# Developing the Students' Critical Thinking in Management Information System Courses through the Inquiry Method

**Nunung A. Firmansyah[1]; Lila Bismala[2]; Yayuk H. Manurung[3]; Hafsah[4]; Susi Handayani[5]**

[1]*Faculty of Engineering, University of Muhammadiyah Kudus, Indonesia*
[2,4,5]*Faculty of Economic and Business, University of Muhammadiyah Sumatera Utara, Indonesia*
[3]*Faculty of Teacher Training and Education, University of Muhammadiyah Sumatera Utara, Indonesia*
[2]*Corresponding Email: lilabismala@umsu.ac.id, Phone Number: 0823 xxxx xxxx*

**Article History:**
Received: Mar 28, 2023
Revised: Apr 11, 2023
Accepted: May 01, 2023
Online First: May 04, 2023

**Keywords:**
Critical Thinking, Inquiry Method, Management Information System.

**Kata Kunci:**
Berpikir Kritis, Metode Inkuiri, Sistem Informasi Manajemen.

**How to cite:**
Firmansyah, N. A., Bismala, L., Manurung, Y. H., Hafsah, H., & Handayani, S. (2023). Developing the Students' Critical Thinking in Management Information System Courses through the Inquiry Method. *Edunesia: Jurnal Ilmiah Pendidikan*, 4(2), 843-854.



**Abstract:** One of the essential abilities expected to be created and grown after students take a specific class is the ability to think critically, which becomes an indicator of learning quality. Critical thinking skills are essential in life, which can be used to solve problems and issues, and will make a lifelong learner. This study aims to analyze the significance of the influence of the implementation of the inquiry method in improving students' critical thinking skills in the Management Information Systems course. The research was conducted on 168 students taking the Management Information Systems course in the Management Studies program at Universitas Muhammadiyah Sumatera Utara, but 113 returned questionnaires. The data analysis technique used is descriptive statistical analysis techniques and simple regression. The results showed a positive and significant effect of implementing the inquiry method on students' critical thinking skills in the management information system course. Meanwhile, the R Square value is 0.642, which means that the influence exerted by the inquiry method in increasing students' critical thinking is 64.2%. This can be used as a recommendation to improve the students' necessary thinking skills.

**Abstrak**: Salah satu kemampuan penting yang diharapkan dapat diciptakan dan ditumbuhkan setelah siswa menempuh suatu kelas tertentu adalah kemampuan berpikir kritis, dan itu menjadi salah satu indikator kualitas pembelajaran. Memiliki kemampuan berpikir kritis sangat penting dalam kehidupan, yang dapat digunakan untuk memecahkan masalah, sehingga mampu menyelesaikan permasalahan serta akan menjadikannya sebagai pembelajar seumur hidup. Penelitian ini bertujuan untuk menganalisis signifikansi pengaruh implementasi metode inkuiri dalam meningkatkan kemampuan berpikir kritis Mahasiswa dalam mata kuliah Sistem Informasi Manajemen. Penelitian dilakukan pada 168 mahasiswa yang mengikuti mata kuliah Sistem Informasi Manajemen, pada program Studi Manajemen di Universitas Muhammadiyah Sumatera Utara, namun 113 kuesioner yang kembnali dan dinyatakan valid. Teknik analisis data yang digunakan adalah Dengan teknik analisis statistik deskriptif dan regresi sederhana. Hasil analisis regresi menunjukkan adanya pengaruh yang positif dan signifikan penerapan metode inkuiri terhadap kemampuan berpikir kritis mahasiswa mata kuliah sistem informasi manajemen. Sementara itu, nilai R Square adalah sebesar 0.642, yang berarti bahwa pengaruh yang diberikan oleh metode inquiry dalam meningkatkan critical thinking Mahasiswa adalah sebesar 64.2%. Hal ini dapat menjadi sebagai rekomendasi penerapan metode inkuiri dalam meningkatkan kemampuan berpikir kritis siswa.

https://doi.org/10.51276/edu.v4i2.435

## A. Introduction

Critical thinking is about developing specific skills, including skills in argumentation and making the exact evaluation. Employers aspire to the evidence of necessary thinking skills in their employees, and scholars are assumed to have these skills (Ennis, 2015). It is one of the essential skills expected to be created and grown after students take a specific class (Haghparast et al., 2014) and is one of the most important indicators of the quality of student learning (Alsaleh, 2020). The ability to think critically gives students the ability to understand what they have read or have proven and build knowledge without additional guidance. Critical thinking teaches that knowledge flows and builds itself, not just memorization or the ability to absorb lessons without asking questions (Manurung & Siregar, 2018). It is essential in life and creates good thinkers and lifelong learners so that they can solve problems in life. Students who master the ability to think critically and insightfully will perform better academically in their current high school environment. They will also be better prepared to face the rigors and increase academic expectations in college (Changwong et al., 2018). The need for colleges and universities to develop critical thinking skills has emerged as an essential issue in education. Critical thinking begins with the problem-solving process, continues with the reasoning process, produces several induction, deduction, and value-judging conclusions, and ends with a decision about what to do or believe (Arsal, 2017). Students with critical thinking skills will be able to view problems from various perspectives so that they can provide solutions from various perspectives as well. They will be able to face difficulties in the world of work, have creative thinking, and try to discover new things. This is very important, more than just cognitive abilities.

Learning is determined by several factors, including the characteristics of each student, what the teacher understands, and how to apply critical thinking competencies in the subjects being taught (Bezanilla et al., 2019). In e-learning, lecturers can use various combinations of learning methods that foster students' cognitive, affective, and psychomotor abilities. These methods will, of course, be adapted to the distance learning system so that they can still control and monitor the results. Learning methods that require student collaboration are student-centered, generate willpower, and problem-solving abilities can be used as an alternative in e-learning to achieve the learning objectives (Akrim et al, 2020). Learning is expected to construct students' knowledge, abilities, and skills in terms of hard and soft skills. Meanwhile, the purpose of learning has increased beyond acquiring grades, competencies, and knowledge. However, it must cultivate critical thinking skills so that students can later help solve problems in the world of industry and business.

Critical thinking skills can be improved by using learning methods that can stimulate them. Inquiry learning can be used to train students' critical thinking skills (Suryanti et al., 2018). Students who study with inquiry will be actively involved in physical and mental learning (hands-on activity) through experimental activities, observing, asking questions, analyzing data, and making conclusions. Student-centered inquiry learning has improved students' critical thinking skills (Suryanti et al., 2018). In the context of activity-based learning design, the application of learning behavior is an essential element that contributes

https://doi.org/10.51276/edu.v4i2.435

to student engagement (Rajabalee et al., 2020). Compared to passive and indirect means of facilitating learning, inquiry-based learning can foster a more engaging, meaningful, and effective learning environment in the long term (Blessinger & Carfora, 2015). In this skill, students must continue to develop critical thinking skills that are continuously adapted to the characteristics of learning, one of which is by using inquiry learning (Suryanti et al., 2018; Clayton & Kilbane, 2016). The instructor's role is to promote and encourage discourse among learners through the design of learning activities in order to promote critical discourse in collaborative inquiry (Yang & Mohd, 2020). However, the results of Arsal (2017) research show that inquiry-based learning in the experimental group was less effective than control group instruction in increasing the critical thinking dispositions of pre-service teachers. It is exciting that the highest level of openness of inquiry teaching, which involves students frequently asking questions and other inquiry teaching components, results in the lowest science achievement in students (Jiang & McComas, 2015). Meanwhile, the results showed that there were differences in the critical thinking abilities of students with high, medium, and low initial abilities after being taught Inquiry and Problem-Based Learning (PBL), but there was no interaction between Inquiry and PBL online learning with students' initial abilities on students' critical thinking abilities (Putri et al., 2021).

To guarantee that group interactions involving high-level material and associated conceptual learning are not left to chance in scientific classrooms, instructors should be supported in developing their knowledge and abilities in enabling cooperative inquiry-based science learning (Woods-McConney et al., 2016). Wale & Bishaw (2020); Priyanti & Warmansyah (2021) revealed that using inquiry-based argumentative writing instruction improves students' critical thinking skills because it increases students' interpretation, analysis, evaluation, inference, explanation, and self-regulation skills which are core critical thinking skills, where this supports previous research (Suryanti et al., 2018; Rahmi et al., 2019).

Management Information System (MIS) is one of the compulsory subjects in the Management study program at the Faculty of Economics & Business at the Universitas Muhammadiyah Sumatera Utara. Many companies are aware of technological developments, so they view information technology investment as very significant. In principle, this course emphasizes information systems support, knowledge of the latest systems consisting of managerial knowledge, systems development, project management, and teamwork as essential factors to becoming successful and professional at MIS (Uğur & Turan, 2019). Furthermore, Uğur & Turan (2019) verify trends in information system jobs that are growing to be diversified, and the MIS curriculum does not meet all information system job requirements.

The problem encountered in the conventional learning process with the lecture method in MIS courses is low critical thinking, which impacts the MIS knowledge obtained from the learning process. Meanwhile, in critical thinking, students' abilities still need to improve, as evidenced by the inability to link MIS theory with implementation in industry and business, such as identifying inputs, processes, and outputs in small industries. If this

https://doi.org/10.51276/edu.v4i2.435

situation continues, they will be more accustomed to conventional learning methods. They need to realize the importance of critical thinking during college and when they want to enter the world of work or business.

The problems raised become the basis for implementing the inquiry method to improve critical thinking. The learning method used to improve critical thinking is problem-based learning. So here, the researchers apply the inquiry method, with the proposition that students who study with inquiry will be actively involved in learning both physically and mentally (hands-on activity) through experimental activities, observing, asking questions, analyzing data, and making conclusions, to improve their critical thinking skills. Thus, the question posed is whether implementing the inquiry method in online learning management information systems can improve students' critical thinking.

Based on these research questions, the specific objective to be achieved is to analyze the significance of the influence of the implementation of the inquiry method in improving students' critical thinking skills in the Management Information Systems course. Descriptively, this study aims to analyze the extent to which the dimensions of the inquiry learning method are applied and the extent to which students possess critical thinking skills. The results of this study will be a recommendation for the Management Information Systems course in implementing the inquiry method.

## B. Method

Critical thinking is one of the soft skills that students must possess. Implementing e-learning is challenging to grow and improve critical thinking skills because lecturers who care for courses need help monitoring. Therefore, researchers consider it very important to improve critical thinking skills in management information system courses, where current learning is carried out with e-learning. The management information systems course given in the management study program is designed to provide basic knowledge about management information systems (roles, functions, benefits of MIS, decision support systems, organizational business processes, and MIS-based competitive advantages) so that they understand the importance of MIS for sustainability, efficiency, and the company's competitive advantage. In the end, students can identify what data is needed in a business and how to integrate these data.

This research is explanatory research, which tries to describe phenomena and explain relationships. This study aims to measure the extent to which the application of the inquiry method can improve the critical thinking of students taking management information system courses. This study applied a quantitative approach using simple regression analysis to analyze the role of the inquiry learning method in improving students' critical thinking skills who take the management information system course.

The data in this study were collected by distributing questionnaires to respondents. These namely students had taken the management information system course, where the population in this study was 551 students, consisting of 15 classes. Of these 15 classes, the researcher determined four classes that used the inquiry method in management

https://doi.org/10.51276/edu.v4i2.435

information system learning, which were 168 students. To test the effect of implementing the inquiry method on critical thinking, the researcher distributed questionnaires to 168 students, but the number of returned and valid questionnaires was 113. So, the rate of return on the questionnaire was 67.3%.

The dimensions used to measure the method of inquiry include conceptual understanding (4 questions), student skills (4 questions), developing creativity (3 questions), finding a more profound and broader understanding of the subject (3 questions), acquiring some research skills (3 questions), the role of lecturers in applying the inquiry method (4 questions). At the same time, the critical thinking dimensions used in this study included interpretation (8 questions), analysis (11 questions), inference (4 questions), evaluation (2 questions), explanation (2 questions), and self-regulation (3 questions). Questions related to critical thinking and inquiry methods were distributed with a Likert scale with a value of 1 (strongly disagree), 2 (agree), 3 (neutral), 4 (agree), and 5 (strongly agree). The flow of this research can be described as follows:

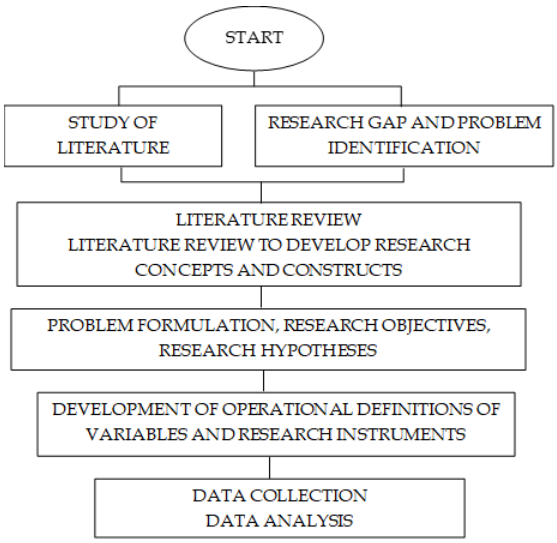


**Figure 1.** Research Flow Chart

## C. Result and Discussion

### Result

Students were asked to assess the implementation of the inquiry method in management information system learning and how it played a role in critical thinking skills. The number of female respondents was 82 (73%) and 31 (27%), where the age of the respondents was 20 years for as many as 45 people (40%), 21 years for as many as 55 people (49%), 22 years for as many as ten people (9%), 23 years for as many as one person (1%) and 24 years as two people (2%).

Before performing regression analysis, all instruments were tested for validity and reliability to measure the research variables. The results of testing the validity and reliability of the instrument are shown in the following table.

https://doi.org/10.51276/edu.v4i2.435

**Table 1.** Test Results of Validity and Reliability

| Variable | Dimension | Validity | Reliability |
|---|---|---|---|
| Inquiry Method | Conceptual understanding | Valid | Reliable |
| | Student skills | Valid | |
| | Develop creativity | Valid | |
| | Find a deeper and broader understanding of the subject | Valid | |
| | Acquire some research skills. | Valid | |
| | The role of the lecturer in applying the inquiry method | Valid | |
| Critical Thinking | Interpretation | Valid | Reliable |
| | Analysis | Valid | |
| | Inference | Valid | |
| | Evaluation | Valid | |
| | Explanation | Valid | |
| | Self-regulation | Valid | |

All instruments used to measure the implementation of the inquiry method and critical thinking skills are declared valid and reliable so that they can be continued in hypothesis testing. The results of a survey conducted to assess the implementation of the inquiry method and critical thinking skills are as follows:

**Table 2**. Overall Implementation of the Inquiry Method and Critical Thinking Skills Dimensions Score

| Variable | Dimension | Mean |
|---|---|---|
| Inquiry Method | Conceptual understanding | 15.8584 |
| | Student skills | 15.7080 |
| | Develop creativity | 12.0354 |
| | Find a deeper and broader understanding of the subject | 12.2920 |
| | Acquire some research skills | 11.8142 |
| | The role of the lecturer in applying the inquiry method | 16.4779 |
| Critical Thinking | Interpretation | 31.2941 |
| | Analysis | 44.4118 |
| | Inference | 15.5882 |
| | Evaluation | 11.8353 |
| | Explanation | 11.4353 |
| | Self-regulation | 12.6824 |

Of the several dimensions of the inquiry method, the highest score was on conceptual understanding, followed by student skills. Meanwhile, the highest score for the critical thinking dimension is analysis, followed by interpretation.

The regression analysis results using SPSS 24.0 for the Windows program showed that the value of t was 14.103 with a value of Sig. of 0.000, which meant that there was an influence between the inquiry method and students' critical thinking. Meanwhile, the value

https://doi.org/10.51276/edu.v4i2.435

of R Square is 0.642, which means that the influence given by the inquiry method in improving students' critical thinking was 64.2%.

**Discussion**

Critical thinking is one of the main goals of higher education to train independent thinkers in modern society (Haghparast et al., 2014) as a competency needed by students in professional life (Bezanilla et al., 2019). It prepares students with the tools necessary to deal with changes and new emerging challenges, facilitating the execution of individual assignments by providing methods for dealing with large amounts of information, evaluating assessments, and enabling students to make their conclusions. In addition, it encourages flexibility with current circumstances by engaging mechanisms in generating knowledge and supporting the adoption of multiple perspectives, the practice of processing information in the most skillful, accurate, and rigorous manner possible, in a manner that will lead to the most reliable, logical conclusions and can be trusted. It helps individuals to think and critically analyze their learning and strive and develop their expertise in the field of professionalism, a mental activity that actively and skillfully conceptualizes, applies, analyzes, synthesizes, and evaluates information to reach an answer or conclusion, which can also be seen as a mental process that involves high quality and higher-order thinking for problem-solving and decision making (Al-Mubaid, 2014). Thinking processes can be improved through teaching, coaching, and practice, so unique education strategies can be used in online courses to facilitate students' critical thinking processes.

Mature critical thinking involves three parts, namely: (1) critical thinking involves asking questions, namely questions that need to be asked, asking good questions, questions that get to the heart of the problem, (2) critical thinking involves efforts to answer questions with reason, (3) critical thinking believes in the results of thinking we (Luke, 2016). Students with critical thinking skills will always be able to find and explain the relationship between the problems discussed and other relevant experiences (Hidayati et al., 2016).

Given the rapid development of information and communication technology, it is essential to have critical thinking skills in management information systems. This requires students' critical thinking to design a management information system that can bring the company to a leading competitive strategy. The ability to think critically will encourage students to find new ideas in designing management information systems.

Instructors who wish to positively influence critical thinking skills and other vital skills associated with success should consider including multiple written assignments and emphasizing research, then providing detailed feedback on scholarship, logic, and style (Nold, 2017). Other methods to consider include using online discussion forums to broaden class discussions to promote deeper thinking and challenge individual or team presentations in class (Nold, 2017).

Inquiry-based learning, as an approach and not a specific method, is a group of teaching and learning strategies in which students investigate the nature of a problem or question (Blessinger & Carfora, 2015). Inquiry learning can be used to train students' critical

https://doi.org/10.51276/edu.v4i2.435

thinking skills (Suryanti et al., 2018), where students will be actively involved in physical and mental learning (hands-on activity) through activity experiments, observing, asking questions, analyzing data, and making conclusions. Learning with the student-centered inquiry method has proven to improve students' critical thinking skills. In inquiry, teachers want less teacher-direction and student-oriented learning to create general good thinkers and increase engagement (Clayton & Kilbane, 2016). Clayton & Kilbane (2016) found that overall satisfaction had increased their ability to implement inquiry. Open-ended questions improve students' scientific reasoning skills and use of cognitive strategies. At the end of open inquiry, students can reach a deeper level of scientific thinking, having various levels of inquiry experience during the inquiry-based learning process. Teacher competence is a crucial factor in the implementation of inquiry-based learning. Teachers must provide inquiry-based learning experiences and opportunities for students to improve academic achievement, attitudes toward science, critical thinking, and scientific skills (Arsal, 2017).

The inquiry-based learning enhances student learning by creating a more engaging and meaningful educational environment through various learning activities (e.g., fieldwork, research projects, case studies, laboratory experiments, and essays) (Blessinger & Carfora, 2015). Blessinger & Carfora (2015) also emphasized that inquiry-based learning improves instructor teaching by expanding their role from subject matter specialists to collaborative instructional leaders who are not only responsible for disseminating information but are also responsible for designing effective learning environments and developing all students (for example, cognitively, psychologically, socially). The lecturer's role is crucial in implementing the inquiry method and assisting students in developing critical thinking skills. The lecturer can motivate so that the implementation runs optimally based on the scenarios set in the learning design. Lecturers must create questions that can arouse interest in finding students and be able to create students who can ask critical questions to be resolved. In the student-centered learning approach, the lecturer acts as a facilitator who can activate students' critical thinking skills, motivating them so that students continue to hone and develop critical thinking skills.

## D. Conclusion

Learning is done to acquire several skills, one of which is critical thinking. In critical thinking, the ability to be improved consists of interpretation, analysis, inference, evaluation, explanation, and self-regulation. From the research results, the critical thinking dimensions obtained by students with the highest scores are analysis, interpretation, inference, self-regulation, evaluation, and explanation. Meanwhile, the highest scores for applying the inquiry method sequentially include the lecturers' role in applying the inquiry method, conceptual understanding, and student skills, finding a deeper and broader understanding of the subject, developing creativity, and acquiring some research skills. The results also showed the significance of implementing the inquiry method in improving students' critical thinking skills in the management information system course. The study results indicate that inquiry can be an alternative learning method to improve students'

https://doi.org/10.51276/edu.v4i2.435

critical thinking skills, apart from the problem-based learning method. Lecturers can relate the method of inquiry, the concept, and the implementation of management information systems.

Learning management information systems is recommended to use the inquiry method because it can improve students' critical thinking skills. After all, the method combines activity-oriented learning, logical argument, and collaboration. This implies that it is necessary to promote inquiry-based learning based on a discovery approach that mainly engages students in searching, collecting, analyzing, synthesizing, and evaluating information based on interest. Student involvement in searching, collecting, analyzing, synthesizing, and evaluating this information will sharpen critical thinking skills.

The number of participants in this study is still relatively small, which is a limitation of the research, so it has yet to be able to generalize the effect of implementing the inquiry method in learning management information systems. Research findings will be more representative if future research uses more participants, even from several universities, to compare inquiry methods in different environments.

**References**

Akrim, Sulasmi, E., Eriska, P., Hidayat, F. P., Bismala, L, Rahmi, A., Subuea, M. B., Harahap, W. U., Intan, D. R., Suryani, D., Nasution, R., Harfiani, R., Dianto, Airlangga, E., & Yunita R. (2020). *Book Chapter Covid-19 & Kampus Merdeka di Era New Normal Ditinjau dari Perspektif Ilmu Pengetahuan*. Medan: UMSU Press.

Al-Mubaid, H. (2014). A New Method for Promoting Critical Thinking in Online Education. *International Journal of Advanced Corporate Learning, 7*(4), 34–37.

Alsaleh, N. J. (2020). Teaching Critical Thinking Skills: Literature Review. *Turkish Online Journal of Educational Technology-TOJET*, *19*(1), 21-39.

Arsal, Z. (2017). The Impact of Inquiry-Based Learning on the Critical Thinking Dispositions of Pre-Service Science Teachers. *International Journal of Science Education, 39*(10), 1326–1338. https://doi.org/10.1080/09500693.2017.1329564

Bezanilla, M. J., Fernández-Nogueira, D., Poblete, M., & Galindo-Domínguez, H. (2019). Methodologies for teaching-learning critical thinking in higher education: The teacher's view. *Thinking skills and creativity*, *33*, 100584, 1-10. https://doi.org/10.1016/j.tsc.2019.100584

Blessinger, P., & Carfora, J. M. (2015). Innovative Approaches in Teaching and Learning: an Introduction to Inquiry-Based Learning for Multidisciplinary Programs. In *Innovations in Higher EducationTeaching and Learning*, 3–22. https://doi.org/10.1108/S2055-364120150000003001

Changwong, K., Sukkamart, A., & Sisan, B. (2018). Critical Thinking Skill Development: Analysis of a New Learning Management Model for Thai High Schools. *Journal of International Studies*, *11*(2), 37-48. https://doi.org/10.14254/2071-8330.2018/11-2/3

https://doi.org/10.51276/edu.v4i2.435

Clayton, C., & Kilbane, J. (2016). Learning in Tandem: Professional Development for Teachers and Students as Inquirers. *Professional Development in Education, 42*(3), 458–481. https://doi.org/10.1080/19415257.2014.997397

Ennis, R. H. (2015). Critical Thinking: a Streamlined Conception. *The Palgrave Handbook of Critical Thinking in Higher Educatio*n, 31-47. https://doi.org/10.1057/9781137378057_2

Haghparast, M., Nasaruddin, F. H., & Abdullah, N. (2014). Cultivating Critical Thinking through E-learning Environment and Tools : a Review. *Procedia - Social and Behavioral Sciences, 129*, 527–535. https://doi.org/10.1016/j.sbspro.2014.03.710

Hidayati, D. N., Amaluddin, L. O., & Surdin, S. (2016). The Effect Guided Inquiry to Critical Thinking Ability to Build Student Character in Geography Subject. *Advances in Social Science, Education and Humanities Research, 79*, 367–371. https://doi.org/10.2991/icge-16.2017.71

Jiang, F., & McComas, W. F. (2015). The Effects of Inquiry Teaching on Student Science Achievement and Attitudes: Evidence from Propensity Score Analysis of PISA Data. *International Journal of Science Education, 37*(3), 554–576. https://doi.org/10.1080/09500693.2014.1000426

Luke, T. W. (2016). What is Critical?. *Critical Policy Studies*, *10*(1), 113-116. https://doi.org/10.1080/19460171.2015.1131617

Manurung, Y. H., & Siregar, F. S. (2018, December). Developing Students Critical Thinking on Speaking Through Socratic Questioning Method. In *International Conference on Language, Literature, and Education (ICLLE 2018),* 212-216. https://doi.org/10.2991/iclle-18.2018.35

Nold, H. (2017). Using Critical Thinking Teaching Methods to Increase Student Success: an Action Research Project. *International Journal of Teaching and Learning in Higher Education, 29*(1), 17–32.

Priyanti, N., & Warmansyah, J. (2021). Improving Critical Thinking Skills of Early Childhood through Inquiry Learning. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini, 5*(2), 2241–2249. https://doi.org/10.31004/obsesi.v5i2.1168

Putri, F. A. E., Syaiful, S., & Siburian, J. (2021). Kemampuan Berpikir Kritis Siswa pada Pembelajaran Online Inquiry dan Problem Based Learning (PBL). *Edumatica : Jurnal Pendidikan Matematika, 11*(01), 84–92. https://doi.org/10.22437/edumatica.v11i01.11458

Rahmi, Y. L., Alberida, H., & Astuti, M. Y. (2019). Enhancing Students' Critical Thinking Skills through Inquiry-Based Learning Model. *Journal of Physics: Conference Series, 1317*(1), 1–6. https://doi.org/10.1088/1742-6596/1317/1/012193

https://doi.org/10.51276/edu.v4i2.435

Rajabalee, B. Y., Santally, M. I., & Rennie, F. (2020). A Study of the Relationship Between Students' Engagement and Their Academic Performances in an Elearning Environment. *E-Learning and Digital Media, 17*(1), 1–20. https://doi.org/10.1177/2042753019882567

Suryanti, Arifin, I. S. Z., & Baginda, U. (2018). The Application of Inquiry Learning to Train Critical Thinking Skills on Light Material of Primary School Students. *Journal of Physics: Conference Series, 1108*(1), 1–7. https://doi.org/10.1088/1742-6596/1108/1/012128

Uğur, N. G., & Turan, A. H. (2019). Critical professional skills of MIS graduates: Practitioner vs. Academician perspectives. *Journal of Education for Business, 94*(4), 251–258. https://doi.org/10.1080/08832323.2018.1522291

Wale, B. D., & Bishaw, K. S. (2020). Effects of Using Inquiry-Based Learning on EFL Students' Critical Thinking Skills. *Asian-Pacific Journal of Second and Foreign Language Education, 5*(1), 1-14. https://doi.org/10.1186/s40862-020-00090-2

Woods-McConney, A., Wosnitza, M., & Sturrock, K. L. (2016). Inquiry and Groups: Student Interactions in Cooperative Inquiry-Based Science. *International Journal of Science Education, 38(*5), 842–860. https://doi.org/10.1080/09500693.2016.1169454

Yang, L., & Mohd, R. B. S. (2020). The Relationship Between Critical Thinking and the Community of Inquiry Model: a Quantitative Study Among EFL University Students in China. *International Journal of Adolescence and Youth, 25*(1), 965–973. https://doi.org/10.1080/02673843.2020.1814359