Application Of Cognitive Learning Theory In Improving Students' Critical Thinking Skills

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	Abstract
Keywords: Cognitive Learning Theory, Critical Thinking Ability, 21st Century Education, Collaborative Learning,	The ability to think critically is one of the essential skills in the modern era, especially in facing the challenges of a world full of information. This research aims to analyze the impact of applying cognitive learning theory on the development of critical thinking skills in class 6D MIN 1 Batam students. The research uses qualitative methods with a case study approach, involving observation, interviews and document analysis. The research results show that the implementation of cognitive learning theory has a positive impact on students' critical thinking skills. This approach allows students to be more active in the learning process through group discussions, case study analysis, and reflection, which encourages their ability to analyze, evaluate, and solve problems logically. Improving critical thinking skills is also accompanied by strengthening social skills, such as collaboration and communication. However, there are challenges in the form of limited time and the diversity of student abilities. Teachers apply differentiation strategies and various learning methods to overcome these challenges. This research concludes that cognitive learning theory is effective in improving students' critical thinking skills and creating a more interactive learning environment. Research recommends teacher training and provision of adequate resources to support more optimal implementation. These findings demonstrate the importance of cognitive-based learning approaches in the education system to equip students with 21st century skills.
	Abstrak
Kata kunci: *Teori Belajar Kognitif, Kemampuan Berpikir Kritis, Pendidikan Abad ke-21, Pembelajaran Kolaboratif* Article history: Received: 18-11-2024 Revised 23-11-2024 Accepted 27-12-2024	*Kemampuan berpikir kritis merupakan salah satu keterampilan esensial di era modern, terutama dalam menghadapi tantangan dunia yang penuh dengan informasi. Penelitian ini bertujuan untuk menganalisis dampak penerapan teori belajar kognitif terhadap pengembangan kemampuan berpikir kritis siswa kelas 6D MIN 1 Batam. Penelitian menggunakan metode kualitatif dengan pendekatan studi kasus, melibatkan observasi, wawancara, dan analisis dokumen. Hasil penelitian menunjukkan bahwa implementasi teori belajar kognitif berdampak positif terhadap keterampilan berpikir kritis siswa. Pendekatan ini memungkinkan siswa untuk lebih aktif dalam proses pembelajaran melalui diskusi kelompok, analisis studi kasus, dan refleksi, yang mendorong kemampuan mereka dalam menganalisis, mengevaluasi, dan memecahkan masalah secara logis. Peningkatan keterampilan berpikir kritis juga diiringi oleh penguatan keterampilan sosial, seperti kolaborasi dan komunikasi. Kendati demikian, terdapat tantangan berupa keterbatasan waktu dan keberagaman kemampuan siswa. Guru menerapkan strategi diferensiasi dan berbagai metode pembelajaran untuk mengatasi tantangan tersebut. Penelitian ini menyimpulkan bahwa teori belajar kognitif efektif dalam meningkatkan keterampilan berpikir kritis siswa dan menciptakan lingkungan belajar yang lebih interaktif. Penelitian merekomendasikan pelatihan guru dan penyediaan sumber daya yang memadai untuk mendukung implementasi yang lebih optimal. Temuan ini menunjukkan pentingnya pendekatan pembelajaran berbasis kognitif dalam sistem pendidikan untuk membekali siswa dengan keterampilan abad ke-21.*

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INTRODUCTION

Critical thinking skills are one of the essential skills that are very much needed in the modern era. In a world filled with diverse information, the ability to analyze, evaluate, and integrate information effectively is very important (Anggraeni, Rustini, and Wahyuningsih 2022). The World Economic Forum noted that critical thinking is included in the 10 key skills that will be most in demand by employers in 2025 (World Economic Forum, 2020). This fact emphasizes the importance of the education system to prepare students with relevant skills to be able to face future challenges.

Critical thinking involves the ability to analyze information, evaluate arguments, and make decisions based on available data (Astuti et al. 2023). In the context of education, this ability includes some important aspects, such as recognizing arguments, assessing the validity of evidence, and drawing logical conclusions. For example, a student who reads an article about climate change and can identify arguments for and against the issue demonstrates mastery of critical thinking skills. They do not only receive information passively but also process it actively to form opinions based on the evaluation of existing evidence.

Critical thinking skills are very significant in education because they help students become independent learners and ready to face various real-world challenges. During today's flood of information, critical thinking skills allow students to sort information, determine its accuracy, and assess its relevance. Education that emphasizes the development of these skills will produce individuals who not only understand information but are also able to evaluate and use it wisely. For example, students who are trained in critical thinking tend to be better prepared to contribute to public discussions, where they must present arguments supported by strong and logical evidence (Utama and Kristin 2020).

Cognitive learning theory developed by figures such as Jean Piaget and David Ausubel highlights the importance of mental processes in learning. This theory emphasizes how individuals process, store, and utilize information (Wisman 2020). In education, this approach helps students understand concepts in depth rather than simply memorizing them. Through this approach, students are taught to think critically and creatively in solving problems (Anidar 2017).

Grade 6 students are at a significant stage of cognitive development, where they begin to be able to think abstractly and logically. At this age, the ability to evaluate information and draw conclusions begins to develop. Therefore, the application of cognitive learning theory to grade 6 students is very relevant to support the development of critical thinking skills. Research shows that well-designed interventions at this stage can have a long-term positive impact on students' critical thinking skills (Firdausi et al., 2021). Based on the data above, this study aims to analyze the extent to which the application of cognitive learning theory can influence the development of critical thinking skills of grade 6 students at MIN 1 Batam.

RESEARCH METHOD

This research was conducted as a qualitative study with a case study approach (Arif 2019) at MIN 1 Batam located at Jalan Golden Prawn, Bengkong Laut Village, Bengkong District, Batam City. This madrasah has an environment that supports the learning process both in terms of facilities and a conducive learning atmosphere. The principal of the madrasah provides full support for the program to improve the quality of education in this madrasah. MIN 1 Batam has been accredited A, so it has adequate quality standards in the learning process and education management. The research was conducted in class 6D consisting of 28 students. This class was chosen as the research location because students at this level are in the operational-concrete thinking development stage, so the application of cognitive learning theory is expected to develop students' critical thinking skills. In addition, the class 6D teacher strongly supports innovative learning approaches that are relevant to the development of 21st-century skills. In the next stage, the researcher conducted data analysis using Miles and Huberman data analysis including condensation data, display data, and concluding (Arif 2023). In addition, researchers also conducted data validity tests through triangulation: triangulation of methods, sources, and theories.

RESEARCH RESULTS AND DISCUSSION
Result
Implementation of Cognitive Learning Theory

The implementation of cognitive learning theory in class 6D MIN 1 Batam has a positive impact on the learning process. This method allows students to be actively involved in learning activities through group collaboration, which not only improves understanding of the material but also builds important social skills. Learning becomes more interesting and relevant to students, thus increasing their motivation and enthusiasm for learning.

In line with the results of the interview conducted with Mrs. Wahyona:

"Learning using this theory provides an opportunity for students to be actively involved in the learning process. By collaborating in groups, students learn from each other and build important social skills. In addition, this method makes learning materials more interesting and relevant, thus increasing students' motivation and enthusiasm for learning."

Meanwhile, a grade 6 student explained that:

"I find learning very challenging but interesting. This learning makes me think more critically and creatively in solving problems. Sometimes, the challenges make me think at a high level, but it also helps me learn many new things and develop analytical thinking skills"

However, the implementation of this theory is not without challenges. One of the main obstacles is the diversity of student abilities, which makes it difficult for teachers to design activities that are appropriate for all students. Time constraints are also an obstacle because the activities designed often require a longer duration. In addition,

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resistance from some students to new methods and lack of understanding and support from parents are also challenges that need to be overcome.

Nevertheless, cognitive learning theory has many advantages. This approach encourages students to be active in the learning process, which makes it easier for them to understand the material. In addition, students are trained to work together, communicate well, and respect the opinions of their friends. Critical and analytical thinking skills are also honed, encouraging students to find solutions and make logical decisions. When learning is linked to the context of everyday life, students feel more motivated and enthusiastic about learning.

In line with the results of interviews with grade 6 students:

"learning using cognitive theory is very helpful in solving difficult problems. By working in groups, we can share knowledge and strategies. Each group member has a different perspective and approach, so we can help each other and find solutions that we might not have thought of before. This discussion and collaboration are very effective in understanding difficult concepts."

To address the diversity of student abilities, the teacher implemented a differentiation strategy. Students were grouped based on their abilities, and tasks were given according to the level of understanding of each group. The teacher also used a variety of learning methods and media to ensure that all students were actively involved. The flexible and creative approach proved effective in meeting the diverse learning needs in the classroom.

Significant changes were seen in students' critical thinking skills after the application of this theory. Students showed improvements in analyzing problems, asking questions, and finding logical solutions. They were also more confident in arguing and defending their opinions during group discussions. Reflections carried out at the end of the learning helped students understand their thinking processes, making learning more meaningful.

In line with what Mrs. Wahyona said there was a significant change:

"There is a significant increase in students' critical thinking skills after implementing a multiple learning approach. Students are now better able to analyze problems, ask questions, and find logical solutions. They also show progress in arguing and defending their opinions during group discussions. Reflections carried out at the end of the activity also help students understand their thinking processes"

The success of this learning requires adequate support. Teachers need training on the application of cognitive learning theories and diverse classroom management. The availability of resources such as teaching aids, reference books, and educational technology is also very important. In addition, parental involvement in providing support at home is a significant supporting factor.

Evaluation of learning is carried out in various ways. Teachers use assessment rubrics to measure student engagement, collaboration skills, and the final results of group projects. Feedback from students is collected to evaluate the effectiveness of the

methods applied. In addition, project-based assessments and group presentations are used to assess students' understanding of the material that has been studied.

Although there are still some difficulties, students objectively express several ways to overcome them:

"To overcome these difficulties, I try to be more active in asking questions if there is something I don't understand. In addition, I also try to listen more and note down important ideas during discussions. Sometimes, I also ask the teacher for help explaining difficult material. With the support of teachers and friends, I can overcome these difficulties and learn better.

Based on the data above, overall, the implementation of cognitive learning theory in class 6D MIN 1 Batam shows great potential in improving students' critical thinking skills, although it still requires support and adjustments to overcome the various challenges that exist.

Discussion

The results of this study revealed that the application of cognitive learning theory has a positive impact on the critical thinking skills of class 6D students of MIN 1 Batam. The results of observations and data analysis also showed that the application of active learning methods proved effective in involving students in the learning process in class 6 of MIN 1 Batam.

Student Involvement in Learning

In implementing learning using cognitive learning theory, students are faced with various activities such as group discussions, case study analysis, and reflection. The results of observations showed that students were more courageous in speaking and expressing their opinions during group discussions. This activity is in line with the theory of Johnson and Johnson (2019) which emphasizes the importance of social interaction in collaborative learning. This active involvement also contributes to increasing students' self-confidence in critical thinking, which is in accordance with the findings of Anggeraini et al that critical thinking skills can develop through learning experiences that encourage students to think independently and logically (Anggareni, Ristiati, and Widiyanti 2013).

Improving Critical Thinking Skills

Through the analysis of student work results, it was found that many students were able to identify problems, analyze information, and provide logical arguments in the tasks given. For example, when given a case study on environmental issues, students can formulate solutions based on their analysis of the situation. This reflects analytical and evaluation skills, two key components of critical thinking. Reflection activities carried out after learning also allow students to evaluate their thinking processes, which can help them make better conclusions in the future (Sutama 2019).

Influence of the Learning Environment

A conducive learning environment at MIN 1 Batam plays an important role in the success of the multiple-learning approach. Clean, orderly classrooms and adequate facilities support students to focus on learning. Interviews with teachers revealed that support from the principal and parental involvement in children's education also have a positive impact on student motivation. According to Akhtim, a pleasant and supportive learning environment can facilitate the development of students' multiple intelligences, including critical thinking skills (Wahyuni 2011).

Challenges in Implementation

Although there are many advantages, this study also found several challenges in implementing cognitive learning theory. One of them is the limited time to complete each activity, which can reduce the depth of learning. Students sometimes find it difficult to understand complex concepts if there is no sufficient explanation from the teacher. This shows that even though learning using cognitive theory has been designed in such a way, the readiness of teachers to apply a variety of learning methods and strategies remains an important factor that must be considered (Arnando 2019).

Synthesis of Results

Based on the results obtained, it can be concluded that the application of cognitive learning theory in class 6D MIN 1 Batam has succeeded in increasing student engagement and critical thinking skills. Interactive and collaborative learning experiences encourage students to think more deeply and analytically. Therefore, the results of this study support theories that state that a varied and adaptive learning approach can develop students' critical thinking skills, and show that the application of cognitive theory is one of the effective theories in the context of education in the modern era.

CONCLUTION

Based on the research conducted on the Application of Cognitive Learning Theory in improving critical thinking skills of Class 6D students of MIN 1 Batam, it can be concluded that the application of this theory has a significant positive impact on the teaching and learning process. The results of the study showed that students showed an increase in critical thinking skills through collaborative activities, experiments, and discussions carried out in groups. These activities allow students to analyze phenomena, argue, and share ideas, which contribute to the development of their critical thinking skills. In addition, students also reported higher self-confidence in expressing their opinions during the learning process. However, there were several obstacles faced, such as difficulties in understanding complex material and challenges in collaborating with students who have different learning styles. However, with guidance from teachers and support from friends, students were able to overcome these difficulties. Thus, the

application of cognitive learning theory not only improves students' critical thinking skills but also creates a more active and enjoyable learning environment. This study recommends that the application of cognitive learning theory in improving students' critical thinking skills can continue to be developed and applied more widely, with adequate support and resources expected to achieve more optimal learning outcomes in the future.

References

Anggareni, N. W., N. P. Ristiati, and N. L. P. M. Widiyanti. 2013. "Implementasi Strategi Pembelajaran Inkuiri Terhadap Kemampuan Berpikir Kritis Dan Pemahaman Konsep Ipa Siswa Smp." *Jurnal Pendidikan Dan Pembelajaran IPA Indonesia* 3(1).

Anggraeni, Nofi, Tin Rustini, and Yona Wahyuningsih. 2022. "Keterampilan Berpikir Kritis Siswa Sekolah Dasar Pada Mata Pelajaran Ips Di Kelas Tinggi." *Jurnal Review Pendidikan Dasar : Jurnal Kajian Pendidikan Dan Hasil Penelitian* 8(1):84–90. doi: 10.26740/jrpd.v8n1.p84-90.

Anidar, Jum. 2017. "Teori Belajar Menurut Aliran Kognitif Serta Implikasinya Dalam Pembelajaran." *Jurnal Al-Taujih : Bingkai Bimbingan dan Konseling Islami* 3(2):8–16. doi: 10.15548/atj.v3i2.528.

Arif, Muhamad. 2019. "Model Pembelajaran Terpadu Mata Pelajaran IPS Kelas IV Madrasah Ibtidaiyah Tema Indahnya Kebersamaan." *MIDA : Jurnal Pendidikan Dasar Islam* 2(1):46–59. doi: http://e-jurnal.unisda.ac.id/index.php/mida/article/view/1337.

Arif, Muhamad. 2023. *Karya Tulis Ilmiah: Implementasi Chatgpt Dan Manajemen Referensi Menulis*. Jambi: PT. Sonpedia Publishing Indonesia.

Arnando, T. 2019. *Strategi Pembelajaran Guru Pendidikan Agama Islam Dalam Membentuk Akhlak Siswa Di SMA N 6 Seluma*. repository.iainbengkulu.ac.id.

Astuti, Mardiah, Mutyati Mutyati, Ibrahim Ibrahim, Muhammad Ali Maksum, Nabila Ismaresy, Natasyah Ifah Faridhona, and Aulia Violeta Riertika. 2023. "Perkembangan Psikologi Anak Dari Taman Kanak-Kanak Ke Sekolah Dasar Di MI Al-Amalul Khoir Palembang." *Mau`izhah : Jurnal Kajian Keislaman* 13(2):42–52. doi: 10.55936/mau`izhah.v13i2.132.

Sutama, I. W. 2019. "Developing Learning Models to Increase Higher Order Thinking Skills in Early Childhood." *International Journal of Innovation, Creativity and Change* 5(5):562–78.

Utama, Kafiga Hardiani, and Firosalia Kristin. 2020. "Meta-Analysis Pengaruh Model Pembelajaran Problem Based Learning (PBL) Terhadap Kemampuan Berpikir Kritis IPA Di Sekolah Dasar." *Jurnal Basicedu* 4(4):889–98. doi: 10.31004/basicedu.v4i4.482.

Wahyuni, Akhtim. 2011. "Mengasah Interpersonal Skills Mahasiswa Calon Pendidik." *Pedagogia : Jurnal Pendidikan* 1(1):1–10. doi: 10.21070/pedagogia.v1i1.28.

Wisman, Yossita. 2020. "Teori Belajar Kognitif Dan Implementasi Dalam Proses Pembelajaran." *Jurnal Ilmiah Kanderang Tingang* 11(1):209–15. doi: 10.37304/jikt.v11i1.88.