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Improving Primary School Students Critical Thinking Abilities with the Help of Online Media: Effective Learning Strategies in Elementary Schools

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Abstract. The lack of adequate emphasis on developing primary school students' critical thinking skills in the curriculum is a problem that requires special attention with the help of online media. Integrating critical thinking concepts into the curriculum can help elementary school students develop the analytical and evaluative skills necessary to understand social reality. The main aim of this research is to analyse the effectiveness of online learning methods, especially in the context of online media use among elementary school students. The research method used is mixed research which combines quantitative and qualitative approaches. The number of respondents was 98 elementary school students. Data collection techniques include surveys, interviews, observation and documentation. Data analysis was carried out using SPSS version 26.0 software to simplify and manage the data. The research results show that the majority of elementary school students have good analysis, synthesis, problem solving and drawing conclusions skills, but there is still room for improvement. In conclusion, online media is effective in improving elementary school students' critical thinking skills. The implication is that collaboration between educators, educational institutions and related parties is very necessary to support the optimal development of students' critical thinking skills.

Keywords: Critical Thinking; Elementary School; Online Method

1. Introduction

In critical thinking, learning at elementary school level is important to develop with the help of online media (Thorndahl & Stentoft, 2020; Liyanage et al., 2021). Critical thinking is an ability that is really needed by elementary school students in carrying out the learning process (Amin et al., 2020). By thinking critically, students will be able to produce a more in-depth, logical and objective analysis of every problem they face. But unfortunately, not all elementary school students have good critical thinking skills. This is caused by several factors, including a lack of understanding of the concept of critical thinking, a lack of critical thinking training, and a lack of support from teachers or educational institutions in developing students' critical thinking skills in learning (Liu & Pásztor, 2022). Apart from that, it is also necessary to pay attention to the role of the tools used in delivering lessons to elementary school students, namely online media which is in accordance with current developments and is easily accepted by elementary school students with the hope of improving the critical thinking skills of all elementary school students who take part in the learning (Pinto & Leite, 2020; Shwartz-Asher et al., 2022; Shwartz-Asher et al., 2022; (Lumbantoruan & Manalu, 2024). Online media such as learning management systems are digital platforms used by universities to simplify the learning process, but for elementary schools, online media such as Google Class, Google Drave, Teams, Google Meeting and other media are needed which can develop elementary school students' critical thinking skills. With the help of the teacher in directing students to open Google Class and provide assignments which can be easily accessed by students, discuss with teachers and classmates, and do online assignments which can stimulate students' critical thinking abilities. However, the use of online media in developing students' critical thinking skills is still not optimal. Some schools still do not fully utilize online media features to train students' critical thinking skills. Apart from that, there are still some teachers who are not used to or do not understand how

to integrate the use of online media with the development of critical thinking skills. Therefore, there needs to be better efforts from schools, teachers and students themselves to overcome these problems. Schools need to provide better training regarding the concept and importance of critical thinking in education (Styers et al., 2018; (Karaca-Atik et al., 2023). Teachers need to be more active in teaching and training their students to think critically, both inside and outside the classroom. Students also need to be more proactive in developing their critical thinking skills. They need more practice in analysing, explaining and evaluating information obtained, both from books and internet sources (Zulkifli et al., 2020; Cort et al., 2020). With better efforts from various parties, it is hoped that elementary school students' critical thinking abilities can improve significantly. This will have a positive impact on students' success in completing their studies, as well as their ability to face challenges in the increasingly complex world of education. Therefore, discussion regarding the background of critical thinking problems in school student learning is very important to continue to pay attention to and improve.

1.1. Problem Statement

The problem of critical thinking in school students' learning is increasingly becoming a major concern in educational institutions throughout the world (Dekker, 2020). This is due to the importance of critical thinking skills for elementary school students in learning social sciences, mathematics and natural sciences in dealing with various complex problems in the educational environment and in the community environment (Tobón & Luna-nemecio, 2021). However, the implementation of learning that encourages critical thinking is still not evenly distributed in various educational institutions. The facts show that 67% of the 85 students surveyed had very low critical thinking skills (Liu & Pásztor, 2023). In the survey, students were also asked about the media used in learning and 67% stated that the media used in learning was still minimal. One solution that can be done is to utilize online media as a learning platform that can help students develop critical thinking skills (Nind & Katramadou, 2023). With online media, students can access learning materials, discuss with classmates, and do assignments that require analysis and problem solving. However, the challenge faced is how to increase the effectiveness of using online media in developing critical thinking in elementary school students. A deep understanding of how to integrate social and scientific concepts in online learning is required, as well as appropriate guidance from subject teachers to encourage students to think critically independently (Marougkas et al., 2023; Van den Beemt et al., 2020). Apart from that, the role of schools in providing adequate support and facilities for learning critical thinking is also very important. Schools need to realize that critical thinking is the key to student success in facing future challenges, so there needs to be investment and commitment to continue developing learning methods that encourage critical thinking (John Lemay et al., 2021; John Lemay et al., 2021). In the context of elementary school students, it needs to be understood that critical thinking skills are not only needed in the academic world but also in everyday life. By thinking critically, students can become individuals who are analytical, critical, and able to evaluate objectively the various information they receive (John Lemay et al., 2021). Therefore, elementary school students need to continue to train and hone their critical thinking skills through various available learning methods, both inside and outside the classroom. That way, they are able to become agents of change who are able to make positive contributions to society and the nation. Many elementary school students are not yet able to think critically about the various educational problems they face at school (Tommasi et al., 2023). The factors that cause the lack of critical thinking are the lack of use of learning methods that encourage students to think critically, the lack of awareness of the importance of critical thinking in understanding various social phenomena, students' ignorance of critical thinking techniques, the absence of special training to develop critical thinking skills in subjects, lack of teacher support in improving students' critical thinking skills, lack of literature and regular references about critical thinking in Social Sciences subjects, there is not enough emphasis on developing critical thinking skills in the Social Sciences curriculum, students' inability to distinguish valid information and invalid. There is no collaboration between schools and other institutions to train elementary school students' critical thinking skills (Noah & Abdul Aziz, 2020). Another factor is that there has been no development of special modules or programs to improve elementary school students' critical thinking skills. Lack of incentives or rewards for elementary school

students who are able to think critically. Lack of training for elementary school teachers in developing students' critical thinking skills. Elementary school students' inability to make strong and logical arguments. There is no learning that encourages students to ask critical questions. There is no special training for students in critically analysing the material provided by the teacher (Kasneci et al., 2023).

1.2. Related Research

Several previous studies have highlighted the importance of critical thinking in the learning of social sciences, mathematics and natural sciences in elementary school students (Mahayothee et al., 2020). Critical thinking is the ability to question, evaluate, and interpret information critically. Research shows that critical thinking skills are important to help elementary school students develop a deep understanding of various concepts and theories in the social sciences, basic mathematics and natural sciences taught in elementary school (Uliyandari et al., 2021). Apart from that, the use of online media such as Google Class and Google Drive is also a topic that is often discussed in the context of basic education which is used by students to obtain assignments and information given by teachers to students (Ziraba Godwill Chenyuei Akwene Atabong nee Alemanjoh Mariana Nkea Shiynsa Charles Lwanga American et al., 2020). Online media such as Google Class is an online platform that allows teachers and students to interact, access learning materials, and carry out other learning activities. Several studies have found that using Google Class can increase learning effectiveness and facilitate collaboration between teachers and students (Elzainy et al., 2020). Elementary school students are also a research subject that is often raised, especially in the context of online media-based learning (Al-Mamary, 2022). Previous research has also highlighted the importance of actively involving students in the learning process and providing them with opportunities to develop primary school students' critical thinking skills by paying attention to supporting and inhibiting factors (Production et al., 2021). Apart from that, research excellence also shows that students can feel more motivated and directly involved and think critically by finding the right online method in elementary school and knowing where students' difficulties lie when using online media as a learning aid. Overall, previous research has provided valuable insight into how critical thinking, online media use, and students' roles in learning may relate to and influence each other. However, it does not show the solution that must be implemented. So this research is different from previous research by knowing the effectiveness of using online media in elementary school students' critical thinking, educators are able to design learning well at the start.

1.3. Research Objectives

Research objectives in the context of the importance of critical thinking in elementary school students. The main aim of this research is to analyse the effectiveness of online learning methods, especially in the context of using online media for elementary school students. By conducting a comparative study between the use of traditional learning methods, this research aims to provide a deeper understanding of the benefits and challenges of integrating critical thinking concepts in using online media during online learning.

2. Theoretical Framework

2.1. Critical thinking

In theory, critical thinking is a very important ability in understanding social sciences, natural sciences and mathematics. Critical thinking allows individual students to analyse information deeply and critically in the lessons they are facing at school (Mao et al., 2022; Barta et al., 2022). In learning social sciences in elementary schools, critical thinking is considered the main key to understanding and studying complex social phenomena and online media plays a very important role in developing students' critical thinking skills in obtaining the information they are reading (Alfalah, 2023). Online media such as Google Class provides an online learning platform that allows students to interact with lesson material independently and collaboratively with teachers and students (Cantabella et al., 2019). With online media, students can access various learning resources, discuss with classmates, and do assignments independently. This provides an opportunity for students to build their critical thinking skills through problem solving,

critical analysis, and evaluating information. Schools also have a very important role in developing critical thinking skills in elementary schools. Through a carefully designed curriculum, schools can ensure students receive learning materials that encourage them to think critically. In addition, an academic environment that stimulates intellectual discussion and critical analysis can also improve students' critical thinking abilities (Thorndahl & Stentoft, 2020). Elementary school students themselves also have a very important role in developing critical thinking skills. They need to have motivation and independence in deepening their understanding of social sciences and science (Cohen et al., 2020; Batanero & Álvarez-Arroyo, 2023).

2.2. Online media

In online media which is used as a tool to convey learning, elementary school students are required to read diligently, follow the latest developments, and actively discuss with classmates and teachers. Students must be able to hone their critical thinking skills well with the help of online media (Mahayothee et al., 2020; (Haryadi & Pujiastuti, 2022). Therefore, online media is the foundation for students to think critically and plays a very important role in learning at the elementary school level. Through online media such as Google Class, schools and their active role in honing critical thinking skills can continue to be developed and improved so as to produce graduates who are able to study social phenomena critically and in depth (Davy Tsz Kit et al., 2022; Cheung et al., 2021). The research gap on critical thinking indicates an urgent need to better understand and address the challenges faced in developing students' critical thinking skills. Although critical thinking is recognized as an important skill in understanding complex social phenomena, there are several gaps that need to be addressed. First, the lack of adequate literature and critical thinking references in Social Sciences subjects is an obstacle in developing a deep understanding of this topic. The limited availability of literature can limit the understanding and application of critical thinking concepts in the context of Social Sciences. Therefore, further research is needed to fill this gap and provide a strong theoretical basis. Second, students' inability to differentiate between valid and invalid information is also a challenge that needs to be overcome. In this fast and complex information era, the ability to critically evaluate the information received is very important. Further research could help identify effective learning strategies to improve students' ability to sort relevant and accurate information (Patricia Aguilera-Hermida, 2020; (De Paor & Heravi, 2020). Apart from that, the lack of emphasis on developing critical thinking skills in the Social Sciences curriculum is also a problem that needs attention. Integrating critical thinking concepts into the curriculum can help students develop the analytical and evaluative skills necessary to understand social reality. Research regarding the implementation of a curriculum that supports the development of critical thinking with the help of online media can provide valuable insight into the educational development of elementary school students (Gever et al., 2021; (González-pérez & Ramírez-montoya, 2022).

3. Method

3.1. Research Design

Mixed research methods Research, also known as mixed research, combines quantitative and qualitative approaches in one study to provide a more comprehensive understanding of the phenomenon under study (Mikalef et al., 2019; Petticrew et al., 2013). In the context of elementary school students' critical thinking, a mixed approach can provide in-depth insight into the factors that influence elementary school students' critical thinking abilities, effective learning strategies, as well as evaluation of the use of online media such as Google Classroom in improving critical thinking abilities. Quantitative approaches in mixed research can be used to measure the extent of students' critical thinking abilities, identify factors that contribute to these abilities, and evaluate the effectiveness of learning methods in improving critical thinking abilities. Quantitative data can be obtained through surveys and tests to measure variables related to critical thinking.

3.2. Respondent

The research subjects were 98 elementary school students studying social sciences, natural sciences and mathematics. The 98 students consisted of 50 male students and 48 female students. All students are taken from the same level. In the interview session, the number of students interviewed was 30 people by random selection and the number of students surveyed and directly observed was 98 people in 3 classes.

3.3. Data Collection

Data collection techniques in this research used surveys, interviews, direct observation and documentation. In surveys, researchers develop instruments based on research indicators. Instruments are prepared and given to resource persons for assessment. The instrument is given accompanied by an assessment rubric. The survey was assessed using a Likert point scale of 1 to 5. Meanwhile, the following data was obtained through direct interviews with 30 students. Data is also obtained by directly observing students in the ongoing learning process in subjects. In observation, research records everything that the researcher sees. The final stage in data collection is collecting all documentary evidence that intersects with other data. The following are the indicators that form the basis for preparing the instrument.

Table 1. Research Indicators

No	Indicator	Instrument Section	Number of Items
1	Critical Thinking Social Science Lessons	1. Analysing Ability 2. Synthesis Ability 3. Problem Solving Ability 4. Ability Concluding, and 5. Evaluating Ability	22 Items
2	Use of online media/Google Class Room	1. User Interface (UI) 2. Online Registration 3. Students and teachers must register first so that Google Classroom stores a database of their usage. 4. Online Classes. 5. Online Tests, Quizzes or Exams 6. Discussion Room 7. Reports.	44 Items
3	Barriers and difficulties for social science students	External factors and internal factors. The main obstacles come from external factors, namely school factors, family factors, and facilities and infrastructure, especially the internet network, which is often unstable or poor.	30 Items

3.4. Data Analysis

Data analysis techniques using SPSS version 26.0 are an effective way to simplify and manage data obtained from surveys (Kinslow et al., 2020). In the data analysis process, several important stages need to be carried out, including data reduction, data collection, conclusion, and coding. First of all, the data reduction stage is carried out to simplify the data obtained so that it is easier to interpret. This is done by cleaning the data from irrelevant or outlier values, combining variables that are related, and formulating new variables that are more informative. Data reduction is an important stage because it will facilitate the subsequent analysis process. Then, the data collection stage is carried out to obtain the data needed for analysis. Next, the stage of concluding is carried out to interpret the results of the analysis that has been carried out. Finally, the coding stage was carried out to group the data into categories or variables that could be calculated and analysed using SPSS version 26.0 software. The survey data that has been analysed is formed in a bar chart, and the results of surveys, interviews, observations, and documentation are combined to look at the intersecting data. The sliced copy data is the data interpreted in this research.

3.5. Validity

In the context of critical thinking skills research, validity plays an important role in establishing the credibility and relevance of research findings. First, the KR-20 (Kuder-Richardson 20) was used to assess item reliability, which indicates the internal consistency of the items. This measure of reliability helps ensure that the questions effectively measure cognitive factors related to critical thinking skills. In addition, this research considers the suitability of the data with the Rasch Model, thereby further increasing the validity of the research results. In addition, this research prioritizes the content validity of research items by evaluating the suitability of questions in measuring critical thinking abilities. By focusing on the relevance and accuracy of test questions, research aims to increase the validity of research results. Next, statistical analysis, such as identifying root mean square values and conducting item function tests, was carried out to ensure the validity of the data and findings.

4. Findings

The following are the results and findings of the research based on Surevi's quantitative data

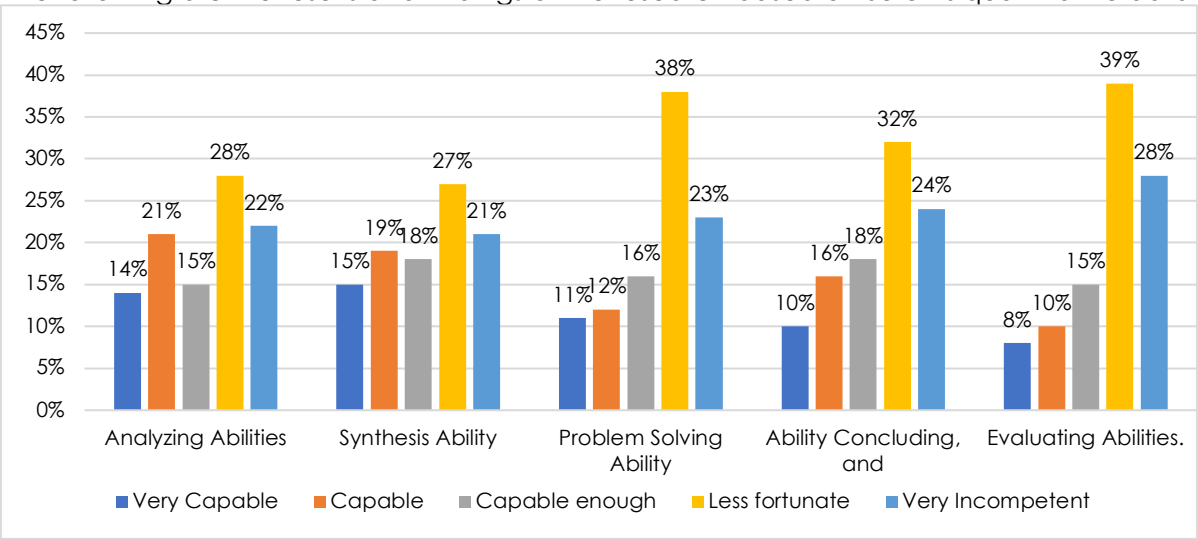
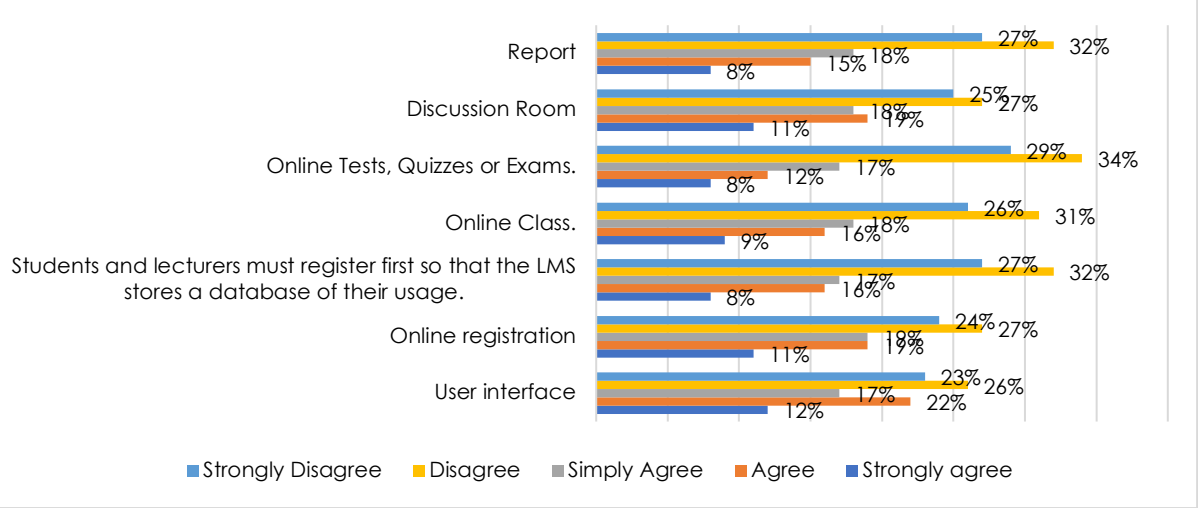


Figure 1. Critical Thinking Process in Learning

Figure 1 depicts the distribution of critical thinking abilities among elementary school students in various areas such as analytical abilities, synthesis abilities, problem solving abilities, and the ability to conclude and evaluate. The percentages assigned to each category provide insight into elementary school students' level of proficiency in their critical thinking skills. It can be seen that the majority of students fall into the "Very Able" and "Able" categories in various critical thinking abilities. This shows that a large number of elementary school students demonstrate



strong analytical, synthetic, problem-solving and conclusion-drawing skills in the context of social sciences, natural sciences and mathematics education. However, there are also percentages allocated to categories such as "Moderately Competent", "Lagging", and "Very Incompetent", indicating that there is still room for improvement in certain areas of critical thinking skills among students. Overall, Figure 1 provides a comprehensive picture of the distribution of critical thinking skills among students, highlighting strengths and areas that may require further development. This visualization can guide educators and institutions in designing targeted interventions and learning strategies to effectively improve students' critical thinking abilities in the field of science.

Figure 2. Use of Online Media in Learning

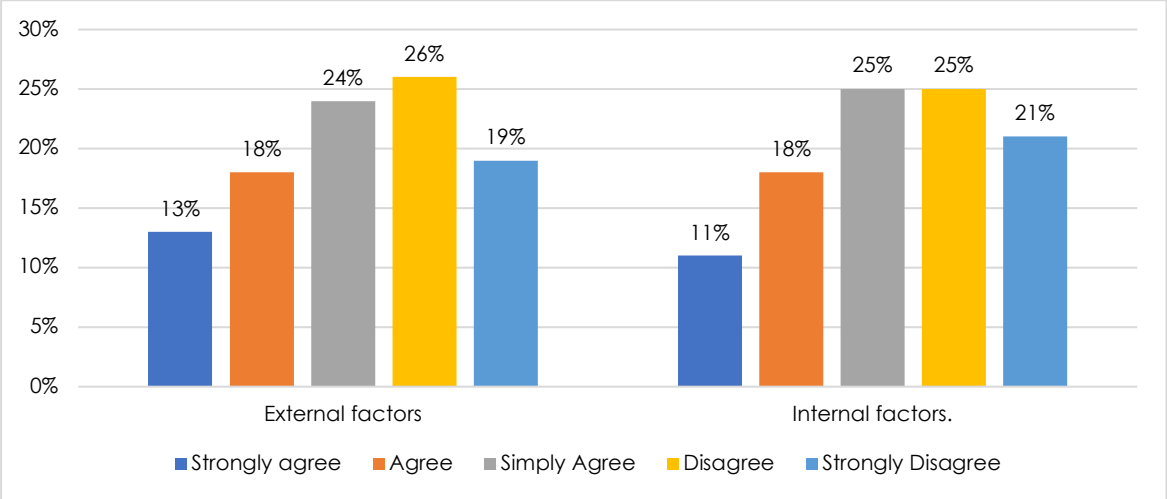


Figure 3. Obstacles and Difficulties of Elementary School Students

Table 2. Interview Coding Results

No	Indicator	Interpretation Results
1	Critical Thinking Social Science Lessons	Analysing Ability (Ability to Analyse) Interview results show that the majority of students show quite good analytical skills. They can break down complex information into smaller parts for better understanding. However, there is a small number of students who still need to improve their analytical skills. They may have difficulty identifying relationships between different concepts or ideas. Synthesis Ability From the interview results, it appears that the majority of students have good synthesis abilities. They can combine information from various sources to make coherent conclusions. However, some students still need more practice in integrating various ideas into a consistent whole. Problem Solving Ability (Ability to Solve Problems) Most students show good abilities in solving problems. They can identify problems, formulate resolution strategies, and evaluate the solutions they propose. However, some students may need more guidance in developing more effective problem-solving strategies. Ability Concluding (Ability to Conclude) Interview results show that students tend to have good abilities in concluding information. They can summarize the essence of a material or argument clearly and concisely. However, some students may need more practice in forming more in-depth and relevant conclusions. Evaluating Ability From the interview results, it appears that the majority of students have good abilities in evaluating

		information. They can criticize arguments, assess the reliability of sources, and form opinions based on critical analysis. However, some students need more practice in developing more in-depth and systematic evaluation skills. Google Classroom User Interface plays an important role in the student learning experience. The interview results showed that most students found the online media user interface easy to use and intuitive. A clean design and clear navigation can help students access learning materials more efficiently. However, some students may need more guidance or training to take advantage of the features. Online Registration The online registration process on Google Classroom is an important first step for students and teachers. With online registration, you can store user data to track their learning activities. The interview results showed that the majority of respondents felt that the online registration process ran smoothly and efficiently. Storing a Database for Use The importance of registration for students and teachers to store user data in the database in Google Class Room is emphasized. In the interview results, users who are well recorded, Google Class Room can provide useful information regarding the learning activities of elementary school students and teachers. This can help evaluate the effectiveness of learning and provide more targeted feedback
2	Use of online media/Google Class Room	Online Class is one of the main features that allows students to access learning materials flexibly. Interview results show that the majority of students feel that online classes provide learning opportunities that are more accessible and adaptable to their schedules. However, some students may need more direct interaction with teachers and fellow students to improve the quality of online learning. Online Tests, Quizzes or Exams Online tests, quizzes or tests are an effective way to measure students' understanding and abilities in subjects. Interview results show that the majority of students feel that online exams provide a fair and transparent assessment experience. The online discussion room provides a forum for students to interact, share ideas and discuss learning material. Interview results show that the majority of students consider the discussion room to be a useful place to collaborate with fellow students and gain a deeper understanding of a particular topic. Reports produced by online media such as Google Classroom can provide valuable information regarding student learning progress and teacher teaching effectiveness. Interview results show that most students feel that the reports generated by Google Classroom help them track their learning progress and identify areas that need improvement.
3	Barriers and difficulties for social science students	External factors such as school factors, family factors, as well as facilities and infrastructure, especially internet networks which are often unstable or poor, are the main obstacles in developing students' critical thinking skills. Interview results show that some students experience difficulties in accessing the necessary learning resources due to limited facilities on campus or at home. Apart from that, an unstable or poor internet network is also a serious obstacle in carrying out online learning which requires a reliable internet connection

		School environmental factors, such as a lack of adequate learning resources, limited access to libraries or laboratories, and lack of support from the school, can affect students' ability to develop critical thinking skills. Interview results showed that some students felt that the school environment did not support improving critical thinking skills due to a lack of necessary facilities and resources. Family factors also have a significant influence on the development of students' critical thinking skills. Some students may face challenges in getting support and motivation from their families to learn and develop critical thinking skills. The interview results show that factors such as family economic conditions, parental education level, and home learning environment can influence students' motivation and ability to hone critical thinking skills. Facilities and Infrastructure Limited facilities and infrastructure, especially related to unstable or poor internet networks, are a serious obstacle in the student learning process. Students who have difficulty accessing the internet may experience problems participating in online learning, accessing digital resources, or participating in online discussions. Interview results show that improving infrastructure and better access to technology can help overcome these barriers and improve the quality of student learning.

Table 3. Observation Coding and Documentation

No	Indicator	Interpretation Results
1	Critical Thinking Social Science Lessons	From the results of observations and documentation regarding critical thinking skills in learning, several findings are as follows: Analysing Ability: The majority of students show fairly good analytical skills. They can break down complex information into smaller parts for better understanding. However, some students still need to improve their analytical skills. They have difficulty identifying relationships between different concepts or ideas. Synthesis Ability: From the results of observations, most students have good synthesis abilities. They can combine information from various sources to make coherent conclusions. However, some students still need more practice in integrating various ideas into a consistent whole. Problem Solving Ability: Most students show good ability in solving problems. They can identify problems, formulate resolution strategies, and evaluate proposed solutions. However, some students may need more guidance in developing more effective problem-solving strategies. Ability to Infer: The results of observations and documentary evidence show that students tend to have good abilities in concluding information. They can draw conclusions based on the analysis they do.
2	Use of online media/Google Class Room	Online Registration: The importance of registration for students and teachers to store user data in Google Classroom. Emphasized in the results of observations and documentary evidence, with well-recorded user data, online media such as Google Classroom can provide useful information regarding student learning activities and teacher performance. Online classes such as Google Class Room are one of the main features that allow students to access learning materials flexibly.

		The majority of students feel that online classes provide learning opportunities that are more accessible and fit their schedules. Online Exams, Quizzes, or Tests: Online exams, quizzes, or tests are an effective way to measure a student's understanding and ability in a subject. The discussion room in Google Classroom provides a forum for students to interact, share ideas, and discuss learning material. The majority of students consider the discussion room to be a useful place to critically collaborate with fellow students. The reports generated by Google Classroom can provide valuable information about student learning progress and the teaching effectiveness of other students who are not in class. Critical Thinking Skills Analysis: The majority of students demonstrate fairly good analytical skills in understanding complex information. However, a small number of students still need to improve their analytical skills, especially in identifying relationships between different concepts or ideas.
3	Barriers and difficulties for social science students	Synthetic Critical Thinking Skills: Most students have good synthesis skills in combining information from various sources to make coherent conclusions. Problem Solving Ability: The majority of students demonstrate good ability in solving problems by identifying problems, formulating strategies, and evaluating solutions. Inference Ability: Observation results and documentary evidence show that students tend to have good abilities in inferring information based on the analysis they carry out.

5. Discussion

In Figure 1 the visualization of critical thinking in elementary school students' learning presents a comprehensive picture of the main components and processes involved in developing critical thinking skills in students. The results of Figure 1 can illustrate the interconnected nature of critical thinking, highlighting elements such as problem solving, analysis, evaluation, and decision making in an educational context. By illustrating these components of critical thinking, Figure 1 emphasizes the importance of developing elementary school students' ability to think critically and applying these skills to real-world scenarios. This finding is in line with previous findings in (This et al., 2020; This et al., 2020; (Al Shloul et al., 2024). The visualization will likely serve as a guide for educators and institutions to design effective teaching strategies and curricula that encourage critical thinking in education. Meanwhile, in Figure 2, which focuses on the use of online media such as Google Class Room and other media in the context of elementary school education, the visualization most likely displays various features and functions of Google Class Room that can improve students' learning experiences. This image perhaps highlights how the Google Classroom platform provides opportunities for interactive learning, access to resources, collaboration between students, and independent learning. By visualizing the integration of online media in elementary education, Figure 2 highlights the role of technology in facilitating the development of critical thinking and increasing student engagement in Social Sciences courses. Educators can leverage insights from these images to optimize the use of online tools and create a more dynamic and interactive learning environment for students. This finding is in line with previous research, that the appropriate use of online media in elementary schools has a significant impact on increasing critical thinking (Tommasi et al., 2023; Al Shloul et al., 2024). Figure 3 explores the obstacles and difficulties students face in developing their critical thinking skills. This visualization likely identifies external factors, university-related challenges, and family influences that hinder students' ability to develop critical thinking skills. By illustrating these barriers, Figure 3 highlights the barriers students face in their academic journey and emphasizes the importance of overcoming these challenges to support student growth and development. Educators and institutions can use insights from this figure to implement strategies that reduce these barriers and create

conducive learning environments that foster critical thinking skills among Social Sciences students. Meanwhile, Table 2 presents the results of interview coding, offering a detailed analysis of qualitative data collected from interviews with students or educators. This table may categorize and code responses to identify recurring themes, insights, and perspectives related to critical thinking in Social Studies education, the findings of which are consistent with (Tommasi et al., 2023; Sovacool et al., 2018).

By presenting the results of interview coding in a structured format, Table 2 provides a comprehensive overview of the qualitative data and allows for a deeper understanding of the factors that influence the development of critical thinking among students. Table 3 focuses on coding observations and documentation, providing a systematic analysis of observational data and documented evidence related to critical thinking in the education of elementary school students. These findings categorize observations, notes, and documentation to identify key patterns, trends, and findings that contribute to understanding the practical aspects of developing elementary school students' critical thinking in the classroom. By looking at the observation data in Table 3, education can gain valuable insights regarding the implementation of teaching strategies, student involvement, and learning outcomes in education that can be done by overcoming difficulties and obstacles both from within the school and from the online media used. This is in line with previous research which states that students can improve their critical thinking by preparing the material well and choosing the online media used in teaching students (Samadun & Dwikoranto, 2022; Priatna et al., 2020). Deeper understanding of the factors that influence critical thinking skills, the role of technology in education, and its positive impact on the development of elementary school students' knowledge. These insights can inform the design of effective teaching strategies, curriculum enhancements, and support mechanisms to empower Social Studies students with the critical thinking skills necessary for success in their academic endeavours.

The implications of this research are very important in the context of elementary school education, especially in developing critical thinking skills in Social Sciences students. The integration of online media such as Google Classroom in learning can improve the quality of learning by providing useful information regarding student learning activities and teacher performance, as well as helping monitor and improve student learning experiences. This research highlights the importance of problem-based learning approaches in improving students' conceptual understanding and critical thinking skills, indicating that learning approaches that encourage the development of critical thinking skills need to continue to be improved to ensure students can face complex challenges. The systematic review highlights important 21st century skills for graduates' sustainable career development, by strengthening critical thinking skills students can be better prepared to face changes and challenges in the world of education. By understanding the importance of critical thinking skills, teachers can design more effective teaching strategies to facilitate the development of these skills in students, improving the quality of teaching and learning in basic education environments.

6. Conclusion

In conclusion, it is important to note that the research results show that the majority of elementary school students have demonstrated good abilities in analyzing, synthesizing, solving problems, and inferring information. However, there is still room for improvement in some aspects, especially in integrating ideas more consistently and drawing stronger conclusions. Therefore, learning approaches that encourage the development of critical thinking skills need to continue to be improved to ensure students can face complex challenges in society more effectively. Apart from that, the use of online media such as Google Classroom in the learning context also shows several important findings. Online registration at Ceiling is considered important for storing student and teacher user data. With well-recorded user data, it can provide useful information regarding student learning activities and teacher performance in elementary schools. This shows that integration can provide significant benefits in monitoring and improving students' learning experiences in subjects. In the context of developing critical thinking skills, research highlights the importance of a problem-based learning approach in improving students' conceptual understanding and critical thinking abilities. Apart from that,

the use of learning methods such as concept mapping has also proven effective in developing students' critical thinking abilities and dispositions. Therefore, learning approaches that encourage active interaction, reflection, and problem solving can be key in improving students' critical thinking abilities in subjects. Regarding the obstacles and difficulties faced by elementary school students, internal and external factors can influence their ability to develop critical thinking skills. Factors such as the school environment, family, facilities and infrastructure, especially unstable internet networks can become obstacles in the learning process. Therefore, educators and educational institutions need to pay attention to these factors and find appropriate solutions to support the development of students' critical thinking skills.

Limitation

Although this research provides valuable insight into the development of critical thinking skills in science students through online integration, several limitations need to be noted. First, this study may be limited in geographic coverage and population sample, so the generalizability of the findings may be limited to a particular context and may not be widely applicable. Second, the use of research methods that are limited to certain quantitative and qualitative approaches can limit a comprehensive understanding of the complexity of developing students' critical thinking abilities. In addition, limited resources and time can also affect the depth of analysis and interpretation of the data obtained. Third, this research may not have fully considered external factors that can influence the development of critical thinking skills, such as social, cultural, or economic environmental factors that can play a role in students' learning processes. Fourth, this research may not have fully explored individual differences in responding to educational integration in the development of critical thinking skills, so it cannot provide an in-depth understanding of student diversity in the learning context. Finally, limited accessibility of certain data or information can also affect the completeness of the analysis and interpretation of research findings.

Recommendation

Based on the findings of this research, several recommendations can be proposed to improve the development of critical thinking skills in elementary school students through the integration of online media such as Google Classroom and effective learning strategies. First, elementary schools need to increase investment in teacher training to develop the ability to design and implement learning strategies that encourage students' critical thinking abilities. Teachers need to be encouraged to utilize technology, including Google Classroom or LMS used by universities, optimally to support problem-based learning and develop critical thinking skills. Second, there needs to be collaboration between teachers and online media managers to continue to monitor and evaluate the effectiveness of the learning process with the help of media. Regular evaluation of online media use can provide valuable input for improving learning content and interactions in virtual environments for elementary school students. Third, it is important to integrate problem-based learning approaches more widely in educational curricula to strengthen students' conceptual understanding and critical thinking abilities. By providing real challenges that are relevant to the social context, students can develop critical thinking skills more holistically.

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Conflict of Interest

In writing this research report and publication, there were no conflicts of interest.

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