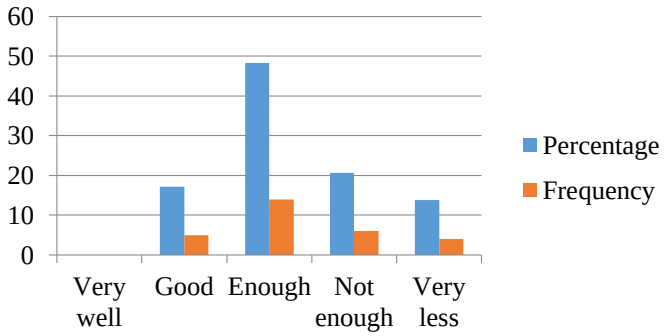

Figure 1. Frequency and Percentage Distribution Diagram of *Pre-Test Results*

Table 3 . Statistical Data *Post-Test* Critical Thinking Skills

Descriptive statistics	Statistical Value
Number of Samples	29
Minimum Value	75
Maximum Value	95
Average	85.62
Range	20
Standard Deviation	6.02
Median	86
Mode	80

Based on Table 3, the average *Post-Test score* for students' critical thinking skills was 85.62. The minimum value is 75 and the maximum value is 95. The middle value (median) is 86, the most frequently occurring value (mode) is 80 and the standard deviation is 6.02. Furthermore, the range that describes the distance between the lowest value and the

highest value is 20. The frequency distribution and percentage of *post-test results* are presented in Table 4.

Table 4. Frequency Distribution and Percentage of *Post-Test Results*

No	Score	Percentage	Frequency	Category
1	>86	41,38%	12	Very well
2	76 – 86	51,72%	15	Good
3	65 – 75	6,90%	2	Enough
4	55 – 64	0	0	Not enough
5	<55	0	0	Very less

Based on Table 4, the majority of *Post-Test* scores are in the interval 76-86 in the good category and the percentage of students is 51.72% (15 students). Furthermore, 12 students obtained scores in the very good category with a percentage of 41.38%. Meanwhile , 2 students scored in the sufficient category (6.90%). There were no students who obtained grades with less or very less percentages. Frequency distribution and percentage of *Post-Test results* shown in Figure 2.

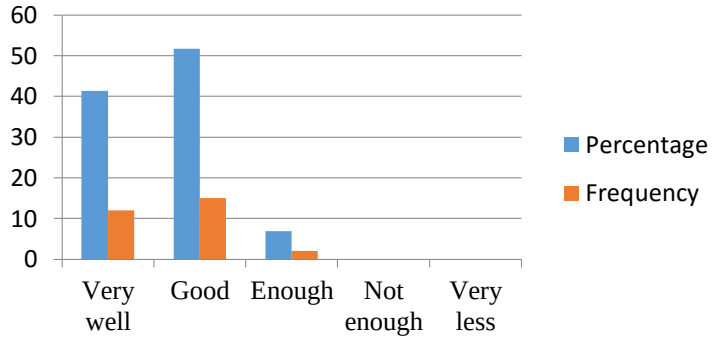

Figure 2. *Post-Test* Frequency and Percentage Distribution Diagram

Inferential Statistical Analysis

1. Normality test

Based on the normality test that has been carried out, the significance value for the Pre-Test is 0.062 > 0.05 and the Post-Test is 0.097 > 0.05, so it can be concluded that the data is normally distributed.

2. Homogeneity Test

Based on the homogeneity test which was carried out using Levene Statistics, a significance value of 0.072 > 0.05 was obtained, so it can be concluded that the data is in a homogeneous variation.

3. Hypothesis testing

Hypothesis testing was carried out using the Paired Sample Test and a significance value of 0.000 <0.05 was obtained so that it could be concluded that the research hypothesis was accepted.

Research that was carried out at SMA Negeri 20 Bone used one class sample that was given *a pre-test* and *post-test.* The instrument was given to see students' critical thinking skills. Based on the results of research in class The results of this research are in line with The results of this research are in line with Ilhamdi, *et al.* (2020) which revealed that the guided inquiry learning model had a significant effect on students' critical thinking abilities.

The research was carried out by giving *a pre-test* to students at the beginning of the meeting. This is done to obtain initial data before model treatment. After giving *the pre-test* to students, an average score of 66.03 was obtained and it was categorized as being in the

sufficient category. This happens because students are less able to control their thinking processes, resulting in students' critical thinking abilities being less than optimal. Apart from that, the majority of science learning in schools does not reflect independent, meaningful and enjoyable activities. To overcome this, teachers need to prepare learning plans so that the integration of the learning process in the classroom can take place optimally. So, a solution was implemented using the guided inquiry learning model. The use of appropriate learning models can be combined with media in delivering learning material (Wahyuni & Citra, 2019). The guided inquiry learning model is a teaching model designed to teach concepts and relationships between concepts (Lovisia, 2018).

The guided inquiry learning model has a learning syntax. The initial stage begins with students being given a problem to observe and identify, then based on the information they get, students generalize a question to discuss a solution to the problem. In the second stage students need to make hypotheses guided by the teacher. In the third stage, the teacher gives students the opportunity to determine experimental steps to test their hypothesis by discussing in groups. The fourth stage, students carry out experiments according to the steps that have been prepared to obtain information regarding the research question and at the final stage. The guided inquiry model is used as a solution in improving students' critical thinking skills because it can encourage students to actively explore their own knowledge so that students can become independent, active and skilled individuals (Nurjannah, *et al.*, 2023).

In accordance with research that has been carried out by applying six guided inquiry learning syntaxes, the results show that the application of the guided inquiry learning model brings positive results to students' critical thinking skills. This can be proven by the students' *post-test* average score of 85.62 which was categorized as being in the good category with the percentage of students who got a score in the good category of 51.72%. The *post-test* scores obtained indicate that students' critical thinking skills have been categorized as good and it can be concluded that there is an influence from the model treatment, where previously the majority of students' scores were in the fair category, but after implementation they rose to the good category. This is in line with Hidayati & Yonata (2019) who state that the creation of learning experiences can enable interaction between students so that their critical thinking skills are further improved.

After carrying out a normality test using the Shapiro-Wilk aim to identify whether a random variable is normally distributed or not. The results of the analysis obtained a significance value for *the Pre-Test* of 0.062 > 0.05 and *the Post-Test* of 0.097 > 0.05 so it can be concluded that the data is normally distributed. Meanwhile, the results of the homogeneity test using *Levene Statistics* obtained a significance value of 0.072 > 0.05, so it can be said that the data is in a homogeneous variation. Then, in testing the hypothesis using the t-test, a significance value of 0.000 < 0.05 was obtained so that it could be concluded that the research hypothesis was accepted.

CONCLUSION

Based on the results of research that has been carried out at SMA Negeri 20 Bone that the application of the guided inquiry learning model has an effect on students' critical thinking skills . It is hoped that this research will enable teachers to be able to apply more varied learning models in the learning process so that students' basic skills develop further. It can also be a source of information and can be used by other researchers for further model development.

REFERENCES

Ahmad, Ovilailia, E., Andani, I. S., Nirkana, M. A., Rahayu, S. L., Ishaq, M., & Purwito, L. (2022). Standar Pengelolaan Program Pendidikan Non-formal Ditinjau Dari Perspektif Akreditasi. *Sustainable Jurnal Kajian Mutu Pendidikan*, *5*(1), 42–49. https://doi.org/10.32923/kjmp.v5i1.240.

Cahaya, I. M. E., Poerwati, C. E., & Suryaningsih, A. (2023). Penerapan Model Pembelajaran Inkuiri Terbimbing oleh Guru PAUD. Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini, 7(1), 855–862. https://doi.org/10.31004/obsesi.v7i1.2534.

Dewi, D. R. (2019). Pengembangan Kurikulum Di Indonesia Dalam Menghadapi Tuntutan Abad Ke-21. *Jurnal As-Salam I*, *8*(1), 1–22.

Hidayati, N., & Yonata, B. (2019). Penerapan Model Pembelajaran Inkuiri Terbimbing Untuk Melatihkan Keterampilan Proses Sains Peserta Didik Pada Materi Kesetimbangan Kimia Kelas XI SMAN Ngoro Jombang. Unesa Journal of Chemical Education, 8(2), 148–155.

Ilhamdi, M. L., Novita, D., & Rosyidah, A. N. K. (2020). Pendidikan Guru Sekolah Dasar. Jurnal Ilmiah Kontekstual, 1(2), 49–57.

Jannah, M., Kemala Dewi, N., Oktaviyanti, I., Guru, P., & Dasar, S. (2021). Analisis Faktor Kesulitan Guru Dalam Menyusun Rencana Pelaksanaan Pembelajaran (RPP) Di SDN 05 Ampenan. *Primary Education Journal*, *2*(1), 42–50. https://journal.unram.ac.id/index.php/pendas.

Jannati, P., Ramadhan, F. A., & Rohimawan, M. A. (2023). Peran Guru Penggerak Dalam Implementasi Kurikulum Merdeka Di Sekolah Dasar. Al-Madrasah: Jurnal Pendidikan Madrasah Ibtidaiyah, 7(1), 330–345. https://doi.org/10.35931/am.v7i1.171.

Lovisia, E. (2018). Pengaruh Model Pembelajaran Inkuiri Terbimbing terhadap Hasil Belajar. Science and Physics Education Journal (SPEJ), 2(1), 1–10. https://doi.org/10.31539/spej.v2i1.33.

Nurjannah, Khaerati, & Al Anshori, F. (2023). Pengaruh Model Pembelajaran Inkuiri Terbimbing Berbantuan Media Video Terhadap Pemahaman Konsep Siswa Pada Materi Jamur (Fungi). Jurnal Al-Nafis, 3(1), 37–45. http://journal.iain-ternate.ac.id/index.php/Al-Nafis/index.

Pertiwi, A. D., Nurfatimah, S. A., Hasna, S., Studi, P., Guru, P., & Dasar, S. (2022). Menerapkan Metode Pembelajaran Berorientasi Student Centered Menuju Masa Transisi Kurikulum Merdeka. *Jurnal Pendidikan Tambusai*, *6*(2), 8839–8847.

Rahmadani, R., & Qomariah, S. (2022). Menciptakan Keunggulan Bersaing Berkelanjutan Berbasis Sumber Daya Manusia dalam Dunia Pendidikan. *Tarbiyah Wa Ta'lim: Jurnal Penelitian Pendidikan Dan Pembelajaran*, *9*(2), 108–117. https://doi.org/10.21093/twt.v9i2.4272.

Rahman, D., & Akbar, A. R. (2021). Problematika Yang Dihadapi Lembaga Pendidikan Islam Sebagai Tantangan Dalam Meningkatkan Mutu Pendidikan. *Journal of Management Education*, *1*(1), 76–89.

Sudarsana, K. (2017). Membentuk Karakter Anak Sebagai Generasi Penerus Bangsa Melalui Pendidikan Anak Usia Dini. *Purwadita*, *1*(1), 41–48.

Suciartini, N. N. A. (2017). Urgensi Pendidikan Toleransi Dalam Wajah Pembelajaran Sebagai Upaya Meningkatkan Kualitas Pendidikan. *Jurnal Penjamninan Mutu*, 12–22.

Syamsu, F. D. (2017). Pengembangan Penuntun Praktikum Ipa Berbasis Inkuiri Terbimbing Untuk Siswa SMP Siswa Kelas VII Semester Genap. *BIOnatural*, *4*(2), 13–27.

Wahyuni, S., & Citra, L. (2019). Peningkatan Hasil Belajar IPA melalui Model Pembelajaran Iqro' dengan Berbantuan Media Video pada Siswa Kelas VII A SMP Negeri 2 Amali Kabupaten Bone. Jurnal Biology Teaching and Learning, 2(2), 124–133.

Wahid, A. (2018). Pentingnya Media Pembelajaran Dalam Meningkatkan prestasi Belajar. *Abdul Wahid*, *5*(2), 1–11.