



Unlocking The Potential of Inquiry: A Systematic Literature Review on Enhancing Science Literacy of Elementary School Students

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Abstract

This study aims to analyze the effectiveness of the inquiry learning model in improving the science literacy of elementary school students, considering the importance of science literacy in the era of globalization and the concerning state of science literacy among Indonesian students. The research method used is Systematic Literature Review (SLR) with data from Google Scholar through the use of Publish or Perish (PoP) software within the years 2017-2022. This study identifies and analyzes 15 relevant articles to answer three main research questions: (1) how does the inquiry learning model affect the improvement of students' science literacy, (2) what factors influence the effectiveness of the inquiry learning model, and (3) how can the implementation of the inquiry learning model be optimized in elementary schools. The results of the study indicate that the inquiry learning model has a positive influence on improving students' science literacy. Supporting strategies such as scaffolding and the use of appropriate learning media have proven to increase the effectiveness of the inquiry model. Additionally, focusing on the development of specific skills and integration with other learning models also plays an important role. To optimize the implementation of the inquiry model, this study recommends the use of scaffolding, relevant learning media, and integration with other learning strategies. A guided inquiry approach is also emphasized as an effective method. This research is expected to make a significant contribution to the development of more effective and relevant science learning strategies in Indonesia. This research provides both theoretical clarity and practical guidance to enhance science literacy in Indonesian elementary schools through effective inquiry-based strategies.

Keywords: Inquiry, Systematic Literature Review, Science Literacy

INTRODUCTION

In the increasingly complex era of globalization, science literacy has become a crucial ability for students to understand the relationships between everyday events, technology, and scientific concepts (OECD, 2013). Science literacy, as defined by PISA 2006, encompasses the ability to use scientific knowledge to identify problems, draw evidence-based conclusions, and make decisions related to science and its impact on life (Rusilowati, 2018). Recognizing the urgency of science literacy, science education aims to instill this ability in students from the elementary school level (DeBoer, 2000; Sultan et al., 2021). With strong science literacy, students are expected to develop a deep sense of curiosity, practice questioning skills, and find solutions to problems using a scientific

approach (Bellová et al., 2021). This approach becomes an important foundation in shaping a generation ready to face global challenges.

The PISA 2018 results provide a concerning picture of Indonesian students' science literacy, with an average score of 396, placing Indonesia 71st out of 78 participating countries (OECD, 2019). This score is far below the OECD country average, indicating that the majority of Indonesian students have not reached the minimum proficiency level in science literacy. Additionally, there are significant performance gaps based on socio-economic background and gender, where students from disadvantaged backgrounds and male students tend to have lower scores. This data underscores the urgency to improve the overall quality of science education in Indonesia, so that Indonesian students can compete effectively at the global level.

The implementation of the inquiry learning model is believed to be an effective effort to improve the quality of learning. This model encourages students to actively engage in the learning process, from asking questions, designing experiments, to drawing conclusions based on available evidence. Wenning (2006) emphasizes that inquiry skills are a crucial element in the development of science literacy, as students are encouraged to think critically and analytically. This is in line with Sani's (2019) view, which asserts that the inquiry learning model focuses on the investigation process, allowing students to explore the material in depth. Furthermore, Abidin (2014) also highlights the importance of a student-centered learning approach, where the inquiry model provides space for students to be more independent and creative in understanding learning concepts. Thus, this model offers a relevant approach to creating a more effective and meaningful learning process."

This research problem focuses on the effectiveness of the inquiry learning model in improving the science literacy of elementary school students. The main questions posed include: (1) How does the implementation of the inquiry learning model affect the improvement of students' science literacy? (2) What factors influence the effectiveness of the inquiry learning model in this context? (3) How can the implementation of the inquiry learning model be optimized in the context of science learning in elementary schools? This research aims to provide a deeper understanding of how the inquiry model can be implemented effectively to improve students' science literacy, as well as to identify the factors that contribute to its success.

Previous research has revealed that the inquiry learning model has great potential in improving students' science literacy. Anderson (2002) states that the inquiry approach allows students to be directly involved in the scientific discovery process, thereby strengthening their understanding of concepts in depth. Crawford (2007) highlights that inquiry-based learning not only encourages students to explore scientific knowledge but also fosters critical thinking skills that are crucial in the era of globalization. Furthermore, Hmelo-Silver, Duncan, and Chinn (2007) assert that the success of inquiry learning heavily relies on the support and guidance of teachers, who act as facilitators in helping students face challenges during the investigation process. These findings indicate that



inquiry is an effective learning model for developing both science literacy and students' critical thinking skills. Consequently, the synthesis of these studies underscores the necessity of designing learning environments that actively engage students in scientific inquiry, moving away from passive information reception. Moreover, the consistent emphasis on teacher facilitation across these findings highlights the crucial role of professional development in equipping educators with the skills to effectively implement inquiry-based pedagogies.

Although the inquiry learning model shows significant potential, there are still gaps in research, particularly regarding its application at the elementary school level in Indonesia. Research on this model is still limited, and the factors that influence its effectiveness have not been comprehensively identified. Joyce, Weil, and Calhoun (2009) emphasize the importance of adapting learning models to students' contexts, so that their implementation can be more relevant and successful. Additionally, Hmelo-Silver, Duncan, and Chinn (2007) highlight that identifying the supporting and inhibiting factors of inquiry learning effectiveness is a crucial aspect. Anderson (2002) also emphasizes that the successful implementation of this model requires a deep understanding of how students learn. This indicates the need for further research to strengthen the theoretical and practical basis of inquiry learning, so that it can be optimally applied in elementary schools. Furthermore, research by Liliasari (2001) highlights the critical need to adapt science education in Indonesia to foster critical thinking and inquiry skills, aligning with global demands for science literacy. Additionally, studies by Taufik (2017) on the implementation of inquiry-based learning in Indonesian elementary schools reveal that cultural and contextual factors significantly influence the model's effectiveness, necessitating localized strategies for successful implementation. In summary, the existing research underscores the urgent need for context-specific studies to refine and adapt the inquiry learning model for effective implementation in Indonesian elementary schools, addressing both theoretical gaps and practical challenges.

This research aims to fill these gaps by analyzing the influence of the inquiry learning model on improving the science literacy of elementary school students in depth. Specifically, this research will focus on three main objectives: (1) to analyze the influence of the inquiry learning model on improving the science literacy of elementary school students, (2) to identify the factors that influence the effectiveness of the inquiry learning model in improving the science literacy of elementary school students, and (3) to provide recommendations on the effective implementation of the inquiry learning model in the context of science learning in elementary schools. Thus, this research is expected to make a significant contribution to the development of more effective and relevant science learning strategies in Indonesia.

METHODS

The research methodology used in this article is Systematic Literature Review (SLR). SLR is a method for identifying, evaluating, and interpreting all relevant research on a research question or topic area being studied (Calderon & Ruiz, 2015). SLR is also defined



as the process of identifying, assessing, and interpreting all available research evidence to answer specific research questions (Kitchenham et al., 2009). SLR research is conducted to identify, evaluate, and interpret all relevant research results related to specific research questions, topics, or phenomena (Kitchenham, 2004). This research is conducted systematically by following the rules of the literature review process to avoid subjective understanding biases.

This research uses a qualitative research type with a Systematic Literature Review (SLR) design. The SLR design was chosen because it allows researchers to comprehensively analyze previous studies related to the research topic, thus producing a valid and reliable synthesis of knowledge. The data used in this study is sourced from the Google Scholar scientific publication database through the use of Publish or Perish (PoP) software with a maximum result limit of 200 articles within the years 2017-2022. The criteria for the analyzed articles are: 1) discussing the inquiry learning model; 2) science literacy; 3) the application of the inquiry learning model in improving the science literacy of elementary school (SD) students. The data obtained is limited to the period 2017-2022. The data collection technique in this study is documentation study. Researchers searched for scientific articles on Google Scholar using keywords relevant to the research topic. After finding articles that meet the inclusion criteria, researchers selected and extracted data from these articles. Data analysis in this study was conducted using thematic analysis techniques. Researchers identified, coded, and categorized themes that emerged from the analyzed articles. Furthermore, researchers synthesized and interpreted these themes to answer the research questions.

The steps for conducting an SLR according to Vanessa Gaffar (2020) include: (1) planning, (2) data collection, (3) analysis, and (4) synthesis. The explanation for each step is as follows:

1. **Planning:** This stage is the initial stage in SLR, where researchers formulate clear and specific research questions. Researchers also determine search keywords relevant to the research topic and develop a research protocol that includes article inclusion and exclusion criteria. At this stage, it is important to determine the time limits for the publication of the articles to be analyzed. It is also important at this stage to determine the sources for literature searches, such as the Google Scholar database, etc.
2. **Data Collection:** This stage involves searching for scientific articles in scientific publication databases using the determined keywords. Researchers select articles based on the inclusion and exclusion criteria set out in the research protocol. After the articles are selected, researchers extract data relevant to the research questions. At this stage, researchers must document every step of the data collection process to ensure transparency and reproducibility of the research.
3. **Analysis:** This stage involves analyzing the data collected from the selected articles. Researchers identify, code, and categorize themes that emerge from the data. Analysis can be conducted using thematic analysis techniques or other analysis techniques



appropriate to the type of data. At this stage, it is important to ensure that the analysis is conducted systematically and objectively.

4. **Synthesis:** This stage is the final stage in SLR, where researchers synthesize and interpret the identified themes. The aim of the synthesis is to answer the research questions formulated in the planning stage. Researchers present the synthesis results in the form of narratives, tables, or graphs, as needed. At this stage, researchers can also provide recommendations for further research based on the synthesis results. The research process flow can be seen in Figure 1 as follows:

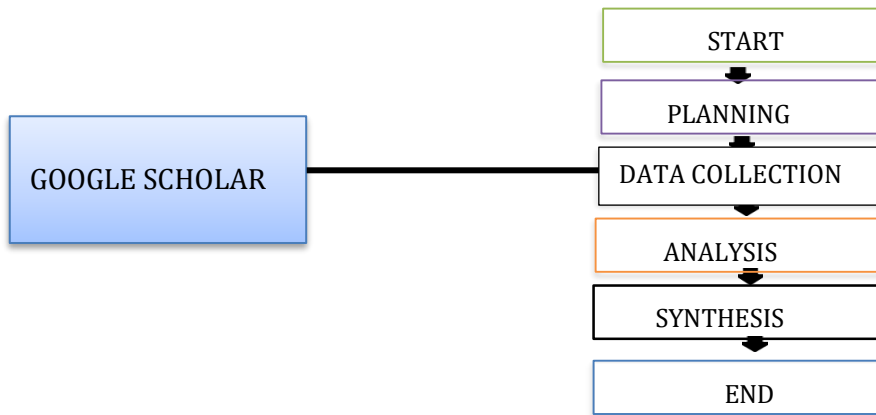


Figure 1. Research Process Flow

RESULTS AND DISCUSSION

According to Shoimin (2014:85), the inquiry learning model is a series of learning activities that emphasize student activity in having learning experiences in discovering material concepts based on presented problems. Meanwhile, according to Wardoyo (2013), inquiry learning is an activity that involves critical and analytical thinking processes to seek and find answers to faced problems using various information sources as support. In the stages of inquiry learning, students need adequate knowledge to master the concepts. Once the concepts are mastered, skills become the next most important thing, namely critical, analytical, and logical thinking skills. The inquiry learning method is one effective approach to improve students' science literacy. Inquiry learning encourages students to actively participate in the learning process by asking questions, formulating hypotheses, conducting experiments, and drawing conclusions based on obtained data. This is in line with the results of previous research that examined the influence of the inquiry learning model in improving students' science literacy.

The results of the literature review conducted by the researchers are systematically described as follows:

Stage 1: Planning

Planning is a process that begins with setting goals, determining strategies, and formulating a comprehensive planning system to integrate and achieve goals (Robbins & Coulter, 2010).

The planning stage in a systematic literature review involves forming a review panel, presenting research questions (RQs) to be answered through the literature review, and developing a review protocol. This initial stage also involves developing the review questions and method plan. The Research Questions (RQs) developed in this study are as follows:

1. RQ1: How does the implementation of the inquiry learning model affect the improvement of students' science literacy?
2. RQ2: What factors influence the effectiveness of the inquiry learning model in this context?
3. RQ3: How can the implementation of the inquiry learning model be optimized in the context of science learning in elementary schools?

Stage 2: Data Collection

The data collection stage in a systematic literature review involves comprehensive searches, including database selection with keyword combinations, inclusion or exclusion criteria, and a complete list of articles with keywords based on the research question, search string, search development, and advanced search to obtain accurate results in the database. Data extraction in this study was conducted through the Google Scholar search engine.

Based on searches on Google Scholar using PoP with the keywords inquiry learning model, science literacy, and inquiry implementation in elementary schools, with a time frame of 2017-2022, researchers found 200 articles that matched these keywords. The articles found with the keywords were then screened, and some articles were removed due to duplicate titles and the unavailability of full-text articles, resulting in 84 articles. Subsequently, abstract screening was conducted to identify topics, research objectives, findings, or implications containing the keywords. The resulting 38 articles were then reviewed for their relevance to answering the research questions and assessed for quality. Articles deemed unsuitable in terms of quality or criteria were removed, resulting in a final set of 15 articles for this review. The article data collection process is illustrated in Figure 2 as follows:



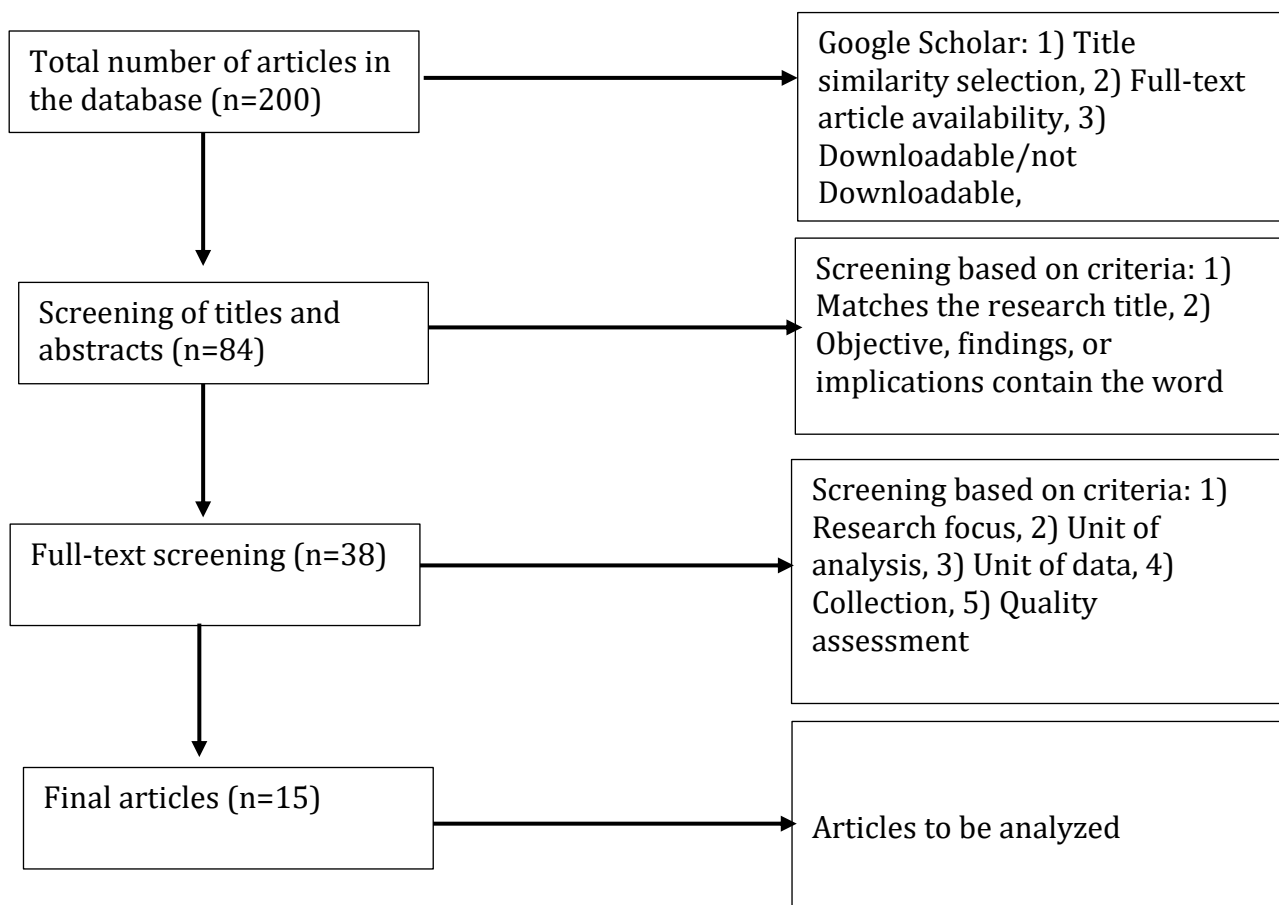


Figure 2. Article Data Collection Process

Stage 3: Analysis

The data analysis phase in this systematic literature review involves presenting the results or findings and answering the research questions. The presentation of the analysis results from the 15 articles can be seen in Table 1 as follows:

Table 1. Literature Review Results

| Name research ers and years | Title Article | Methods | Results |
|-----------------------------------------|-----------------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| This Wayan June, I Wayan Widiana (2017) | Implementation of Learning Models Inquiry For Improving Science Learning Outcomes | Experiment | Application of inquiry model succeed increase results students' science learning, with improvement average score of 65 in pre-cycle to 80 in cycle II. |

| Name research ers and years | Title Article | Methods | Results |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Kertiasih, LE (2018) | Implementation Learning Based on Inquiry Wenning Assisted by e-UKBM for Increase Skills Scientific Participant Educate | Classroom Action Research | Implementation learning based on inquiry Wenning assisted by e-UKBM to improve skills scientific student in a way significant . |
| Murtiani, NN (2018) | Increase Ability Abstracting Text Procedure Complex Using the Inquiry Learning Model | Classroom Action Research | Effective inquiry learning model increase ability student in abstract text procedure complex . |
| Big Rasben Dantes, Nyoman Dantes (2018) | The Influence of Learning Models Inquiry with Scaffolding Techniques against Ability Science Literacy and Achievement Learning Science | Quasi Experiment | Inquiry model with scaffolding increases science literacy and students' science achievements , with improvement average value from 68 to 82. |
| Erna Muliastri, Dantes Nyoman, Dantes Big The Rasben (2019) | The Influence of Learning Models Inquiry with Scaffolding Techniques against Ability Literacy Science and Achievement Learning Science | Quasi Experiment | Learning model inquiry with scaffolding techniques improve ability literacy science and achievement students science learning in a way significant compared to conventional models. |
| Ramdani et al (2020) | Development of learning media based on android during the pandemic covid - 19 for increase literacy science participant educate | Study Development | Results studies eligibility product learning android based shows level validity by 84%, Which classified as very valid. Besides That, results studies eligibility For various components, such as media, syllabus, RPP, And instrument literacy science, also achieves the average value that tall , each as big as 88%, 83%, 82%, and 83%. With Thus , it can concluded that media based products android For learning IPA is |



| Name research ers and years | Title Article | Methods | Results |
|--------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ramadan (2021) | Use Strategy Learning Inquiry Guided in Learning Science in School Education base | Descriptive Qualitative | worthy For implemented, especially in context the COVID-19 pandemic, because has proven valid And fulfil criteria required eligibility. Guided inquiry model show results Which significant in increase results Study student compared to with method conventional. Especially in eye lesson Science, method This help student For more understand material through experiments and exercises based on experience personal. Matter This No only increase understanding draft but also develop skills think critical and engagement student in learning. By Because That, implementation guided inquiry model very recommended in Science learning in elementary school |
| Aprilia et, al (2021) | Learning Inquiry For literacy training Science Student basic education | Descriptive Qualitative | Literacy science student school base must trained through learning inquiry which is effective. In learning inquiry, important For notice traits, characteristics, principles, stages implementation, as well as advantages and disadvantages method This. Practice literacy science must also notice competencies, indicators, and steps proper learning . With thus learning inquiry can in a way effective increase |



| Name research ers and years | Title Article | Methods | Results |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | literacy science student school base . |
| Sitti Jauhar, Muliadi The Greatest Showman (2021) | Implementation of Learning Models Inquiry Social For Improving Social Studies Learning Outcomes of Grade V Students of SDN 284 Labuaja Subdistrict You know Bone Regency | Classroom Action Research | Implementation of learning models inquiry social can increase results students social studies learning class V, with improvement teacher and student activities as well as average value of cycle I to cycle II |
| Nobles et al (2022) | The influence of the inquiry model to literacy science and results students science learning Class V SDN 4 Sangit | Quantitative experiment | Literacy science students who follow learning with inquiry model in a way significant more Good than students who follow learning conventional. The results of students ' science learning who took part in learning with inquiry model in a way significant more Good than students who follow learning conventionally. In simultaneous, inquiry model influential significant to literacy science and results students science learning Class V of SDN 4 Sangsit . |
| June Safitri, Khairun Nisa, Fitri Praise Astria (2022) | The Influence of Learning Models Inquiry Guided To Ability Literacy Science Participant Educate in Science Learning Class V SDN 28 Cakranegara | Quasi Experiment | Inquiry model guided increase literacy science student class V, with t- count value 10.571 > t- table 1.67943 and sig value 0.001 < 0.05. |
| Urge Putu Agung Dharmay anti (2022) | Implementation of Learning Models Inquiry For Increase Performance | Classroom Action Research | Application of inquiry model increase performance Study Indonesian language students class VI, with improvement the average |



| Name research ers and years | Title Article | Methods | Results |
|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Learning Indonesian Language for Grade VI Students Semester I SDN 3 Sudaji | | value from 63.03 in cycle I to 83.93 in cycle II. |
| Herniwati, Indros Piliati, Iwan Putra, John Kennedy, Merya Melly Sesa, Mira Ariyanti, Mora Fatma, Mutia Rissa (2022) | Implementation of Learning Models Inquiry For Improving Science Learning Outcomes | Classroom Action Research | Inquiry model increase results students science learning class V, with an average value of increase from 73.71 in cycle I to 79 in cycle II. |
| Septiani & Kusnindar (2022) | Effort increase literacy science and results Study student class 5 through guided inquiry implementation | Classroom Action Research | Research result show existence improvement literacy science and results Study student after application of guided inquiry learning model. Percentage improvement literacy science and results Study student from pre- action to cycle I was 26.91%. Percentage improvement literacy science and results Study student from cycle I to cycle II by 7.7%. Guided inquiry learning model proven effective in increase literacy science and results Study student grade 5. |
| Masithah et al (2022) | Science- based teaching materials inquiry For increase literacy science | Research and development | Analysis validity use Aiken index and analysis reliability with percentage agree show that science based teaching materials developed inquiry fulfil valid and reliable criteria . This to signify that material teach the considered precise and consistent in measure What is intended and can reliable in its use With Thus , success in |

| Name research ers and years | Title Article | Methods | Results |
|--------------------------------------|---------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | develop science based teaching materials inquiry This promising as effective tool in increase learning and understanding student science material. |

Stage 4: Synthesis

The synthesis phase in a Systematic Literature Review (SLR) is the process of combining and interpreting the findings from the selected studies, with the aim of answering the established research questions. The synthesis in this research is as follows:

The Influence of Implementing the Inquiry Learning Model on Improving Elementary School Students' Science Literacy

Based on the data in Table 1, several studies indicate a positive influence of implementing the inquiry learning model on improving students' science literacy. A quasi-experimental study by Gede Rasben Dantes and Nyoman Dantes (2018) found that the inquiry model with scaffolding increased science literacy and science learning achievement. Similar findings are also supported by Erna Muliastri, Dantes Nyoman, and Dantes Gede Rasben (2019), which showed that the inquiry learning model with scaffolding techniques significantly improved science literacy skills and science learning achievement compared to conventional models. These consistent results, particularly the recurring emphasis on scaffolding as a key component, strongly suggest that the inquiry learning model, when coupled with effective support strategies, yields substantial and measurable improvements in students' science literacy and academic performance in the Indonesian context

Furthermore, a quantitative experimental study by Muliastri et al. (2022) also confirms that the science literacy of students who participated in learning with the inquiry model was significantly better than that of students who participated in conventional learning. Juniar Safitri, Khairun Nisa, and Fitri Puji Astria (2022) in their quasi-experimental research also found that the guided inquiry model improved students' science literacy. Classroom action research by Septiani & Kusnindar (2022) also showed an increase in students' science literacy and learning outcomes after the implementation of the guided inquiry learning model. Collectively, these Indonesian studies provide strong empirical evidence of the inquiry model's effectiveness in enhancing science literacy across various research designs, consistently demonstrating its superiority over conventional teaching methods and highlighting its potential for widespread application in Indonesian educational settings.



Thus, it can be concluded that various studies demonstrate the positive influence of the inquiry learning model on improving students' science literacy. Whether quasi-experimental, quantitative experimental, or classroom action research, they consistently show that the implementation of the inquiry model, whether with scaffolding, scaffolding techniques, or guided inquiry, results in a significant increase in students' science literacy.

Factors Influencing the Effectiveness of the Inquiry Learning Model

Based on the analysis of articles in Table 1, several factors appear to influence the effectiveness of the inquiry learning model. One important factor is the use of supporting strategies such as scaffolding. Several studies (Dantes & Dantes, 2018; Muliastri et al., 2019) show that the inquiry model combined with scaffolding techniques significantly improves students' science literacy and learning achievement. In addition, the use of appropriate learning media also plays a crucial role. Ramdani et al. (2020) indicate that the development of valid and reliable Android-based learning media can enhance students' science literacy.

Another factor influencing the effectiveness of the inquiry model is the focus on developing specific skills or learning outcomes. Several studies show that the inquiry model is effective in improving science learning outcomes (Juniati & Widiana, 2017; Herniwati et al., 2022), science literacy (Muliastri et al., 2022; Safitri et al., 2022), abstraction abilities (Murtiani, 2018), and Indonesian language learning achievement (Dharmayanti, 2022). Furthermore, Kertiasih's (2018) research indicates that the implementation of Wenning's inquiry-based learning assisted by e-UKBM improves students' scientific skills. Ramadhan (2021) also emphasizes the importance of guided inquiry in improving science learning outcomes and developing critical thinking skills.

Based on the available data, the effectiveness of the inquiry learning model is influenced by several key factors. The use of supporting strategies such as scaffolding and appropriate learning media, such as valid and reliable Android-based media, has been proven to enhance the effectiveness of the inquiry model. Furthermore, a focus on developing specific skills or learning outcomes, such as science learning outcomes, science literacy, abstraction abilities, Indonesian language learning achievement, and scientific skills, also plays an important role in determining the success of the inquiry model. The guided inquiry approach is also emphasized as an effective method for improving science learning outcomes and developing students' critical thinking skills.

The implementation of the inquiry learning model can be optimized within the context of science learning in Elementary School.

Based on the analyzed articles, the implementation of the inquiry learning model in Elementary School can be optimized through several strategies. First, the use of scaffolding or structured guidance from teachers is crucial, especially in helping students formulate research questions, design experiments, and analyze data. Research by Dantes & Dantes



(2018) and Muliastri et al. (2019) shows that inquiry with scaffolding significantly improves science literacy and science learning outcomes. In addition, the use of relevant and engaging learning media, such as valid Android-based media (Ramdani et al., 2020), can increase student engagement and concept understanding. These findings collectively highlight that successful inquiry-based learning in elementary schools hinges on a combination of strategic teacher intervention through scaffolding and the integration of technology-enhanced, contextually relevant learning materials, thereby creating a supportive and stimulating environment conducive to the development of students' science literacy.

Second, the integration of inquiry with other relevant learning models or strategies can strengthen its effectiveness. For example, the use of Wenning's inquiry with e-UKBM (Kertiasih, 2018) or social inquiry (Jauhar & Muliadi, 2021) shows positive results in improving scientific skills and social studies learning outcomes. Furthermore, focusing on the development of specific skills such as abstraction (Murtiani, 2018) or science literacy (Safitri et al., 2022) through guided inquiry can help students achieve better learning outcomes. Research by Ramadhan (2021) and Aprilia et al. (2021) also emphasizes the importance of guided inquiry in improving science learning outcomes and science literacy in Elementary School.

Thus, the implementation of the inquiry learning model in Elementary School can be achieved through several strategies. The use of scaffolding or structured guidance from teachers is very important to assist students in the research process, and the use of relevant and engaging learning media can increase student involvement. In addition, the integration of inquiry with other relevant learning models or strategies, as well as a focus on developing specific skills, can also strengthen its effectiveness. The guided inquiry approach is also emphasized as an effective method for improving students' learning outcomes and science literacy in Elementary School.

CONCLUSION

This research embarked on a systematic literature review (SLR) of 15 relevant articles to analyze the effectiveness of the inquiry learning model in enhancing elementary school students' science literacy, addressing the critical need to improve science literacy amidst globalization and the concerning state of Indonesian students' performance. The study focused on three key research questions: the impact of the inquiry model on science literacy, the factors influencing its effectiveness, and strategies for its optimal implementation in elementary schools.

The synthesized findings consistently demonstrated a positive correlation between the inquiry learning model and improved science literacy. Empirical evidence, drawn from quantitative experiments and classroom action research, highlighted the significant gains achieved through the integration of scaffolding, relevant learning media, and a focus on developing specific scientific skills. Furthermore, the effectiveness of the model was shown



to be enhanced by its integration with other relevant learning strategies. To maximize the inquiry model's potential, this research recommends the adoption of guided inquiry approaches, the implementation of structured scaffolding, the use of engaging and relevant learning media, and the integration of the model with other effective pedagogical strategies.

Theoretically, this study contributes by consolidating and synthesizing existing research, providing a comprehensive understanding of the inquiry learning model's efficacy within the Indonesian educational context. Practically, this research offers actionable insights for educators and policymakers, providing evidence-based recommendations for the design and implementation of effective science learning strategies that can significantly enhance students' science literacy outcomes in Indonesian elementary schools.

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