



The Effect of Guided Inquiry Learning Model on Critical Thinking Skills and Science Learning Outcomes of Elementary School Students

Pengaruh Model Pembelajaran Inkuiri Terbimbing terhadap Keterampilan Berpikir Kritis dan Hasil Belajar IPA Siswa Sekolah Dasar

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Abstract

This study aims to analyze the effect of the Guided Inquiry learning model on students' critical thinking skills and science learning outcomes. The type of research used is quasi-experimental research with nonequivalent control group design. The sampling technique is a saturated sample, namely fifth grade students of public elementary school 9 West Bangkala, Jeneponto Regency, totaling 56 students. Research data were analyzed through descriptive analysis and inferential analysis using SPSS 22. Based on the results of the study it can be concluded that the use of guided inquiry learning models can improve critical thinking skills and student learning outcomes compared to those without using the guided inquiry learning model. The results of the study using the inquiry learning model had an effect on critical thinking skills and science learning outcomes for fifth grade students of public elementary school 9 Bangkala Barat, Jeneponto Regency.

Keywords: *Guided Inquiry Learning Model; Critical Thinking Skills; Science Learning Outcomes*

Abstrak

Penelitian ini bertujuan untuk menganalisis pengaruh model pembelajaran Inkuiri Terbimbing terhadap keterampilan berpikir kritis dan hasil belajar IPA siswa. Jenis penelitian yang digunakan adalah penelitian kuasi Eksperimen dengan bentuk desain nonequivalent control group design. Teknik Pengambilan Sampel adalah sampel jenuh yaitu siswa kelas V UPT SDN 9 Bangkala Barat Kabupaten Jeneponto yang berjumlah 56 siswa. Data hasil penelitian dianalisis melalui analisis deskriptif dan analisis infrensial menggunakan SPSS 22. Berdasarkan hasil penelitian dapat disimpulkan bahwa penggunaan model pembelajaran inkuiri terbimbing dapat meningkatkan keterampilan berpikir kritis dan hasil belajar siswa dibanding

tanpa menggunakan model pembelajaran inkuiri terbimbing. Hasil penelitian dengan menggunakan model pembelajaran inkuiri berpengaruh terhadap keterampilan berpikir kritis dan hasil belajar IPA siswa kelas V UPT SDN 9 Bangkala Barat Kabupaten Jeneponto.

Kata Kunci: *Model Pembelajaran, Inkuiri Terbimbing, Keterampilan Berpikir Kritis, Hasil Belajar IPA*

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Introduction

Indonesia began participating in the PISA study in 2000. The results of the PISA study for the science abilities of Indonesian students in 2018 showed that Indonesia ranked second to last compared to other ASEAN countries, with a score of 396 and still below the average results of ASEAN countries (OECD, 2019). Many factors influence the students' competencies, including internal factors such as students' motivation to learn, resilience, competitiveness, and others, as well as external factors such as the learning environment at school and at home, teaching practices implemented by teachers, completeness of learning facilities, and others. These factors were also studied in PISA 2018 through student and school questionnaires by looking at the headmaster's answers and students' perceptions regarding various factors (OECD, 2019).

The class V teacher at Bangkala Barat State Elementary School 9 in Jeneponto Regency also expressed his views on critical thinking skills and the learning outcomes of science and other subjects, which are still considered not optimal. The average learning outcomes of most students have indeed met the 70 Minimum Completeness Criteria, but the average results are not far from the set Minimum Completeness Criteria score of 70. Students' critical thinking skills, in this case, their critical thinking skills, are still considered low. The low learning outcomes and critical thinking skills of students are caused by several factors. Science learning tends to still use conventional learning. Learning is carried out by only the teacher explaining the definition and material related to a concept. The teacher only lectures without any scientific process towards the discovery of the concept, so students tend to be unenthusiastic about learning and only memorize the material. By memorizing the material, students become forgetful quickly because it is not stored in their long-term memory. Teachers do not provide enough stimuli to students, so students' thinking abilities do not improve. Teachers only explain the material so that students also only receive the material without any feedback regarding a material conveyed by the teacher. For example, the teacher explains the concept of the human digestive system. The teacher tends to immediately explain that the digestive system is a collection of digestive organs and channels that function to digest food that enters the body to become a source of energy for the body until finally, the leftovers of the food are removed through the anus. Learning becomes less

meaningful because students are not able to relate concepts to daily life. Science education in elementary school plays a strategic role in preparing students who are able to think critically, creatively, logically, and initiate responses to issues in the community environment. Critical thinking skills are developed as a personal quality that students must possess in order to solve problems logically, reflectively, and productively in making good decisions.

The ability of students to think critically, creatively, logically, and take initiative is crucial in improving learning outcomes. Learning outcomes are the skills that students acquire through their learning experiences. Learning outcomes are actions in the form of knowledge, skills, attitudes, information, and new cognitive strategies that students acquire after interacting with the environment in a learning atmosphere and condition (Sudjana, 2005). Teachers must be able to apply teaching models that can enhance students' critical thinking skills and learning outcomes during the learning process.

Currently, there are many emerging teaching models, one of which is the inquiry learning model. The inquiry learning model is a series of teaching and learning activities that involve all of the students' abilities to search and investigate so that they can formulate their own discoveries (Mashuri, 2012). The inquiry learning model is a series of learning activities that maximally involve all students' abilities to systematically, critically, and logically search and investigate so that they can discover knowledge, attitudes, and skills as a manifestation of behavioral change (Suhana & Hanafiah, 2014).

The Digestive System material is a concept that discusses the collection of digestive organs and digestive tracts that aim to help humans digest food that enters the body and become a source of energy for the body until the remaining food is excreted through the anus (Nurhayati, 2016). The application of the guided inquiry learning model to the Digestive System material is still very limited. This material was chosen because it provides real examples or experiences within the students themselves, in their daily lives, and the problems that exist within it. The purpose of applying the guided inquiry learning method to the Digestive System material is to determine the effect of the Guided Inquiry Learning Model on Critical Thinking Skills and Learning Outcomes of Human Digestive System Concepts in Science on Fifth-Grade Students of State Elementary School 9 Bangkala Barat, Jeneponto Regency. The hypothesis in this study is

that there is an influence of the guided inquiry learning model on critical thinking skills and learning outcomes of the Human Digestive System concept in fifth-grade elementary school students.

Method

This study is an Experimental research. The type of research used is Quasi experimental design, which is a development of True experimental design. The research design used is nonequivalent control group design. The independent variable is guided Inquiry learning, while the dependent variables are Critical Thinking Skills (Y1) and Science Learning Outcomes (Y2) on the concept of the human digestive system in fifth grade elementary school students. The population in this study was fifth grade elementary school students divided into two classes totaling 56 students, Class Va (experimental class) with 28 students and class Vb (control class) with 28 students.

In this study, the researcher used a sampling technique called saturated sampling or total sampling. The data collection techniques used tests on critical thinking abilities and student learning outcomes on the concept of the human digestive system. The research instruments used were test instruments (critical thinking skills tests and learning outcome tests) and non-test instruments (teacher observation sheets and student observation sheets). The data analysis technique used was descriptive analysis to determine the average scores of the students and inferential analysis (manova hypothesis test) to determine the effect of the guided inquiry learning model on students' critical thinking skills and science learning outcomes.

Result

The results of the research that have been obtained regarding the effect of the guided inquiry learning model on critical thinking skills and learning outcomes of the natural science concept of the human digestive system in class V UPT SDN 9 Bangkala Barat Jeneponto Regency can be seen in table 1.

Table 1 Statistical Value of Students' Critical Thinking Skills

Statistik	Control Class		Experiment Class	
	Pretest	Posttest	Pretest	Posttest
Mean	50,14	80,36	57,86	88,25
Median	50,00	81,00	58,00	87,00
Std. Deviation	10.690	7.704	8.614	6.620
Variance	114.275	59.349	74.201	43.824
Range	38	25	29	25
Minimum	37	70	41	75
Maximum	75	95	70	100

Data on the statistical value of students' critical thinking skills are then entered into the category table to see the student's value category.

Table 2 Distribution of Categorization of Critical Thinking Skills control class

Value Intervals	Category	Frequency		Percentage	
		Pretest	Posttest	Pretest	Posttest
81,25 – 100	Very Critical	0	14	0%	50%
62,50 – 81,24	Critical	7	14	25%	50%
43,75 – 62,49	Less Critical	12	0	42,85%	0%
25,00 – 43,74	Not Critical	9	0	32,14%	0%

Based on the table above, it can be seen that the critical thinking skills of students in the control class during the pretest phase amounted to 9 students with a percentage of 32.14% in the category of not critical, 12 students or 42.85% in the category of less critical, 7 students or 25% in the category of critical, and no students were in the category of very critical. Meanwhile, in the posttest phase, there were no students in the not critical and less critical categories. In the critical category, there were 14 students with a percentage of 50%, and in the very critical category, there were also 14 students with a percentage of 50%.

Table 3 Distribution of Categorization of Critical Thinking Skills Experiment class

Value Intervals	Category	Frequency		Percentage	
		Pretest	Posttest	Pretest	Posttest
81,25 – 100	Very Critical	0	25	0%	89,28%
62,50 – 81,24	Critical	13	3	46,42%	10,71%
43,75 – 62,49	Less Critical	13	0	46,42%	0%
25,00 – 43,74	Not Critical	2	0	7,14%	0%

Based on the table above, it can be seen that the critical thinking skills of students in the experimental class in the pretest phase were 2 students with a percentage of 7.14%

in the not critical category, 13 students or 46.42% in the less critical category, 13 students or 46.42% in the critical category, and no students were in the very critical category. Meanwhile, in the posttest phase, there were no students in the not critical and less critical categories. In the critical category, there were 3 students with a percentage of 10.71%, and in the very critical category, there were 25 students with a percentage of 89.25%.

Statistics on student learning outcomes in the experimental class and control class can be seen in table 4.

Table 4 Statistical Value of Students' Science Learning Outcomes

Statistik	Control Class		Experiment Class	
	Pretest	Posttest	Pretest	Posttest
Mean	51,43	80,36	56,07	85,00
Median	50,00	80,00	55,00	85,00
Std. Deviation	10.616	8.270	9.463	8.389
Variance	112.698	68.386	89.550	71.263
Range	35	30	35	30
Minimum	35	65	40	70
Maximum	70	95	75	100

Statistical value data on student learning outcomes are then entered into the category table to see the categories of student scores.

Table 5 Distribution of Categorization of Science Learning Outcomes control class

Value Intervals	Category	Frequency		Percentage	
		Pretest	Posttest	Pretest	Posttest
93 – 100	Very high	0	2	0%	7,14%
84 – 92	High	0	9	0%	32,14%
75 – 83	Currently	0	12	0%	42,85%
<75	Not enough	28	5	100%	17,85%

Based on the table above, it can be seen that the student learning outcomes in the control class at the pretest stage amounted to 28 people with a percentage of 100% in the less category. And no students are in the medium, high, or very high categories. While at the posttest stage, there were 5 with a percentage of 17.85% in the less category. A total of 12 people, with a percentage of 42.85%, are in the medium category. There were nine people, with 32.14% in the high category. And as many as two people, with a percentage of 7.14 in the very high category.

Table 6 Distribution of Categorization of Science Learning Outcomes Experiment class

Value Intervals	Category	Frequency		Percentage	
		Pretest	Posttest	Pretest	Posttest
93 – 100	Very high	0	6	0%	21,42%
84 – 92	High	0	12	0%	42,85%
75 – 83	Currently	2	8	7,14%	28,57%
<75	Not enough	26	2	92,85%	7,14%

Based on Table 6, it can be seen that the students' learning outcomes in the experimental class at the pretest stage were 26 students, or 92.85%, in the category of less satisfactory. There were 2 students, or 7.14%, in the medium category. And no students were in the high and very high categories. Meanwhile, at the posttest stage, there were 2 students, or 7.14%, in the less satisfactory category. There were 8 students, or 25.57%, in the medium category. There were 12 students, or 42.85%, in the high category. And there were 6 students, or 21.42%, in the very high category.

After conducting a descriptive analysis test, the assumption test was performed first before the hypothesis test. In the normality test of critical thinking skills and student learning outcomes, all pretest and posttest data were obtained with a significance value > 0.005 , which means that all data are normally distributed. The homogeneity test of critical thinking skills and student learning outcomes also obtained a significant value > 0.005 , which means that all data are homogeneous. The Homogeneity of Covariance Matrix/Box M test obtained a significant value of $0.621 > 0.05$. Therefore, it is declared eligible for the manova test. The Multicollinearity test with a Pearson correlation value of $0.282 < 0.8$ indicates that there is no multicollinearity, so it can proceed to the hypothesis test. Then, a manova hypothesis test was performed, and a multivariate test value of $0.000 < 0.05$ was obtained, which is in accordance with the decision-making criteria that H_0 is rejected and H_1 is accepted.

Discussion

Based on the descriptive analysis results obtained from the critical thinking skills scores, the pretest scores of the control group were categorized as "less critical" and the posttest scores of the control group were categorized as "critical". Meanwhile, the pretest scores of the experimental group were categorized as "less critical" and the posttest scores of the experimental group were categorized as "very critical". From these results, it can be concluded that the use of guided inquiry learning model can improve students'

critical thinking skills compared to not using the guided inquiry learning model. Thus, it can be concluded that the guided inquiry learning model has an effect on students' critical thinking skills.

The descriptive analysis results obtained from the science learning outcomes showed that the pretest scores of the control group were categorized as "less" and the posttest scores of the control group were categorized as "moderate". Furthermore, the pretest scores of the experimental group were categorized as "less" and the posttest scores of the experimental group were categorized as "high". From these results, it can be concluded that the use of guided inquiry learning model can improve students' learning outcomes compared to not using the guided inquiry learning model. Thus, it can be concluded that the guided inquiry learning model has an effect on students' learning outcomes.

The results of the study using the guided inquiry learning model had a significant effect on critical thinking skills and learning outcomes in the concept of the human digestive system in fifth-grade students at State Elementary School 9 Bangkala Barat, Jeneponto Regency. This is in line with the research conducted by (Wariyanti, 2019), which stated that students' scores improved after using the inquiry learning model and had a positive effect on their critical thinking skills and learning outcomes, as shown by the average score of criticals thinking skills obtained. Furthermore, the study conducted by (Ulandari et al., 2019) stated that implementing the inquiry learning model would be effective and could make students actively participate and work independently in seeking information or problem-solving during the learning process, as well as find new ideas and creative thinking, thereby enhancing students' creative thinking skills in learning.

Based on the results of the research, the application of guided inquiry learning model has a positive effect on critical thinking skills and learning outcomes. According to (Hanafiah & Suhana, 2014), the Inquiry Learning model is a series of learning activities that maximizes students' ability to explore and systematically, critically, and logically investigate and discover their own knowledge, attitudes, and skills as a form of behavioral change. This is in line with (Susilawati et al., 2020) statement that critical thinking skills are abilities or potentials that can be measured, trained, and developed.

The best way to develop critical thinking skills can be done by linking learning materials to students' real-life experiences in their daily environment. This is in accordance with Bruner's cognitive theory that states that learning by actively seeking knowledge by oneself provides the best results.

Based on these explanations and reviewing relevant previous research results, it is related that the application of guided inquiry learning model is recommended, especially in science learning, to build critical thinking skills and student learning outcomes. However, in its application, the teacher must understand the syntax of the guided inquiry learning model and adjust it to the characteristics of the students, so that the expected learning can take place effectively and efficiently.

Conclusion

From the results of this study, it can be concluded that using the guided inquiry learning model can improve critical thinking skills and student learning outcomes compared to those without the guided inquiry learning model. The results of the study using the inquiry learning model affected critical thinking skills and science learning outcomes for fifth-grade students of public elementary school 9 Bangkala Barat, Jeneponto Regency.

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