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The Influence of Inquiry Learning Model and Critical Thinking Ability on Student Learning Outcomes

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Abstrak

Penelitian ini mendeskripsikan tentang pengaruh model pembelajaran inkuiri dan kemampuan berpikir kritis terhadap hasil belajar siswa. Populasi penelitian adalah seluruh siswa kelas kelas VII SMP Negeri 3 Tarutung. Sampel ditetapkan sebanyak 60 orang terdiri dari 2 (dua) kelas, dengan rincian kelas VII-B berjumlah 30 orang, kelas VII-C berjumlah 30 orang. Penelitian ini dilaksanakan mulai bulan Oktober hingga Desember tahun 2021. Instrumen penelitian ini menggunakan tes pilihan berganda sebanyak 30 butir untuk tes hasil belajar dan 10 butir berbentuk esai untuk tes kemampuan berpikir kritis. Hasil penelitian dikemukakan bahwa terdapat pengaruh model pembelajaran inkuiri terhadap hasil belajar IPA siswa di SMP Negeri 3 Tarutung sebesar 0,004. Terdapat pengaruh kemampuan berpikir kritis terhadap hasil belajar IPA siswa di SMP Negeri 3 Tarutung sebesar 0,002. Terdapat interaksi antara model pembelajaran dan kemampuan berpikir kritis terhadap hasil belajar siswa berdasarkan hasil uji ANAVA diperoleh nilai sig = 0,022<sig.0,05. Dengan demikian dapat disimpulkan terjadi interaksi antara model pembelajaran dan kemampuan berpikir kritis dalam mempengaruhi hasil belajar siswa.
Kata Kunci: Berpikir Kritis, Hasil Belajar, Pembelajaran Inkuiri.

Abstract

This study describes the influence of the inquiry learning model and critical thinking skills on student learning outcomes. The research population was all seventh grade students of SMP Negeri 3 Tarutung. The sample was set at 60 people consisting of 2 (two) classes, with details of class VII-B totaling 30 people, class VII-C totaling 30 people. This research was carried out from October to December 2021. This research instrument used a multiple choice test of 30 items for learning outcomes tests and 10 items in the form of essays for critical thinking ability tests. The results showed that there was an effect of the inquiry learning model on the science learning outcomes of students at SMP Negeri 3 Tarutung of 0.004. There is an effect of critical thinking skills on students' science learning outcomes at SMP Negeri 3 Tarutung of 0.002. There is an interaction between learning models and critical thinking skills on student learning outcomes based on the results of the ANOVA test, the value of sig = 0.022 <sig.0.05. Thus, it can be concluded that there is an interaction between learning models and critical thinking skills in influencing student learning outcomes.
Keywords: *Critical Thinking, Learning Outcomes, Inquiry Learning.*

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INTRODUCTION

Superior and intelligent human resources can be obtained through a quality education process (Sidik, 2016: 109-114; Mantiri, 2019: 20-26). This is also the main goal of implementing the educational process in Indonesia. The realization of these ideals is embodied in the form of optimizing teacher competencies to help students understand and reason about the subject matter (Mardhiyah, *et.al.*, 2021: 29-40; Nugrahani, 2017). Furthermore, the teacher is responsible for displaying role models and motivating students.

The reality in society, information is obtained that learning in schools is often chosen by students, starting from the teacher aspect, teaching material aspects, supporting aspects (infrastructure), and so on (Krismiyati, 2017: 43-50; Maulinda, 2022: 84-95). One of the materials that students often complain about is the subject of Natural Sciences (IPA). This is based on the practice of conceptual-based experiments and the lack of availability of teaching aids (experiments) in schools (Umami & Jatmiko, 2013). Thus, the ideal science learning in the context of a scientific approach is instead taught based on the lecture method.

The meaning of science learning will be seen as monotonous if it does not use experiments because this type is declared conventional learning (Uswatun & Rohaeti, 2015: 138-152; Hendracipta, 2016: 109-116). In addition, conceptual learning about science material with a learning model that is centered in one direction, only the teacher (Amijaya, *et.al.*, 2018: 94-99). The placement of the teacher as the only source of learning, of course, causes students to only focus on delivering the teacher's material, so they are waiting for the teaching material, not finding out the concepts taught by the teacher (Dwi, 2013: 1-11). The digital era offers various opportunities for students to proactively seek knowledge from various sources (books, articles, and the internet).

The level of student activity is highly demanded in the digital era learning process. In this context, stimulating students' curiosity through efforts to improve students' critical thinking skills, or known as higher order thinking skills (HOTS) (Rozi & Hanum, 2019: 246-311; Winarno, *et.al.*, 2015: 82-91). In practice, learning must be based on the involvement of students in each learning process. The involvement of students independently to take part in learning will present higher-order thinking skills to students, ranging from systematic, critical, logical, analytical, and can formulate the next (curious) discovery (Rusyadi, 2021).

One indicator of students' higher thinking skills can be seen from the cognitive aspect test (knowledge) through the results of the student's final exam. For example, SMP 3 Tarutung in 2018/2019 science subjects received a low average score, which was only 4.5. Of course, this shows the test results of students who are in the low category. This is of course inversely proportional to the concept of modern learning which requires students to actively find out, think critically about teaching materials, and be able to practice and re-communicate learning.

Learning with the concept of searching or finding something is known as the inquiry model. The inquiry learning model helps students to actively learn independently, likes to find certain concepts and provides educational experiences for students (Nasution, 2018: 1-11). One of the important things in inquiry learning is to stimulate students to think critically in problem-solving, and decision making, to learn based on scientific approaches. This concept, of course, is in line with natural and scientific-based science materials simultaneously, so that it trains students to be close to nature while still maintaining science.

According to Maryam, *et.al.* (2020: 206-213), critical thinking skills help students' reasoning in identifying and finding things. Furthermore, Puspita & Jatmiko (2013) added that critical thinking skills help students in solving problems that are present in the learning process through natural phenomena. The implementation of learning using the inquiry model has a positive and better influence on student learning outcomes compared to conventional learning models such as lectures.

Indeed, academic studies on inquiry learning models and critical thinking skills have been studied from various perspectives. The relevant ones include discussing aspects of science process skills (Sutama, *et.al.*, 2014), increasing student understanding (Sochibin, *et.al.*, 2009), guided inquiry learning (Hajrin, 2019), training students' critical thinking skills (Sulianti & Murdinono, 2017: 165-175; Cahyani & Azizah, 2019; Agustin,

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2014), mastery of teaching material concepts (Prasetyowati & Suyatno, 2016: 67-74; Anggareni, *et.al.*, 2013), multiliteracy skills (Julianda, *et.al.*, 2018: 460-467), science learning tools (Safitri & Jamal, 2016: 170-175; Prabowo, 2015), the use of science laboratories (Malik, 2010), and learning based on local wisdom (Hunaepi, *et.al.*, 2020: 269-281).

Observing the description above, it is known that the literature review of the research above leaves a gap analysis. Meanwhile, the research that will be carried out is also still related to the inquiry learning model and student learning outcomes, the difference is that this study will be associated with students' critical thinking skills that have not been studied previously in the inquiry learning model. Furthermore, the research is summarized in the title, "The Influence of the Inquiry Learning Model and Critical Thinking Ability on Student Learning Outcomes".

METHOD

This type of research is a type of comparative causal research or also called quasi-experimental research. Because this method is used by researchers to conclude causal equations between two or more variables, where one variable depends on another independent variable (Sukmadinata, 2010). This research was conducted at SMP Negeri 3 Tarutung. The subjects of this study were seventh-grade students of SMP Negeri 3 Tarutung. Then, the sampling technique used is random sampling, which is chosen from the same 6 classes because one class is categorized as the superior class (class VII-A). Of the 6 classes drawn using the lottery, 2 classes were selected as research samples. As a result, the samples for this study were grades VII-B and VII-C. With each number of students 30 people for each class.

The data analysis technique used is two-way ANOVA parametric statistics (Two Way Anova), factorial analysis or often also called multiple ANOVA is a parametric statistical technique used to test differences between groups of data from 2 or more independent variables (Assingkily, 2021). In this study, there are 2 independent variables, namely the inquiry learning model and critical thinking ability, and 1 dependent variable, namely the science learning outcomes. The two-way ANOVA test can use the help of SPSS 22.0 for Windows. After the analysis compares the significance value obtained, if 0.05, it can be concluded that there is an effect.

RESULTS AND DISCUSSION

Based on the results of the processing and analysis of research data can be stated in the following table:

Table 1
Results of 2 x 2. Factorial ANOVA Test

Tests of Between-Subjects Effects

Dependent Variable: Learning outcomes

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1313.349[a]	3	437.783	9.363	.000
Intercept	444009.597	1	444009.597	9.49703	.000
Model	411.876	1	411.876	8.809	.004
KBK	517.536	1	517.536	11.069	.002
Model * KBK	260.731	1	260.731	5.577	.022
Error	2618.251	56	46.754		
Total	449758.000	60			
Corrected Total	3931.600	59			

a. R Squared = ,334 (Adjusted R Squared = ,298)

Based on Table 1, the results of the 2x2 Factorial ANOVA test above, it can be stated an explanation in the form of answers to the three research problem formulations, namely first, based on table 1, the calculated

value of sig = 0.004 is smaller than sig = 0.05 meaning H0¬ is rejected so that it can be concluded that there are differences in student learning outcomes who are taught using the inquiry learning model with conventional learning models.

In line with the findings above, Nurzaman (2017: 151-161) explains that the concept of discovery in the inquiry learning model provides an opportunity for students to find out for themselves about teaching materials. Furthermore, Retnosari, *et.al.* (2016: 1529-1535) adds that the conventional model is very different from the inquiry model because it is based on educative experience. Thus, students do not just memorize and know each material conceptually, but also practice directly problem-solving efforts and finding constructions from learning materials.

Second, based on table 1, the calculated value of sig = 0.022 is smaller than sig = 0.05, meaning H0¬ is rejected, so it can be concluded that there is an effect of critical thinking ability on student learning outcomes, both taught by the inquiry model and taught by conventional learning. In this regard, Irawati (2017) suggests that critical thinking skills lead students to find out and reason about every finding in their educational experience so that this is in line with the concept of discovery in the inquiry learning model.

Third, based on table 1, information is obtained that the calculated value of sig = 0.022 is smaller than the price provision of sig = 0.05, which means that H0 is rejected. So the category of students' critical thinking skills affects student learning outcomes. From Table (1) it can also be seen that for the learning model factors and critical thinking skills, the calculated value for learning interactions and students' critical thinking skills is sig = 0.022, smaller than sig = 0.05, (0.022 <0.05), it can be concluded that reject H0 and accept Ha, which means there is an interaction between the learning model and critical thinking skills on student learning outcomes. Thus, it can be concluded that there is an interaction between the use of learning models and critical thinking skills in influencing student learning outcomes in science subjects on heat material in class VII SMP Negeri 3 Tarutung.

The findings above are in line with the results of research Yeritia, *et.al.* (2017: 181-187) concluded that inquiry learning has a significant effect on student learning outcomes because the concept of discovery will train students to be proactive in every learning process. In addition, Ritiauw & Salamor (2016: 42-56) views that students' need for critical thinking skills is an important aspect of student learning success. This is because logical and systematic reasoning to produce real creativity and innovation comes from critical thinking skills.

Based on the description above, it is understood that inquiry learning and critical thinking skills have a significant effect on improving student learning outcomes. This is based on a combination of reasoning and student research on teaching material, as well as a particular object. Thus, students will be trained to ask questions and find out research findings, to obtain answers to the formulation of learning problems.

CONCLUSION

Based on the description above, the researchers found that there was an effect of the inquiry learning model on the science learning outcomes of students at SMP Negeri 3 Tarutung of 0.004. There is an effect of critical thinking skills on students' science learning outcomes at SMP Negeri 3 Tarutung of 0.002. There is an interaction between learning models and critical thinking skills on student learning outcomes based on the results of the ANOVA test, the value of sig = 0.022 <sig.0.05. Thus, it can be concluded that there is an interaction between learning models and critical thinking skills in influencing student learning outcomes.

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