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REVIEW

Socio Scientific Issue Approach to Enhance Critical Thinking Skills: A Prisma Systematic Literature Review

Enfoque Sociocientífico Para Mejorar las Habilidades De Pensamiento Crítico: Una Revisión Sistemática de la Literatura de Prisma

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ABSTRACT

The purpose of this project is to explore the Social Scientific Issues (SSI) method to enhance students' critical thinking skills. The Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) served as the basis for a systematic literature review, which aimed to determine how SSI and the development of critical thinking skills are related. SSI is a cutting-edge educational program that links social issues, science, and decision-making. The capacity to study, evaluate, and understand data in a comprehensive, impartial, and methodical manner is known as critical thinking. A learning environment that is appropriate to the cultural and environmental context of students can be built using the SSI method. This research review suggests that the SSI approach can help students develop their critical thinking skills by engaging them in solving environmental problems and hot topics. Students' understanding of the relationship between science and society is also expanded when they become aware of existing environmental issues. The findings of this literature review demonstrate the value of SSI-based learning strategies in preparing students to become critical, analytical, and creative thinkers who can address complex problems in the industrial age 5.0.

Keywords: Socio Scientific Issues; Critical Thinking Skill; PRISMA.

RESUMEN

Este estudio tiene como objetivo explorar el enfoque de Cuestiones Científicas Sociales (SSI) para mejorar las habilidades de pensamiento crítico de los estudiantes. La revisión sistemática de la literatura se basa en los Elementos de Informe Preferidos para Revisiones Sistemáticas y Metaanálisis (PRISMA) para comprender la relación entre SSI y el desarrollo de habilidades de pensamiento crítico. SSI es un aprendizaje innovador que conecta la ciencia, las cuestiones sociales y la toma de decisiones. Las habilidades de pensamiento crítico son la capacidad de analizar, evaluar e interpretar la información en profundidad, de manera objetiva y sistemática. A través del enfoque SSI, se puede crear un entorno de aprendizaje que sea relevante para el contexto cultural y ambiental de los estudiantes. Esta revisión de la literatura revela que el enfoque SSI puede mejorar las habilidades de pensamiento crítico de los estudiantes a través de la participación en la solución de problemas relacionados con problemas ambientales y cuestiones actuales que se están discutiendo ampliamente. El conocimiento de los problemas ambientales a los que se enfrentan también amplía la comprensión de los estudiantes sobre la relación entre la ciencia y la sociedad. Los resultados de esta revisión de la literatura resaltan la importancia de un enfoque de aprendizaje basado en SSI para preparar a los estudiantes para convertirse en individuos capaces de pensar de manera crítica, analítica y creativa para enfrentar los complejos desafíos de la era industrial 5.0.

Palabras clave: Cuestiones Sociocientíficas; Capacidad de Pensamiento Crítico; PRISMA.

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INTRODUCTION

The development and policy of education in Indonesia continues to grow and change over time along with the needs of society and the world of work. Currently, we are entering the era of Industry 5.0 which emphasizes close collaboration between humans and machines such as artificial intelligence (AI) and critical thinking skills as important skills in the era of industry 5.0. The ideal critical thinker can be characterized not only by his cognitive skills but also by how he approaches life and living in general.[1]

Solving challenges in daily life requires the use of critical thinking abilities. The ability to think critically is crucial because it allows one to solve issues rationally, think critically, and make logical judgments about what to believe or do.[2] The process of actively and skillfully developing coherent arguments from the conceptualization, application, analysis, synthesis, or evaluation of data gathered via observation, experience, reflection, reasoning, or communication as a foundation for decision-making is known as critical thinking.[3]

Through practice applying scientific concepts and principles in scenarios that are comparable to those they will face as citizens of a scientific society, SSI-based learning improves students' educational experiences.[4] The Social Science Initiative (SSI) is a strategy that aims to stimulate intellectual, ethical, and moral development, as well as understanding of the link between science and social life. The SSI also encourages kids to think critically and solve problems.[5] Utilizing the SSI method for education has the potential to enhance students' capacity for critical thinking.[6] As a result, pupils may develop poor critical thinking abilities if the education they receive is devoid of significance and relevance to their everyday lives. The educational procedures that do not make use of the surrounding environment as a learning resource and that fail to integrate the ideas that are being studied are one of the factors that contribute to the lack of critical thinking abilities that students possess. The consequence of this is that the relationship between the ideas that are acquired and the actual occurrences that occur in the environment around them is not realized.[7]

By creating courses that are relevant, educators may create learning experiences that foster critical thinking abilities. One way to teach this material is through a scientific social issues method, in which students are given local environmental problems or topics to examine, debate, and solve. Students' lack of experience with real-world problems is the reason for their poor critical thinking abilities. The poor PISA results of Indonesian children (OECD, 2023) suggest that children around the age of 15 lack 21st-century capabilities, such as higher order thinking skills (HOTS), problem-solving abilities, and critical thinking. Lack of critical thinking abilities is ascribed to education that is disconnected from the social concerns and difficulties in the students' surroundings.[8]

It is possible to improve students' thinking and problem-solving abilities by applying the SSI method, which takes into account relevant social issues to make learning more meaningful.[9] One strategy to enhance students' learning outcomes is to help them develop their critical thinking abilities (Susilawati et al., 2020). Students who possess critical thinking abilities are more equipped to tackle practical, scientific, and societal issues. Students must also be able to solve issues and make the appropriate choices in order to function well in the business and in daily life.[3]

According to the description given above, pupils' poor critical thinking abilities have been highlighted as the issue. The purpose of this study is to provide an overview of the literature on the SSI learning strategy for improving students' critical thinking abilities. Understanding the problems relating to pupils' critical thinking abilities requires knowledge of this study. It is anticipated that the research findings would reveal how well the SSI learning technique affects students' critical thinking abilities.

METHOD

Systematic Literature Review (SLR) is the methodology that was utilized in this research project. The Systematic Literature Review (SR) is a method that may be utilized to synthesize scientific data in order to provide answers to specific research questions in a manner that is both transparent and reproducible. This method seeks to incorporate all of the published information on the subject matter while also evaluating the quality of the evidence.[10] In order to provide an answer to a specific research question or hypothesis, the purpose of a systematic review is to locate all of the empirical data that satisfies the inclusion criteria that have been predetermined.

During the process of examining articles and all of the information that is available, bias may be reduced by employing procedures that are both explicit and methodical. This will result in the production of credible results that can be utilized for drawing conclusions and making choices.[11] Planning search methods for data and/or information sources, choosing studies based on quality evaluation using eligibility criteria and quality assessment tools, and synthesis and extraction of data are all activities that are included in the activities.

The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) literature review search approach was employed in this study. Finding information sources is the first phase in the process. This search's information sources are aided by the Google Scholar program. This search employs keywords to find papers that are indexed in Sinta 1, Sinta 2, and Scopus."Scientific Social Issues (SSI)" and "Critical Thinking Skills."

The next stage involves eligibility criteria. The eligibility criteria in this study use inclusion criteria. The inclusion criteria for article searches include: (1) articles about the SSI approach to improve critical thinking skills; (2) publication years ranging from 2019 to 2024; (3) publications in journals indexed in Sinta 1, Sinta 2, and Scopus; (4) full text and open access; (5) publications not in the form of seminar or conference papers. The systematic literature review uses the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) method. The PRISMA flow diagram can be seen in figure 1.[12]

Based on the PRISMA method, a comprehensive search yielded 113 articles indexed in Sinta 1, Sinta 2, and Scopus from the title keywords "socio-scientific issues/SSI/isu sosial ilmiah." Subsequently, using the title keywords "Critical Thinking Skills Students/ keterampilan berpikir kritis," 58 articles indexed in Sinta 1, Sinta 2, and Scopus were produced. After filtering the articles within the range from 2019 to 2024, 32 articles indexed in Sinta 1, Sinta 2, and Scopus were identified. This was followed by the data synthesis stage.

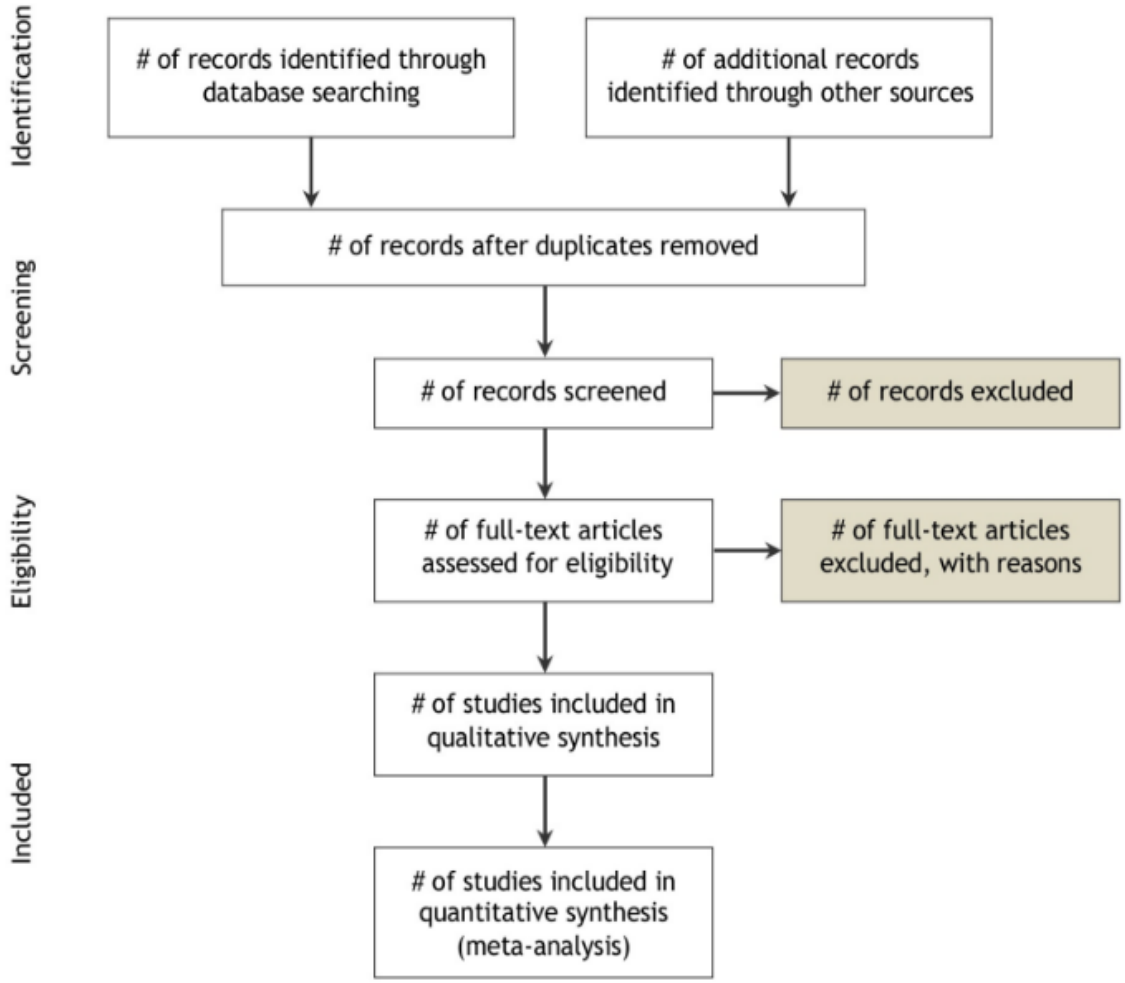


Figure 1. Research Method Flow Chart [12]

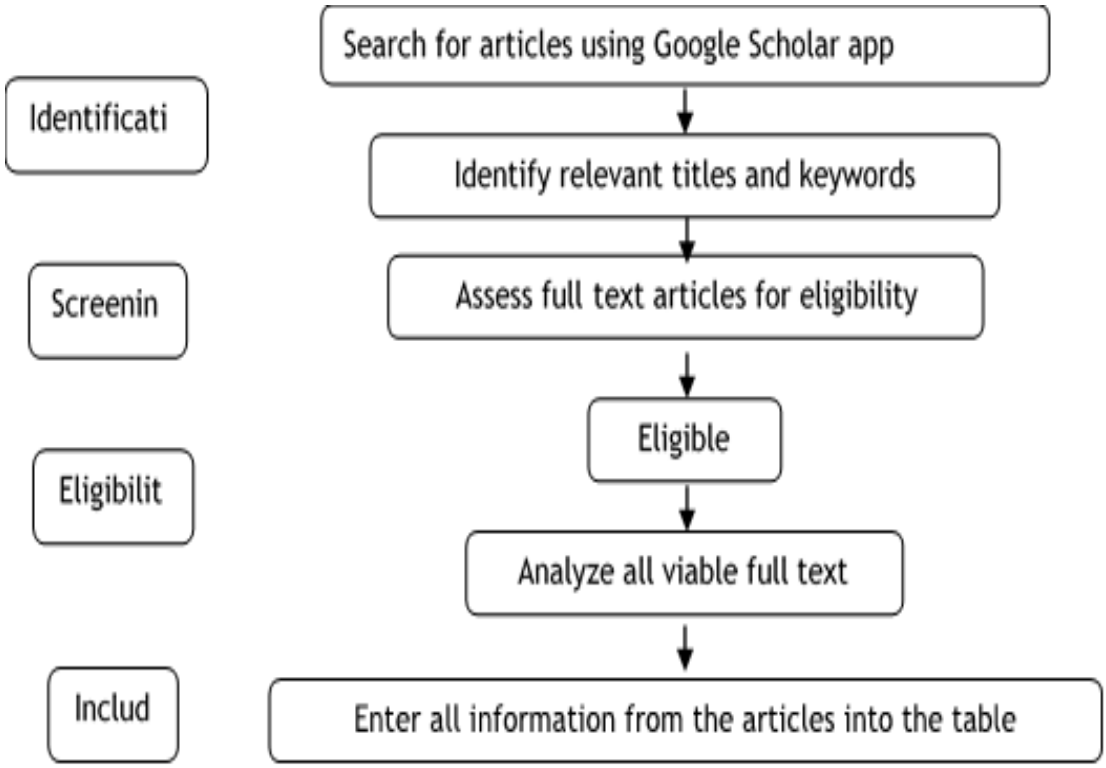


Figure 2. Research Method Flow Chart adapted from [12]

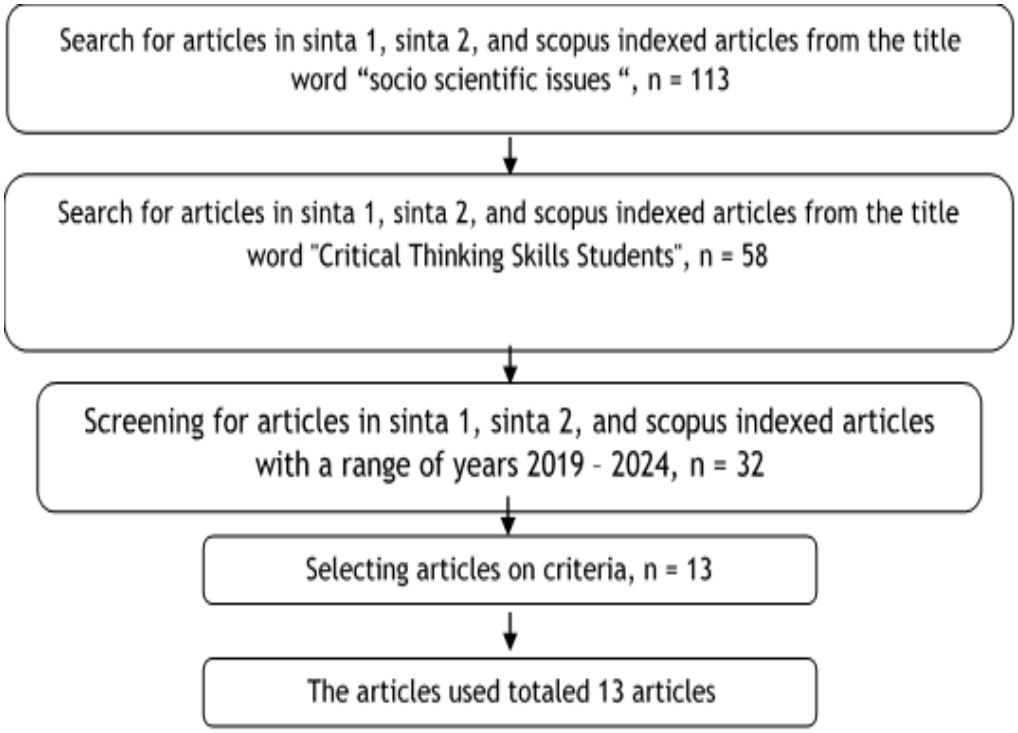


Figure 3. Article Screening Chart

RESULTS

The results of the research data presented in this literature review consist of articles related to problem-based learning with a socio-scientific issues approach to enhance students' critical thinking skills, as shown in table 1. These skills include core skills, soft skills, work-related skills, essential skills, generic skills, and 21st-century skills. Critical thinking skills encompass several abilities such as: listening skills, careful reading, identifying and determining underlying assumptions, and being confident in actions based on solid knowledge (Noel & Parker, 1986).

Socio-Scientific Issues provide students with the opportunity to practice thinking like scientists when they face social difficulties that arise in daily life by training students to conduct independent investigations and develop critical thinking skills in the decision-making process.[13] Concerns pertaining to socioscience play a significant part in providing students with a variety of abilities and in imparting a sense of moral development.[14] With the pros and cons of science concerns and social issues in the community, SSI learning makes education successful in elements of daily life, stimulating students' interest about contentious subjects that are present in everyday life.[15]

Higher-order thinking skills include critical thinking skills (also known as analytical thinking). In addition, critical thinking may be understood as the process of enhancing one's capacity to assess and evaluate information, define questions, and develop conclusions that are logical.[16] The ability to assess or evaluate something, analyze arguments, draw conclusions through inductive and deductive reasoning, and make judgments or solve issues are all examples of talents that fall under the category of critical thinking. Skills in critical thinking are vital for students because they allow them to quickly recognize reliable facts and information, give focus for improved learning, and be sensitive to circumstances that may arise in the practical world.[17]

Students may reap enormous benefits from developing their critical thinking abilities, particularly when it comes to the process of problem-solving in the context of scientific inquiry.[18] children should begin developing their critical thinking abilities as early as elementary school, since this is a component of practice and habituation. abilities are fundamentally something that can be learned, thus it is crucial that children begin developing these skills at this age. Instruction is a method that may be utilized to improve the critical thinking abilities of pupils. Students have to be instructed, over the course of their study, on how to recognize significant links between concepts that are expressed in proportionate forms, as well as how to discover correlations between knowledge and practice.[16]

Through socio-scientific issues present in the students' environment, these can be raised or examined more deeply as learning materials or topics. The integration of SSI has the potential to provide students with opportunities to critically examine and evaluate scientific information and engage in debates and decision-making.[19]

Socio scientific issue Socio-scientific issues (SSI) are real, unresolved, complex, andcontroversial problems, they are linked to the close relation-ship between science, technology, and society and can beconsidered from different perspectives.[20] Low critical thinking skills are due to students not daring or being accustomed to expressing their arguments or opinions, teachers providing insufficient space for students to explore, limited use of media and learning modules, and suboptimal classroom management. In this regard, teachers are required to be innovative in creating a classroom atmosphere and creative in using media and learning resources that align with the social issues relevant to students, in order to motivate them in learning and encourage critical thinking.

Table 1. Article Data

Writer	Method	Title	Finding
[21]	Qualitative	Critical thinking in the making: students' critical thinking practices in a multifaceted SSI project	Students engage in constructive discussion as an essential component of critical thinking (CT) practice. During this type of discourse, students express their opinions, build on one other's ideas, and examine the contributions of their peers. When students are challenged to interpret and evaluate texts and pictures, which fosters the practice of CT during group and class discussions, the involvement of the instructor is crucial and plays a significant role.
[22]	Kuasi-eksperimental desain pretest-posttest	Promoting students' critical thinking and scientific attitudes through socio-scientific issues-based flipped classroom	Based on the findings of the research, it can be concluded that the FCM-SSI model has a substantial impact on the scientific attitudes and critical thinking abilities of students. The results of this study also indicate that the component of students' thinking skills that has the most influence is the analytical aspect, while the side that has the least influence is the interpretation aspect.
[23]	Quasy experimental postest only control group design	Socioscientific Issues (SSI) in Reaction Rates Topic and its Effect on the Critical Thinking Skills of High School Students	Students' capacity for critical thinking is significantly impacted by the use of socioscientific issues (SSI) as a learning setting. This is especially true for students in high school. Students are encouraged to engage in more active discussion and debate in order to develop their critical thinking abilities through the use of this learning application, which involves problematic problems that occur as a result of the feature of SSI.
[24]	Quantitative one-group pretest-posttest design.	The Effectiveness of Science E-Magazine of Socioscientific Issues-Based Inquiry Model to Improve Critical Thinking Skill of Junior High School Students	For the purpose of enhancing the critical thinking abilities of students in the eighth grade, it has been determined that the science learning device that is based on socio-scientific concerns and is supported by electronic magazines is viable (valid, practical, and effective). Students at SMP Negeri 1 Pamekasan provide feedback on the content concerning additives and drugs that are addictive.
[25]	A quasi-experimental method	Implementation of the Socio-scientific Issues Approach with the Investigative Group Learning Model to Improve Students' Critical Thinking Skills on Environmental Change Materials	Making pupils more engaged in their own education is the goal of this project. It is possible to motivate and empower students to actively analyze the strengths and weaknesses of science in their lives by employing the SSI approach that is relevant to the students' day-to-day life.
[26]	Quantitative research design	Interactive Socio-Scientific Inquiry: The Effects on Creative Thinking Skills	There is a correlation between the Interactive Socio-Scientific Model and the creative thinking abilities of students in relation to materials that are associated with environmental change. Following the implementation of learning based on the ISSI model, there was an increase in the markers of innovative thinking.
[27]	A systematic literature review	Socio-Scientific Issues (SSI) Approach Implementation in Science Learning to Improve Students' Critical Thinking Skills: Systematic Literature Review	Students' capacity for critical thinking may be improved by the use of the SSI approach in the context of scientific education. It is possible to implement the SSI methodology in a variety of learning paradigms, including problem-based learning, group investigation, and problem-solving.
[19]	Quantitative One-Group pre-test post-test design	The Effectiveness of Problem Based Learning (PBL) Based Socioscientific Issue (SSI) to Improve Critical Thinking Skills	Critical thinking abilities may be effectively improved through the use of SSI-based project-based learning. According to the findings of this study, the SSI learning model, which is based on PBL, has the potential to be an innovative solution and alternative as well as a means of improving critical thinking abilities.
[28]	Quantitative research using a quasi-experimental design	The Effect of the Problem-Based Learning (PBL) Model in the The Effect of the Problem-Based Learning (PBL) Model in the Context of Socio-Scientific Issues (SSI) on Critical Thinking Ability on Digestive System Material	It is possible to draw the conclusion, on the basis of the findings of the data analysis, that the problem-based learning (PBL) model, when used within the framework of socio-scientific issues (SSI), has an impact on the critical thinking abilities of students in the subject matter of the digestive system.
[29]	Quasi-experimental design	The Effect of Biotechology Module with Problem Based Learning in the Socioscientific Context to Enhance Students' Socioscientific Decision Making Skills	. In accordance with the PBL syntax, it has been shown that students are capable of recognizing and deciding the socio-scientific decision making that is based on justifiable reasoning.

[30]	Design and development approach.	Development of Critical and Creative Thinking Skills Instruments Based on Environmental Socio-Scientific Issues	Through the use of socio-scientific environmental concerns, this study was able to effectively construct a valid and reliable instrument model for evaluating critical and creative thinking skills.
[31]	Descriptive method	Analysis of students critical thinking skills in socio-scientific issues of biodiversity subjec	The findings of the study suggest that there is still room for improvement in the critical thinking abilities of students through the use of more efficient learning methodologies.
[5]	True eksperimen	"Application of the Problem-Based Learning Model Based on Socio-Scientific Issues (SSI) on the Critical Thinking Skills of Middle School Students."	The implementation of the problem-based learning paradigm, which is centered on socio-scientific challenges, has a substantial impact on the critical thinking abilities of students in middle school.

DISCUSSION

Article 1, written by Kolstø[21], analyzes students' critical thinking practices in the context of an interdisciplinary project focused on socio-scientific issues (SSI), specifically a climate project conducted in an 8th-grade classroom in Norway. Using a qualitative approach, the researchers collected data from field notes, video recordings of classes, and audio recordings of group discussions. The results indicate that although critical thinking instruction was not explicit, the teaching strategies employed by two teachers successfully increased student participation in critical thinking. Students engaged in interpreting, analyzing, evaluating, and inferring information, though often based on mixed knowledge and assumptions. This research highlights the importance of dialogue in creating a classroom culture that supports critical thinking practices.

Article 2, written by Sugrah[22], intends to assess how middle school students' critical thinking abilities and scientific attitudes are affected by the flipped classroom model integrated with socio-scientific issues (FCM-SSI), as well as identifying any changes in these areas following the intervention. This study used a pretest-posttest quasi-experimental design. 182 middle school students made up the sample; they are split into two groups: one that uses FCM-SSI for experimentation and the other that follows standard instruction. Tests of scientific mindset and critical thinking abilities were used to gather data, which were then subjected to MANOVA and ANOVA analysis. With a significance value of 0,000 < 0,05, the analysis findings demonstrate that the FCM-SSI model significantly influences students' scientific attitudes and critical thinking abilities. Analysis is the most important component of critical thinking abilities, and openness is the most important scientific attitude.

Article 3, written by Pratiwi[23], intends to examine how students who learn collaboratively in various learning situations differ in their critical thinking abilities, particularly when it comes to socio-scientific problems (SSI) in reaction rate content. A quasi-experimental approach was used in this study, and the control group was limited to posttests. The experimental class (n = 30) was taught using the SSI context, whereas the control class (n = 30) was not taught using this context. These two equivalent courses were chosen as examples. With a reliability of r = 0,765, the research tool was a test consisting of 16 multiple-choice questions that were created using Ennis's critical thinking markers. SPSS was used to analyze the data using a t-test. Critical thinking abilities in the two groups differ significantly, according to the analysis's findings (Asym. Sig = 0,037). Compared to the control class (60,04), the experimental class's average score (73,96) is greater.

Article 4, written by Rika Dyanita Sari[24], intends to utilize science e-magazines with a socio-scientific issues-based learning paradigm to improve middle school students' critical thinking abilities. This study used a single group pretest-posttest design. sixteen pupils in the eighth grade from SMP 1 Pamekasan. through critical thinking assessments, observation, validation, and answer surveys. Middle school pupils' critical thinking abilities have been found to be enhanced by the use of socio-scientific issues-based science e-magazines. This study suggests that more learning resources be created to improve students' critical thinking abilities.

Article 5, written by Jariah & Aminatun[25], intends to investigate how students' critical thinking abilities in relation to environmental change content are affected when a socio-scientific problems approach is combined with a group investigation learning model. The experimental class's average pre-test and post-test scores rose by 15,86, compared to 8,62 for the control group. The control class's N-Gain was 0,20 (low category), but the experimental class's was 0,33 (middle category). A substantial difference between the two groups was shown by the t-test findings, which revealed p = 0,008. It has been demonstrated that the socio-scientific problems approach combined with the group investigation learning model is more successful than traditional teaching techniques at developing students' critical thinking abilities. The results of this study emphasize how crucial it is to use learning techniques that are applicable to students' daily lives in order to improve their critical thinking skills and level of engagement.

Article 6, written by Indriani & Jayanti[26], intends to investigate how Indonesian high schools' tenth-grade students' capacity for creative thought is affected by the Interactive Socio-Scientific Inquiry (ISSI) methodology. Although their application in different institutions is still being questioned, creative thinking abilities are thought to be crucial to the learning process. Sixty students served as research participants in this quantitative study. Essay exams were used to gather information on creative thinking abilities, and ANCOVA and descriptive statistics were used for analysis.

The findings show that pupils who were taught using the ISSI paradigm had improved creative thinking abilities. After the intervention, the experimental class's average pre-test score rose from 66,70 to 91,40, whereas the control class's improved from 64,63 to 80,93. The ISSI model has a beneficial impact on the development of creative thinking abilities, according to the ANCOVA results, which demonstrated significance < 0,05. Students' ability to think creatively on environmental change materials is effectively enhanced by the Interactive Socio-Scientific Inquiry paradigm. According to this study, using the ISSI model in biology classes can improve students' motivation and capacity for original thought.

Article 7, written by Dusturi[27], seeks to improve students' critical thinking abilities by examining how the socio-scientific issues

(SSI) method is applied in science education. In the 21st century, critical thinking abilities are crucial, especially while studying science. A systematic literature review is the approach taken. From January 2016 to December 2022, the researchers gathered articles from the Sinta database. Only 10 of the 301 articles that were identified satisfied the requirements, and five of them underwent further thorough analysis. According to the analysis's findings, using the SSI technique can help students become more adequate at critical thinking. Global warming, biodiversity, environmental pollution, and environmental change are among the topics covered in the course materials. The SSI technique may be used in a variety of learning paradigms, including group investigations, problem-based learning (PBL), and problem-solving. Students' critical thinking abilities have improved when the SSI approach has been used in scientific classes. When discussing complicated social topics, this study suggests employing SSI as a teaching strategy to boost student engagement and critical thinking.

Article 8, written by Fita[19]. This research evaluates the effectiveness of Problem Based Learning (PBL) model based on Socioscientific Issues (SSI) in improving critical thinking skills of seventh-grade students at SMP Negeri 4 Lamongan. Using a pre-test and post-test design, this research involved two classes with 15 students each. Data was collected through critical thinking skills tests and student response questionnaires. The analysis results showed that SSI-based PBL was effective in improving critical thinking skills, with significant N-gain improvement, as well as very positive student responses. This research concludes that this learning model can be an innovative solution to improve students' critical thinking skills.

Article 9, written by Aisy[28] This research explores the influence of Problem Based Learning (PBL) model in the context of Socio-Scientific Issues (SSI) on students' critical thinking abilities in digestive system material. Using a quasi-experimental design, two classes from SMP N 2 Subah were involved: the experimental class (VIII A) implemented PBL with SSI context, while the control class (VIII C) used PBL without SSI context. The results showed that the experimental class experienced a significant improvement in critical thinking ability, with an average N-Gain value of 0,628, higher than the control class which reached 0,4154. T-test showed a significant difference ($p < 0,05$) between the two classes. The effect size obtained was also in the high category (1,1659), indicating that the integration of SSI in PBL learning was effective in improving students' critical thinking abilities.

Article 10, written by Nurtamara[29]. This research aims to train students' socioscientific decision-making skills through a Problem-Based Learning (PBL) biotechnology module. Using a quasi-experimental design, two science classes were tested: one experimental class using the PBL module and one control class using textbooks. Results showed that the average post-test score for socioscientific decision-making skills in the experimental class (82,80) was higher than the control class (62,32), with normalized gain values of 0,745 and 0,434 respectively. ANCOVA analysis showed significant differences between the two classes (F-value = 25,54). The PBL module proved effective in improving students' decision-making skills, supported by well-structured arguments.

Article 11, written by Mulyono[30]. This research aims to develop an instrument model for critical and creative thinking skills based on environmental socio-scientific issues. Through a design and development approach, researchers conducted needs analysis and tested the validity and reliability of the instrument on 277 pre-service science teachers from three universities in Indonesia. The results showed that the developed instrument has good content validity (Aiken score 0,84) and reliable reliability (Composite Reliability 0,89). Confirmatory factor analysis showed that the instrument model fits with field data, making it suitable for effectively measuring critical and creative thinking skills in an educational context.

Article 12, written by Santika[31]. This research analyzes students' critical thinking skills in socio-scientific issues related to biodiversity. Using a descriptive method, the research subjects were first-year high school students with data collection through interviews and open-ended questions. Results showed that students' critical thinking skills were in the low to medium category, with the "questions asked" indicator being very low, while "assumptions" were categorized as high. These findings indicate the need for more effective learning activities to develop students' critical thinking skills in the context of social and scientific issues.

Article 13, written by Utomo[5]. This research examines the implementation of a problem-based learning model based on socio-scientific issues (SSI) on critical thinking abilities of junior high school students. The method used was true experiment with a pretest-posttest control group design. The sample consisted of two classes, VII A as control and VII B as experiment, with analysis results showing a significance value of 0,023 ($p < 0,05$). Results showed that the applied learning model had a significant influence on improving students' critical thinking abilities. This research concludes that SSI-based problem-based learning can effectively increase student engagement and critical thinking abilities.

Socio-scientific issues (SSI) based learning has proven effective in improving students' critical thinking skills across various educational levels. This is supported by various studies showing significant improvements in post-test scores and N-gain values in experimental groups using the SSI approach compared to control groups using conventional methods. The dialogue and group investigation approach in the SSI context creates a classroom culture that supports critical thinking development. Although critical thinking instruction is not always explicit, appropriate teaching strategies have successfully increased student participation in critical thinking practices, including interpretation, analysis, evaluation, and inference of information.

The implementation of SSI is also effective when integrated with modern learning media such as science e-magazines. The use of these media along with SSI contexts helps increase student engagement and their understanding of complex social issues. However, some studies have also identified that students' critical thinking skill levels still vary, with some aspects such as "questioning ability" still falling in the low category. This indicates the need for developing more comprehensive learning strategies to improve all aspects of critical thinking skills.

CONCLUSIONS

Critical thinking skills are one of the higher-order thinking skills. Critical thinking skills are essential for students to possess, as

they enable students to effectively solve social, scientific, and practical problems. There are challenges in students' critical thinking skills, namely the difficulty in making meaning of learning activities that have not been integrated with real life and have not been connected to real problems being faced. Through the implementation of the SSI learning approach, students' critical thinking skills can be improved by habituating students to study social issues in their surrounding environment, thus enabling students to develop critical thinking skills that can be used in daily life and benefit their future lives.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Fitriyani, Idam Ragil Widianto Atmojo, Sri Yamtinah.
Data curation: Fitriyani, Idam Ragil Widianto Atmojo, Sri Yamtinah.
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Research: Fitriyani, Idam Ragil Widianto Atmojo, Sri Yamtinah.
Methodology: Fitriyani, Idam Ragil Widianto Atmojo, Sri Yamtinah.
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