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Analysis of Science Learnin Based on The Merdeka Curriculum

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Abstract: This study aims to analyze the implementation of Science (IPA) learning in the context of the Merdeka Curriculum applied in Indonesia. The Merdeka Curriculum provides greater freedom for schools and teachers in designing learning processes that focus on developing students' potential, such as critical thinking, creativity, and collaboration skills. In Science learning, project-based approaches, formative assessments, and the use of real-life contexts are key aspects explored. Through a qualitative method, data were collected from observations, interviews, and document analysis at several schools that have implemented the Merdeka Curriculum. The results show that the Merdeka Curriculum opens up opportunities for more flexible and relevant learning, but challenges related to teacher readiness, infrastructure, and resource support remain obstacles. Therefore, further development is needed in teacher training and the provision of facilities and infrastructure to maximize the potential of the Merdeka Curriculum in Science learning.

Keywords: Independent Curriculum, Science Learning, Analysis, Education, Competency Development.

Introduction

Education serves as the primary foundation for developing high-quality human resources. The curriculum, as an integral part of the education system, plays a crucial role in determining the direction and methods of teaching. In the context of education in Indonesia, the Independent Curriculum (*Kurikulum Merdeka*) was introduced as an innovation to provide flexibility and freedom in the learning process. This curriculum aims to adapt to students' needs and the changing times, prioritizing more contextual and relevant learning experiences.

One of the essential subjects in the Independent Curriculum is IPAS (Natural and Social Sciences). IPAS learning is expected to encourage students to think critically, creatively, and develop social awareness. With a more interactive and project-oriented approach, the Independent Curriculum provides students with opportunities to apply their knowledge in real-world contexts, thus making the relevance of their achievements clearer. Through this curriculum, it is hoped that students will not only master content but also be able to connect their knowledge to social and environmental conditions around them, creating a generation that is more prepared to face global challenges.

The objectives of Natural and Social Sciences (IPAS) education in elementary schools (SD/MI) are for students to understand their surrounding environment holistically, as well as to develop curiosity and a positive attitude toward science, technology, and society, as follows:

a. **Understanding the Environment**
   Students can manage both the natural and social environments as a unified whole.
b. **Developing Curiosity**

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Students can naturally foster curiosity and develop the ability to ask questions and seek answers.

c. **Cultivating a Positive Attitude**
Students can develop a positive attitude toward science, technology, and society.

d. **Enhancing Skills**
Students can develop process skills to investigate their surroundings, solve problems, and make informed decisions.

e. **Raising Awareness**
Students can enhance their awareness of the importance of participating in the preservation, protection, and conservation of the natural environment.

f. **Character Building**
Students can develop their character by building skills such as critical analysis, sensitivity to social issues, and self-empowerment.

These goals aim to foster a sense of responsibility and personal development, preparing students to become proactive and conscientious members of their community.These objectives aim to build foundational competencies that encourage students to become engaged, informed, and responsible members of society

Materials and Methods

The research method used in this study is a qualitative approach, with data collection techniques consisting of observation and interviews involving teachers and third-grade students at SD Negeri 02 Banyumudal, Kebumen. The data analysis method applied is the Miles and Huberman model. This method is a systematic approach to analyzing qualitative data with the aim of identifying themes, patterns, and relationships among concepts within the research data.The characteristics of the Miles and Huberman method include being systematic, iterative, context-focused, inductive, using data display, triangulation, and a collaborative approach.

Results and Discussion

Natural Science is a field of study that examines all phenomena in nature, including both living and non-living things[1]. According to Sadiman et al. (1986:2), learning is "a complex process that occurs in everyone and lasts a lifetime, from infancy to the grave." Learning can happen at home, in school, in the workplace, in places of worship, and within the community. It occurs through any means, from any source, and with any approach or person. One indicator that someone has learned is a change in behavior, which can manifest as changes in knowledge (cognitive), skills (psychomotor), and attitudes or behaviors (affective). Science learning in elementary school aims to foster a scientific attitude in students, which includes being innovative, creative, critical in reasoning, diligent, meticulous, and environmentally sensitive.

The science learning process based on the *Kurikulum Merdeka* at SD Negeri 2 Banyumudal, Kebumen, utilizes several instructional media, including the surrounding environment, images, and online videos. Instructional media play a vital role in supporting the success of learning objectives. According to Latuheru (1988: 14), instructional media encompass all tools or objects used in teaching and learning activities, with the purpose of conveying educational messages (information) from the source (teacher or other sources) to the recipient (students or learners).

The use of instructional media should align with the learning objectives, the material to be delivered, the facilities available at the school, and the characteristics of the students. Science learning in elementary school is closely related to nature and natural phenomena, making the Problem-Based Learning (PBL) model highly relevant when using the local environment as a learning medium.

A learning model refers to the approach used in teaching, including instructional goals, steps in learning activities, the learning environment, and classroom management. According to Djamarah, SB. (2006: 46), a learning method is "a way used to

[1] Afandi M, Chamalah E , Wardani OP,(2013), *MODEL DAN METODE PEMBELAJARAN DI SEKOLAH*.Semarang.UNISSULA PRESS hal-15

achieve predetermined goals." In the teaching and learning process, teachers need to employ varied methods to achieve desired outcomes by the end of instruction. In science learning at SD N 02 Banyumudal, Kebumen, various learning models are used, including projects, discussions, Q&A, assignments, lectures, games, and field trips. These models are tailored to the characteristics of the third-grade students at the school.

The implementation of science learning based on the *Kurikulum Merdeka* at SD Negeri 02 Banyumudal has encountered no significant obstacles. The only minor challenges relate to managing the classroom environment during hands-on practice and group discussions. These challenges can be addressed by reinforcing classroom norms, refocusing students with chants, and incorporating mindfulness exercises to help them stay engaged and collaborative.

Learning Approach

The *Kurikulum Merdeka* encourages the use of more contextual and project-based approaches. In IPAS (Natural and Social Sciences) learning, this approach can be implemented through:

- **Inquiry Project:** Students investigate local environmental or social issues in their community.
- **Collaborative Learning:** Students work in groups to solve problems relevant to the learning theme.

Material Integration

"IPAS in the Merdeka Curriculum integrates natural sciences and social sciences. This can be done by:

- Cross-Curricular Theme: Connecting scientific concepts with social contexts, such as studying the impact of climate change on society.
- Use of Technology**:** Utilizing information technology to collect data and analyze natural and social phenomena.

Authentic Assessment

The Merdeka Curriculum emphasizes a more holistic and authentic assessment approach. In Natural and Social Sciences (IPAS) learning, assessment can be conducted through:

- Portfolio: Collecting students' work throughout the learning process.
- Presentation and Discussion**:** Students present the results of their research or projects.

Role of the Teacher

In IPAS learning within the Merdeka Curriculum, the role of the teacher transforms into that of a facilitator. Teachers need to:

- Provide diverse learning resources.
- Encourage students to actively ask questions and explore.
- Offer constructive feedback.

Recommendations

The implementation of the Merdeka Curriculum in Natural and Social Sciences (IPAS) learning needs to be supported by teacher training and the provision of adequate resources. This will ensure that students receive an optimal and relevant learning experience.

Science Teaching Methods in Elementary School (SD/MI)

From this study, several methods are used in science teaching in elementary school (SD/MI), including:

1. **Lecture Method**
   The lecture method is still commonly used by teachers to explain lessons or provide information to students, making the teacher more active than the students. According to Sudjana (2013), the lecture method involves the oral presentation of lesson content. This method is most suitable for delivering factual or declarative knowledge. The lecture method includes several stages: preparation, presentation, association, conclusion generalization, and evaluation.
2. **Demonstration Method**
   The demonstration method is often used by science teachers to demonstrate a concept or procedure. This method may involve bringing real objects into the classroom, modeling, or performing an experiment sequence. Demonstration activities include planning, implementation, and follow-up. For example, students may be asked to bring a complete

flower to study the parts and functions of a flower.

3. **Discussion Stage**
   According to Sudjana (2013), the discussion method involves the exchange of information, opinions, and elements of experience to gain a clearer and more accurate understanding of a topic. This method encourages students to collaborate and work together, fostering respect and appreciation among peers. It also helps develop students' critical thinking skills.
4. **Experiment Method**
   The experiment method aids students in understanding material through direct observation of factual elements in objects or processes. This method can be conducted inside or outside the classroom. It is highly engaging for students and can stimulate their curiosity.
5. **Question and Answer Method**
   The question-and-answer method involves the teacher posing questions for students to answer, encouraging students to think and concentrate on the science lesson explained by the teacher. This approach allows teachers to gauge students' comprehension levels and their retention of the material taught.

   These methods support varied learning styles and can enhance students' engagement and understanding in science lessons.

Conclusions

The analysis of Natural and Social Sciences (IPAS) learning based on the Merdeka Curriculum shows that this curriculum provides opportunities for students to learn independently and contextually. Through a creative and integrative approach, students not only understand scientific and social concepts but are also able to apply them in their daily lives.

Learning media encompass all tools or objects used in teaching and learning activities to convey educational messages (information) from the source (teacher or other sources) to the recipients (students or learners). The use of learning media should be aligned with the learning objectives, the material to be delivered, the available facilities at school, and the characteristics of the students

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