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Discovery Learning for Strengthening Students' Basic Competencies in a Library Research Study

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Abstrak

The low understanding of concepts and achievement of basic competencies (BC) among elementary school students is caused by the dominance of conventional teaching methods that do not actively engage students according to their developmental characteristics. This study aims to analyze the contribution of implementing discovery learning in strengthening the basic competencies of elementary school students through a library research approach. The study was conducted by reviewing various relevant literature sources, such as scientific articles, books, and previous research related to the implementation of discovery learning in elementary education. The results of the review indicate that discovery learning has the potential to support the strengthening of students' basic competencies, including conceptual understanding, problem-solving skills, scientific processes, numeracy, and literacy. The learning process through activities such as observation, exploration, manipulation of concrete objects, and group discussions provides students with opportunities to build knowledge independently and meaningfully. These findings are reinforced by Jerome Bruner's constructivist theory and Jean Piaget's cognitive development theory, which emphasize the importance of direct experience in the learning process. Based on the results of literature analysis, discovery learning is relevant to be applied at the elementary school level because it can create active, interactive learning experiences that are in accordance with students' cognitive development stages.

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INTRODUCTION

Education in elementary school is the main foundation for the development of academic, social, and character skills of students at the next level(Saida, 2026; Sofyan & Saputra, 2022). At this stage, students need a learning approach that can stimulate curiosity, enhance conceptual understanding, and foster critical thinking skills from an early age. The curriculum changes increasingly emphasizing competencies, such as problem-solving, creativity, collaboration, and communication, require teachers to apply more active and innovative strategies in the learning process(Häkkinen et al., 2017; Haryani et al., 2021). Traditional learning models that focus on lectures are now considered no longer adequate to meet the demands of the times. Therefore, elementary schools need to adopt learning models that can empower students as active subjects

in learning, not just recipients of information. One approach considered capable of addressing these challenges is discovery learning.

Discovery learning is a learning model that places students in a position to discover concepts or principles on their own through direct learning experiences(Choirunnisa & others, 2024; Ouzzine et al., 2022). In this approach, learners are trained to observe, ask questions, experiment, classify information, and draw conclusions independently. This discovery process aligns with the developmental characteristics of elementary school students who are in the concrete operational phase, where learning through direct activities provides a stronger understanding(Suprayitno, 2025). In addition, discovery learning encourages students to be more active, creative, and motivated because they feel involved in the process of knowledge formation. Compared to conventional methods, this model provides a wider space for students to explore and ask questions, making the learning process more meaningful(Munif, 2026; Murphy et al., 2025). Thus, discovery learning has great potential in enhancing the effectiveness of learning in elementary schools.

Strengthening basic competencies (BC) in elementary schools has become the main focus in the implementation of learning because BC is the minimum target that must be achieved by every student. However, various reports and observations show that some elementary school students still experience difficulties in understanding the material, especially in subjects such as mathematics, science, and Indonesian language. This problem often arises because learning still revolves around lecture methods that make students passive and less involved in the thinking process. In addition, the mismatch between the use of learning methods and the characteristics of student development also affects the low achievement of BC. Teachers often face obstacles in designing creative learning that actively involves students. This condition emphasizes the need for learning strategies that can optimally increase students' participation, conceptual understanding, and problem-solving abilities.

The gap between the need for active learning and the still predominantly traditional learning practices indicates an important gap in the field of primary education. Discovery learning emerges as an alternative that can bridge this gap by positioning students at the center of learning and providing opportunities to learn through direct experience. Various previous studies support that discovery learning can enhance students' critical thinking skills, conceptual understanding, and learning motivation. However, its implementation in primary schools is still not optimal due to teachers' limitations in managing the class, lack of learning resources, and minimal understanding of the appropriate implementation steps. This gap makes research related to the application of discovery learning in strengthening the basic competencies of primary school students important to conduct. This study is expected to provide a more applicable implementation model according to the school conditions.

From a theoretical perspective, discovery learning offers various advantages based on the principles of constructivism, which state that knowledge is built by individuals through direct experience. In the context of elementary school students, learning experiences that involve the discovery process will strengthen concept retention and develop higher-order thinking skills from an early age. In addition, this strategy can help cultivate learning traits such as curiosity, independence, thoroughness, and perseverance in problem-solving. Meanwhile, from a practical perspective, the implementation of discovery learning provides flexibility for teachers in modifying learning activities according to the needs of the class. This strategy allows the creation of a more interactive, collaborative, and enjoyable learning atmosphere, thereby contributing to a more significant improvement in basic competencies. Based on this gap, the research question is how the implementation of discovery learning can contribute to strengthening the basic competencies of elementary school students. This question serves as a basis for examining the stages of implementing discovery learning as well as its contribution to improving students' conceptual understanding and basic skills in the learning process.

Based on the description, this study aims to analyze and describe how discovery learning can be used as an effective strategy in strengthening elementary school students' basic competencies. The focus of the research is directed at the stages of model implementation, student and teacher activities, as well as its impact on concept understanding and fundamental skills. This study also aims to provide operational recommendations for elementary school teachers in implementing discovery learning appropriately and efficiently. In addition, this study is expected to provide new insights for schools and policymakers in improving the quality of learning through strategies that are relevant to the demands of the 21st century. Thus, the results of this study can become an important reference in the development of student-centered innovative learning. Ultimately, discovery learning is expected to be an effective strategy in strengthening basic competencies in elementary school students.

METHOD

This research uses a qualitative approach with the type of library research, which is research conducted through the collection, review, and analysis of various literatures relevant to the topic of discovery learning and the strengthening of students' basic competencies (Muhammad Mustofa, 2023; Mustofa, 2023). The data sources in this study were obtained from national and international scientific articles, educational books, proceedings, as well as other supporting documents accessed through several academic databases such as Google Scholar, Scopus, and ERIC. The literature search process was conducted using keywords such as discovery learning, basic competencies, elementary school students, and strengthening basic competencies. The selected literature was limited to publications within the period of 2015–2025 so that the data used remain relevant to the latest research developments.

The selection of literature was carried out based on several criteria, namely: (1) the article or source discusses the application of discovery learning in the context of primary education; (2) the source is relevant to strengthening students' basic competencies; (3) the article is published in a credible journal or publisher; and (4) the source is fully available for analysis. Based on this selection process, a total of 25 main literature sources were obtained to be used as material for analysis in this study. This selection aims to obtain a comprehensive picture of the implementation of discovery learning in supporting the strengthening of basic competencies of primary school students.

The data analysis technique used is content analysis, which is an analysis of the content of various literature sources to identify, classify, and interpret information relevant to the research focus(WIjaya, 2019). The analysis stages are carried out systematically through four steps, namely: (1) literature identification, by selecting sources that match the research topic; (2) data categorization, by grouping findings based on themes such as the stages of implementing discovery learning, the role of teachers, student activities, and reinforced basic competencies; (3) data interpretation, by linking the findings with constructivist theory and previous research; and (4) drawing conclusions, which is formulating the main findings regarding the contribution of discovery learning to strengthening the basic competencies of elementary school students. The analysis process is conducted in depth so that the research results are arranged systematically, objectively, and can be scientifically accountable(Setiawan, 2018).

RESULT AND DISCUSSION

Result

1. The concept and basic principles of discovery learning from the perspective of modern learning theories that are relevant to the needs of elementary school students

Discovery learning is one of the learning approaches rooted in the constructivist view, which positions students as active subjects in the process of building knowledge through direct experience(Lombardi et al., 2021). In this type of learning, students do not merely receive information verbally from the teacher, but engage in exploration, investigation, and independent discovery of the concepts being studied. The discovery learning model was first developed by Jerome Bruner, who believed that the process of discovering knowledge on one's own would result in a more meaningful, lasting, and easily applicable understanding in real-life contexts. This approach aligns with the needs of elementary school students who are at the concrete operational stage of development, where learning activities involving object manipulation, simple experiments, and real experiences greatly support their cognitive development(Shobirin, 2025). Discovery learning becomes relevant because it provides space for students to learn through curiosity, which is naturally strong in elementary school children.

The main concept of discovery learning emphasizes that knowledge must be acquired through an active mental process, such as observing, classifying, comparing, predicting, and making generalizations. In elementary school students, this type of thinking ability develops gradually, so learning must be designed in the form of concrete activities that are easily accessible to them(Kegan, 2018). Discovery-based learning allows teachers to provide appropriate stimuli so that students are encouraged to explore and identify patterns or principles from the information found(Rokhim, 2025). In the context of learning, the teacher is not the sole source of knowledge but rather a facilitator who designs learning situations that allow students to experience the discovery process naturally. Reinforcing concepts through discovery is very important for early-age students because it supports the formation of more systematic and logical thinking structures according to their developmental characteristics.

The main principles in discovery learning include the principle of learning readiness, knowledge structure, sequencing of material, and students' intrinsic motivation. The principle of learning readiness refers to the condition of students, which needs to be ensured that they have adequate prerequisite knowledge to carry out the discovery process. In elementary school students, teachers need to build context and prepare classroom conditions so that students are ready to enter more complex learning experiences. The structure of knowledge also becomes an important factor, where teachers need to organize material in a form that is easy to understand, organized, and challenging, so that students can gradually discover the relationships between concepts. The principle of intrinsic motivation is a fundamental aspect of discovery learning because students will be more encouraged to explore when they perceive learning as an activity that is interesting, challenging, and relevant to their daily lives.

From the perspective of modern learning theory, discovery learning is closely related to Piaget's constructivist theory, Vygotsky's scaffolding theory, and Ausubel's meaningful learning theory. Piaget emphasizes that children learn through the processes of assimilation and accommodation that occur when they interact with their environment, which is very much in line with the discovery mechanisms in discovery learning(Muh. Ibnu sholeh, 2025). Meanwhile, Vygotsky stresses the importance of scaffolding or structured guidance from teachers so that students can complete discovery tasks within their zone of proximal development. Ausubel's theory also reinforces discovery learning with the view that meaningful understanding is formed when students are able to relate new information to knowledge they already possess. These three theories complement each other and explain that discovery learning is not merely a method, but an approach that supports children's cognitive and social development.

Based on the synthesis of these various theories, discovery learning can be understood as a learning strategy that integrates active student involvement, gradual teacher support, and

the linking of learning experiences with the knowledge structures already possessed by students. This indicates that the main strength of discovery learning does not lie solely in the discovery activity, but in its ability to build meaningful understanding according to the cognitive development stage of elementary school students. Through this process, students not only acquire conceptual knowledge but also develop critical thinking skills and learning independence, which are important foundations for achieving basic competencies. Furthermore, the active involvement of students in discovering concepts makes learning more contextual and helps students connect learning material with real-life experiences.

The implementation of discovery learning in the context of elementary schools must take into account the developmental characteristics of students who still need clear instructions, gradual guidance, and activities that allow them to learn through play. Activities such as simple experiments, observation of the surrounding environment, educational games, contextual problem-solving, and mini-projects are very effective in helping students independently discover fundamental concepts. This approach aligns with the principles of 21st-century learning, which require critical, creative, collaborative, and communicative thinking skills from an early age. Through discovery learning, students are trained to ask questions, seek answers through direct experience, and communicate their findings. Such abilities are highly relevant to the formation of basic competencies that are not only oriented toward memorization but also toward understanding concepts and applying knowledge.

The concept of discovery learning also integrates aspects of the scientific process and inquiry methods to encourage students to conduct investigations based on curiosity. In science learning in elementary schools, for example, students can observe natural phenomena, collect simple data, make predictions, and draw conclusions based on their own experiences. This approach encourages students to develop scientific thinking patterns from an early age. Discovery learning can also be applied in other subjects such as mathematics through activities like discovering number patterns or geometric shapes, as well as Indonesian language through activities like finding the meaning of words in the context of a story. By giving students the opportunity to discover concepts on their own, their higher-order thinking skills can develop according to their respective capacities.

From the perspective of educational psychology, discovery learning supports the learning needs of elementary school children who tend to have high learning motivation, strong curiosity, and the need to move and interact actively. This approach gives them space to experiment without fear of making mistakes, as mistakes are considered part of the learning process. Teachers need to provide a safe and supportive learning environment, where students are valued for their exploratory efforts. Interaction among students is also an important part of discovery learning, as it allows them to build understanding through

discussions, group work, and social reflection. Such collaborative activities enrich the discovery process and train students to develop social skills that are highly needed in elementary education.

Thus, the implementation of discovery learning not only functions as a method to help students discover concepts but also as a means to develop thinking skills, social skills, and meaningful learning in an integrated manner. This synthesis shows that discovery learning has strong relevance in supporting the reinforcement of basic competencies for elementary school students both conceptually and practically. Through active involvement in the learning process, students gain the opportunity to build a deeper understanding and enhance their problem-solving abilities independently. In addition, the implementation of discovery learning contributes positively to creating an interactive learning environment, so that the process of reinforcing basic competencies can take place more effectively and in accordance with the developmental needs of elementary school students.

2. The application of discovery learning can strengthen students' basic competencies

The implementation of discovery learning in elementary school education provides a significant contribution to strengthening students' basic competencies because this model places students at the center of learning activities. In this process, students not only receive information from the teacher but actively build understanding through exploration, observation, and gradual concept discovery(Kasmiana et al., 2020; Wijiastuti & Nurhayati, 2021). When students are engaged in steps such as identifying problems, collecting data, and drawing connections between information, they develop basic cognitive competencies in a more structured manner. Competencies such as the ability to understand concepts, identify patterns, and solve problems grow stronger because students experience firsthand the thinking process required to find answers(Zakki, 2025). In the context of elementary school, which is the early phase of developing academic abilities, learning through discovery provides a strong foundation for logical and systematic thinking. This approach helps students develop a high sense of curiosity and a more stable interest in learning over time. Repeated discovery activities encourage students to expand their initial knowledge while deepening the level of understanding of basic material that is not yet stable.

An important part of strengthening basic competencies through discovery learning is seen in students' ability to connect concrete experiences with the abstract concepts studied in class. When students conduct simple experiments, observe natural phenomena, or engage in manipulative activities, they form stronger mental representations of basic concepts in the elementary school curriculum. Teachers play a role in providing stimuli in the form of problems or phenomena close to students' lives so that the discovery process occurs more authentically and meaningfully(Asad et al., 2021). Through a series of activities such as

observing, questioning, experimenting, and concluding, students develop competencies in understanding basic concepts such as measurement, classification, comparison, or cause-and-effect relationships. The inductive thinking pattern formed during the discovery process helps students reorganize the information they acquire into a more permanent knowledge structure. The more frequently students experience it, the stronger their ability to generalize knowledge to other learning contexts. Understanding built through direct experience tends to last longer compared to learning that is verbalistic..

Discovery learning also strengthens the basic competencies of science process skills and problem-solving, which are the focus of 21st-century learning in elementary schools(Putra et al., 2020). Through the discovery process, students become accustomed to carrying out a series of systematic steps, starting from identifying problems, determining ways to obtain information, to testing the accuracy of their answers. This process develops higher-order thinking skills such as analysis, synthesis, and evaluation, although at a level adjusted to the cognitive development of elementary school children. When students are faced with situations requiring decision-making based on observation results, they learn to apply reasoning skills responsibly. Basic science literacy competencies such as observing, recording data, and providing interpretations are reinforced through simple experimental activities that are repeated in discovery-based learning. The experience of investigating also helps students develop perseverance, self-confidence, and a desire to find answers through independent effort. The entire series of processes shapes more stable problem-solving skills that are ready to be used in various subjects.

In elementary school mathematics, discovery learning has been proven effective in strengthening basic skills such as numbers, arithmetic operations, measurement, and geometry because students do not just memorize formulas but discover patterns through manipulative activities(Faturrachim et al., 2025). Teachers usually provide concrete objects, number cards, blocks, or other teaching aids to facilitate the exploration process so that students can find the basic principles being studied on their own. Concrete manipulative activities build a strong connection between physical experience and abstract mathematical concepts, making students' understanding deeper. When students discover patterns, such as the commutative property in addition or the relationship between the length and perimeter of plane figures, they begin to understand concepts not as imposed information, but as a result of their own reasoning. This learning pattern strengthens basic numeracy competencies because students are able to explain the reasons behind the procedures they use. Discovering patterns independently also builds intrinsic motivation to solve mathematical problems more creatively and not merely follow the steps taught by the teacher.

In Indonesian language learning, the application of discovery learning can strengthen basic literacy competencies through activities that encourage students to gradually discover the meaning of texts and language structure. Teachers can provide simple texts, picture stories, or linguistic experiments that lead students to explore language elements independently(Carroll et al., 2018). The process of identifying information in texts, finding the main ideas, and understanding sentence structures allows students to develop reading comprehension skills more naturally. Meaning discovery activities can also be applied in teaching speaking and writing skills, for example by asking students to observe how paragraphs are structured or how conversations are patterned, and then draw conclusions about the rules that apply. This method strengthens basic literacy skills because students understand language as a system that can be explored rather than just memorized. An active learning style makes students more engaged in the process of understanding texts, thereby strengthening their competence in receiving and processing information. Direct experience in discovering language patterns instills more stable and deeper literacy skills.

In the subject of Natural Sciences (IPA), discovery learning enhances students' basic abilities in understanding natural phenomena through exploration, simple experiments, and data collection. Students are encouraged to observe real objects such as plants, animals, changes in the state of matter, or forces and motion, so that they build knowledge through direct interaction with the environment. When students make predictions, compare observation results, and draw connections between concepts, they develop basic IPA competencies such as classifying living things, identifying object characteristics, or understanding cause-and-effect relationships. Scientific thinking experiences are formed when students engage in activities that mimic the scientific process, even at a simple level. Such learning strengthens students' sensitivity to natural phenomena around them and encourages more active questioning skills. The series of activities allows students to have a more meaningful basic understanding because it is obtained through an investigation process.

The implementation of discovery learning also supports the strengthening of basic competencies in Civic Education (PKn) through learning activities that invite students to discover values, rules, and concepts of social life through shared experiences. Teachers can design activities such as group discussions, role-playing games, or simulations of simple social problems that allow students to understand concepts such as cooperation, responsibility, rights, and obligations through direct involvement(Hikmayana, 2025; Istighosah, 2025). When students investigate the impact of an action on a group or try to find solutions to conflicts through simulated activities, they develop social thinking skills that are part of the basic competencies of PKn. These activities also strengthen democratic character because students are involved in the decision-making process and learn to consider others'

viewpoints. The experience of discovering social values makes it easier for students to understand the rules that apply in everyday life.

The effectiveness of discovery learning in strengthening students' basic competencies becomes increasingly evident when teachers integrate collaborative activities that encourage interaction, discussion, and reflection among students. When students work in small groups to find solutions to a problem, they learn to express their opinions, listen to their peers' ideas, and improve their thinking through social interaction. Collaborative learning enriches the discovery process because students can exchange experiences and discover various alternative answers before drawing conclusions. This interaction develops basic competencies such as communication, critical thinking skills, and the ability to respond to information more thoughtfully. A learning environment that prioritizes cooperation also fosters students' self-confidence in expressing ideas and building arguments based on their discoveries. The application of this method provides space for students to practice cognitive and social skills simultaneously so that both aspects grow in harmony during the learning process.

3. Supporting and inhibiting factors in the implementation of discovery learning in strengthening students' basic competencies

The application of discovery learning in strengthening the basic competencies of elementary school students cannot be separated from various factors that affect its effectiveness, both supportive and inhibiting. As a learning model that emphasizes the process of discovery, active involvement, and independent exploration by students, discovery learning requires a conducive learning environment, careful planning, and a learning setting that provides space for students to experiment. On the other hand, this model faces challenges in its implementation, particularly related to teacher readiness, availability of resources, heterogeneity in student abilities, and limited learning time. Understanding these supporting and inhibiting factors is important so that the application of discovery learning can be optimized to truly strengthen students' basic competencies comprehensively.

a. Supporting factor

The implementation of discovery learning in strengthening students' basic competencies is influenced not only by the strategies used by teachers, but also by various conditions that support the success of the learning process. This model requires a learning environment that allows students to explore, observe, ask questions, and discover concepts through direct experience. Therefore, the presence of supporting factors greatly determines how effectively discovery learning can be carried out and provide a positive impact on students' competency development. The supporting factors include:

1) Teacher's Readiness in Designing Learning

Teacher readiness is a very important supporting factor because the success of discovery learning highly depends on the teacher's ability to design learning scenarios based on exploration, discovery, and investigative activities. Teachers who understand the characteristics of elementary school students can create appropriate learning challenges, provide scaffolding without reducing student independence, and create classroom situations that encourage curiosity. When teachers have good pedagogical competence, the discovery process can run more structured, directed, and remain flexible according to student needs.

2) Availability of Learning Facilities and Media

Adequate learning facilities and media, such as concrete teaching aids, mathematical manipulatives, simple experimental materials, and visual media, are major supporting factors for the success of discovery learning. The availability of these facilities allows students to engage in exploration activities, conduct experiments, examine objects, and test hypotheses directly. When students can learn through concrete experiences that are relevant to their cognitive development, the discovery process becomes more meaningful and basic competencies are easier to develop.

3) Learning Environment Support

A positive learning environment—whether at school, in the classroom, or at home becomes a supporting factor that strengthens the effectiveness of implementing discovery learning. Schools that provide an active learning climate, parents who support exploratory activities, and a classroom culture that values curiosity and the courage to try make students feel safe to experiment and ask questions. This supportive environment helps students become more confident, more active, and more motivated to engage in all stages of concept discovery.

b. Inhibiting Factors

Although discovery learning has great potential in strengthening the basic competencies of elementary school students, its implementation in the field is not always easy. Applying this model requires teacher readiness, support from facilities, and classroom conditions that allow students to learn actively and exploratively. However, various obstacles often arise in practice, both from internal aspects of the school and from the characteristics of the students themselves. These diverse barriers can reduce the effectiveness of the discovery process and prevent learning from achieving optimal results. To understand these challenges more comprehensively, the following are outlined some of the main factors that often become obstacles in the implementation of discovery learning in elementary schools, including the following:

1) Limitations of Learning Time

Time constraints are a major obstacle because discovery learning requires a longer duration for the process of observing, questioning, collecting data, analyzing, and concluding. In elementary schools, tight lesson schedules and the demand to complete basic competencies often make it difficult for teachers to provide enough time for investigative activities. This situation often results in the implementation of discovery learning being less than optimal, and teachers tend to prefer faster methods such as lecturing.

2) Heterogeneity of Students' Abilities

Differences in students' abilities within a single class, ranging from academic ability, learning speed, to language skills, become a common obstacle in the implementation of discovery learning. High-ability students can easily follow the discovery process, while low-ability students require more time and guidance. This imbalance causes the discovery activities not to run evenly; teachers must work hard to balance the students' needs so that everyone can participate optimally in learning.

3) Limitations of Teacher Competence

Not all teachers have the competence and experience in applying discovery learning, especially in designing open-ended problems, providing appropriate stimuli, giving scaffolding, and managing an exploratory classroom. Teachers who are not accustomed to it often face confusion in determining the suitable discovery activity models for elementary school students. This lack of technical understanding causes the discovery-based learning process to be ineffective and not achieve the goal of reinforcing basic competencies.

4) Lack of Facilities and Learning Resources

The limitations of facilities such as teaching aids, concrete media, or experimental materials make it difficult to implement discovery learning optimally. Without adequate facilities, students cannot carry out observation and exploration activities, which are the core of the discovery model. Teachers are forced to use more abstract verbal methods, reducing students' direct experience and making the process of reinforcing basic competencies less optimal. The lack of facilities also makes discovery-based learning difficult to carry out consistently.

5) The High Administrative Burden on Teachers

Administrative demands such as preparing learning tools, class reports, supervision, and various other administrative tasks reduce teachers' time and energy for designing discovery learning that requires creativity and more preparation. Teachers who are burdened with administration tend to choose simple and quick methods, so discovery models are rarely used. This condition becomes a significant

obstacle in the sustainable implementation of discovery learning in elementary schools.

Discussion

The discussion of research results focuses on the analysis of various findings from the literature regarding the contribution of the implementation of discovery learning to strengthening the basic competencies of elementary school students. All the analyzed data come from various previous research results that show a consistent pattern that active student involvement in the discovery process plays an important role in shaping conceptual understanding, process skills, and social abilities needed in elementary school learning. To provide a comprehensive overview, this discussion connects findings from various studies with relevant theories, especially constructivist theory, Bruner's discovery learning theory, and Piaget's cognitive development theory, thereby producing an in-depth scientific interpretation of the effectiveness of the discovery learning model in supporting the achievement of basic competencies in elementary schools.

a. Implementation of Discovery Learning and Strengthening of Students' Basic Competencies

The results of the literature review indicate that the implementation of discovery learning makes an important contribution to strengthening the basic competencies of elementary school students. This can be understood because discovery learning is a learning model strongly rooted in constructivist theory, which emphasizes that knowledge is built through active learning experiences, not given instantly. In the context of elementary school learning, steps such as observing, questioning, gathering information, associating, and communicating enable students to become active subjects in the learning process. Various previous studies show that students involved in the discovery process experience better development in their abilities to understand concepts, recognize patterns, and solve simple problems. Thus, discovery learning not only facilitates knowledge acquisition but also builds a systematic way of thinking from an early age.

These findings are in line with the views of Jerome Bruner, a leading figure in discovery learning theory. Bruner emphasized that students learn more meaningfully when they discover a concept themselves through the process of exploration, compared to through direct delivery of information. According to Bruner, knowledge discovered through problematic situations will be more easily remembered, understood more deeply, and more readily applied in new contexts. Several previous studies also indicate that

discovery-based learning enhances student engagement and conceptual understanding compared to lecture methods, although its effectiveness is influenced by teacher readiness and the design of the learning used. Bruner explains that discovery-based learning stimulates the development of inductive and deductive thinking abilities, making students more active in processing information. This shows that the success of discovery learning is not only determined by the model, but also by the quality of its implementation in learning activities.

b. Strengthening Basic Competencies through Concrete Experience and Abstract Representation

One of the important findings of the research is that the strengthening of basic competencies occurs because students have the opportunity to connect concrete experiences with the abstract concepts learned in class. When students take direct actions such as science experiments, manipulating concrete objects in mathematics, or exploring texts in Indonesian, they build mental representations that help reinforce understanding. The research findings indicate that such learning supports the main principle of constructivism, namely that knowledge becomes more meaningful when it is constructed by the students themselves. In this context, the teacher's role is very important as a facilitator who provides stimuli, authentic situations, and exploratory experiences that are relevant to students' lives. When teachers present real problems or simple phenomena that are close to the children's experiences, the discovery process occurs more naturally, so the basic competencies acquired are also stronger and more sustainable. However, several studies also indicate that without sufficient teacher guidance, students may have difficulty connecting concrete experiences with abstract concepts. Therefore, the effectiveness of discovery learning in strengthening basic competencies is highly dependent on the balance between students' independent exploration and teachers' directed guidance.

In addition to Bruner's theory, these findings are also in line with Jean Piaget's cognitive development theory, particularly at the concrete operational stage experienced by elementary school students. At this stage, Piaget emphasizes that children find it easier to understand concepts when accompanied by concrete objects or direct experiences. The research results support this, showing that students better understand mathematical, scientific, and language concepts through exploratory and manipulative processes. The processes of observation, classification, measurement, and simple hypothesis testing are forms of activities that match the thinking abilities of children at the concrete operational stage. Thus, Piaget's theory further strengthens the argument that discovery learning is highly relevant for reinforcing students' basic competencies. Thus, the study results not

only reinforce Piaget's theory, but also show that discovery learning becomes more effective when designed according to the students' cognitive development stages.

c. Strengthening Science Process and Problem-Solving Competence

Research findings show that discovery learning has an important contribution in strengthening the basic competencies of the science process, including the ability to observe, record, classify, and draw conclusions. Simple scientific investigation activities carried out by students allow them to directly experience the process of scientific thinking. Field findings show that students become more critical, more confident, and more systematic in solving problems. This process builds higher-order thinking skills (HOTS) such as analysis and evaluation, albeit at levels adjusted to the cognitive development of elementary school children. This indicates that discovery learning not only strengthens the understanding of science concepts but also builds scientific thinking patterns that will serve as a foundation for learning at the next level. In addition, several studies compare that students who learn through discovery learning show better problem-solving skills compared to conventional learning, especially on tasks that require analysis and reasoning.

d. Strengthening Numeracy Competence Through Pattern Discovery

In the subject of mathematics, research shows that discovery learning is effective in strengthening basic numeracy skills. Students do not just memorize formulas or procedures, but discover mathematical patterns through experimentation and manipulation of concrete objects. When students manipulate blocks, number cards, or geometric objects, they build independent understanding of the properties of arithmetic operations, relationships between units, or shapes of plane figures. Research findings indicate that the discovery process makes it easier for students to understand mathematical structures because they realize the reasons behind the procedures used. Thus, discovery learning not only improves numeracy mastery but also naturally fosters motivation and interest in learning mathematics.

e. Strengthening Basic Literacy in Indonesian Language Learning

In learning Indonesian, discovery learning has been proven to strengthen basic literacy competencies, especially in reading comprehension, writing, and critical thinking skills. Research findings show that students find it easier to understand texts when they are involved in the process of discovering main ideas, important information, and language patterns. Discovery activities allow students to understand language as a system that can be explored and understood through direct experience. This is different from traditional learning, which relies heavily on memorization or explanations. Thus, discovery learning strengthens students' ability to understand, process, and communicate

information more effectively. Findings from several studies also indicate that this model is more effective in improving reading comprehension compared to conventional methods, especially when students are given the opportunity to discuss and actively explore the content of the reading.

f. Strengthening Social Competence Through Collaborative Learning

Research results show that the integration of collaborative activities in discovery learning also strengthens students' basic social competencies, particularly communication, cooperation, and empathy skills. When students work in groups to find solutions to a problem, they learn to discuss, listen to each other, and combine their thoughts. This interaction not only enriches the discovery process but also educates students to think more thoroughly through the exchange of ideas. The collaborative learning that occurs during discovery learning helps students build self-confidence, argumentative skills, and positive social attitudes. Thus, the results of the synthesis show that discovery learning contributes not only to academic competence, but also to the development of social competence, which is an important part of strengthening the basic competence of elementary school students.

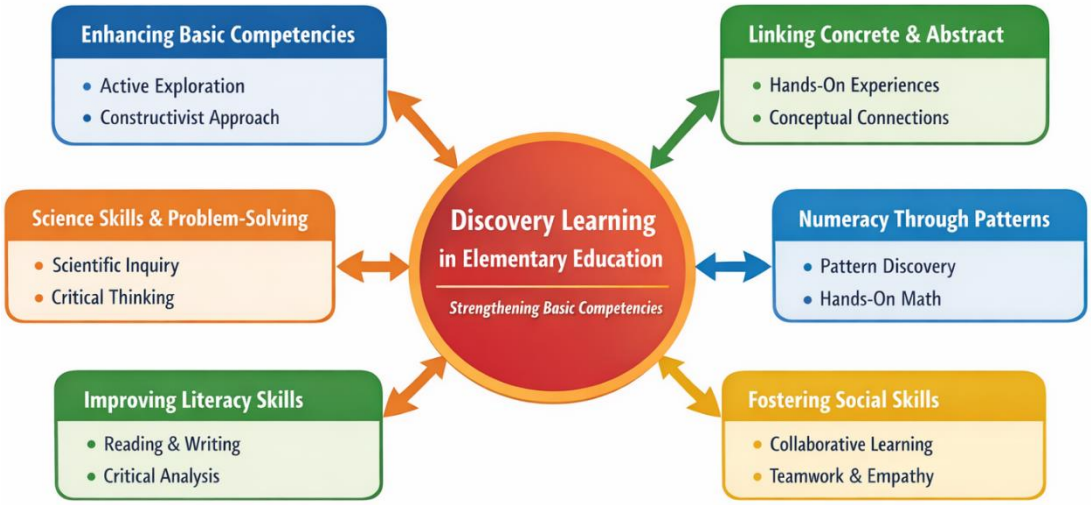

Figure 1 Discovery Learning in Elementary Education

CONCLUSION

The consistent implementation of discovery learning can strengthen the basic competencies of elementary school students through exploration activities, concrete experiences, and active student involvement in discovering learning concepts. This model not only enhances conceptual understanding but also supports the development of science process competencies, numeracy skills through pattern discovery, basic literacy, as well as social competencies through

group work activities. These findings are in line with the constructivist theories of Bruner and Piaget, which emphasize the importance of direct experiences and discovery activities in building students' knowledge. Therefore, discovery learning can be an effective learning approach, relevant to students' cognitive development, and capable of supporting the strengthening of both academic and social basic skills of elementary school students. Theoretically, the results of this study reinforce the view that discovery learning is a learning strategy that aligns with the principles of constructivism.

Practically, the results of this study indicate that elementary school teachers need to design learning that provides space for exploration, hands-on experiences, and active student engagement so that the strengthening of basic competencies can occur more optimally. School support in providing a conducive learning environment and adequate learning media also becomes an important factor for the successful implementation of discovery learning. Additionally, future research is recommended to examine the application of discovery learning across various grade levels and subjects in a more specific manner, as well as to explore the factors that influence its success, such as teacher readiness, student characteristics, and support for learning resources, so that its implementation can be carried out more effectively.

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