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# Activities, Resources, and Learning Environment: A Case Study of Science Learning at Sekolah Alam

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**Abstract:** This study examines science education activities, resources, and the learning environment at Sekolah Alam Al Fath Jambi Junior High School. Using a case study approach, the research involves direct observations, interviews with teachers and students, and learning materials analysis to understand the impact of various learning methods on student outcomes. The findings highlight that science learning activities align with the Sekolah Alam concept, emphasizing project-based, experiential, nature-based, and collaborative approaches. Learning occurs inside and outside the classroom, utilizing the natural surroundings for exploration and field experiments. Resources include school gardens, outbound areas, natural materials, and collaborations with local experts. The learning environment, assessed through the WIHIC questionnaire, supports student success through dimensions like cohesiveness, teacher support, involvement, task orientation, cooperation, equity, enjoyment, and academic efficacy. This study underscores the effectiveness of nature-integrated and experiential approaches in enhancing science learning outcomes and offers recommendations for advancing educational practices in similar settings.

**Keywords:** Learning activities; Learning environment; Learning resources; Science learning; Sekolah alam

## Introduction

Science learning in schools often faces challenges in making the material taught relevant and exciting to students (Halimah et al., 2023; Ndoa & Jumadi, 2022). Conventional approaches based on textbooks and classrooms often cannot arouse students' interest and curiosity in science (Mashudi et al., 2024). Therefore, an alternative approach is needed to present a more meaningful and contextualized learning experience (Mukhlisa et al., 2021). Science learning in formal schools has long been the focus of the attention of various researchers and educational policies. However, the learning approach in nature schools provides a different and exciting perspective to research. Sekolah Alam integrates teaching and learning activities with the natural environment, which aims to create a more contextual and enjoyable learning experience for students.

Sekolah Alam is one of the innovative alternatives in education that integrates the natural environment as an integral part of the learning process. This approach seeks to connect students directly with nature, allowing them to learn through real experiences outside the classroom. This aligns with the view that meaningful learning occurs when students can relate the knowledge gained to the real-world context (Bidarra & Rusman, 2017; Demssie et al., 2023). According to recent research, nature-based learning can increase student engagement and provide a more meaningful learning experience (Novitasari, 2023; Trianasari et al., 2024). In addition, this approach can also help students develop science process

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skills such as observation, measurement, and data analysis (Primayana et al., 2019; Widiastutik, 2021). Sekolah Alam prioritizes learning methods based on direct experience with the surrounding environment. This method can foster students' love and care for nature and improve their understanding of science concepts through direct observation and practice. This research tries to dig deeper into how learning resources in Sekolah Alam can influence the process and outcomes of science learning.

Learning in Sekolah Alam often utilizes the natural environment as an open laboratory rich in learning resources. This provides opportunities for students to interact directly with natural phenomena, which is often difficult to do in conventional classroom settings. According to Cahyanto et al. (2024) and Antari et al., (2021), outdoor learning can increase student engagement and conceptual understanding. In the context of science learning, Sekolah Alam offers unique opportunities to explore science concepts through hands-on exploration and experimentation in the natural environment. Learning activities in nature improve conceptual understanding and foster critical thinking skills and problem-solving abilities (Anugraheni, 2018; Ariesandy, 2021). Previous research by Miller et al. (2021) showed that nature-based learning can improve students' critical and creative thinking skills. They also noted increased learning motivation and student satisfaction with the learning process. These findings support the view that learning resources in nature schools can provide significant benefits in science learning. In addition, using various learning resources derived from the surrounding environment, such as flora and fauna, ecosystems, and natural phenomena, provides opportunities for students to see and experience first-hand how science concepts are applied in real life. This can increase students' learning engagement and motivation, positively impacting their learning outcomes.

The learning environment is critical in the educational process, especially in learning science (Lin et al., 2019; Yilmaz-Tüzün & Topcu, 2010). A conducive learning environment can increase students' motivation, engagement, and understanding of the material (Fajrina et al., 2024; Prameswari et al., 2020). In this context, Sekolah Alam offers a unique approach that utilizes the natural environment as the primary learning resource. This approach can provide a more in-depth and contextualized learning experience for students. Sekolah Alam integrates learning activities with the surrounding environment, making nature an open laboratory. Students are invited to observe, explore, and interact directly with natural phenomena. This is expected to increase student engagement and understanding of science concepts. According to research by Ayotte-Beaudet et al. (2023), learning outside the classroom can increase students' curiosity and scientific skills.

The learning environment in Sekolah Alam, not limited by classroom walls, also provides space for students to explore freely and creatively. This natural and dynamic environment can create a pleasant learning atmosphere and stimulate students' curiosity (Irawan et al., 2024). Thus, the learning environment provided by natural schools has an essential role in supporting an effective and meaningful learning process. A study by Putri et al., (2024) showed that experiential learning can improve students' conceptual understanding and critical thinking skills.

In addition, the learning environment in Sekolah Alam also encourages cooperation and positive social interactions (Sahrakhiz et al., 2018). Students are encouraged to work in groups, share ideas, and solve problems collectively. This improves their social skills and builds a sense of community and responsibility. This approach is supported by research findings by Rofiudin et al. (2024) and Setiawan et al. (2024), who stated that collaborative learning can improve students' communication and cooperation skills. However, implementing science learning in natural schools is not free from challenges. Erratic weather conditions and limited facilities often become obstacles. Therefore, adaptive and creative strategies are needed to overcome these obstacles. Research by Derman (2023) suggests that flexibility in planning and implementing learning activities can help overcome these challenges and maximize the benefits of learning outside the classroom.

This research explores how activities, resources, and learning environments in Sekolah Alam influence science learning. Through a case study in one of the Sekolah Alam at SMP Alam Al Fath Jambi, this research is expected to provide a more in-depth picture of learning practices in Sekolah Alam and their impact on students' understanding and engagement in science learning.

## Method

This research was conducted at the Sekolah Alam Al Fath Junior High School in Jambi using a qualitative case study approach. Data were collected through participatory observation, interviews with teachers and students, and analysis of learning documents. The qualitative data collected is analyzed using the Miles and Huberman model, which consists of three stages: data reduction, data presentation, and conclusion (Chen et al., 2022; Dezola et al., 2023). A qualitative approach can explore in-depth information where the data collected are words, pictures, and not numbers

(Ernawati et al., 2021; Fitriani et al., 2020; Sapat et al., 2017). These data can be obtained from interviews, field notes, photos, video tapes, personal documentation, notes, memos, and other documentation. According to Leman et al. (2015) and Susanto et al. (2023), qualitative research makes discoveries that cannot be made through statistics or other quantification methods. The first two main objectives of qualitative research are to describe and reveal (to describe and investigate) and to describe and explain (to describe and Explain).

Data analysis was conducted through three main stages: interviews, observations, and documentation (Putri et al., 2022). In analyzing interview data, the first step was to transcribe the recorded interviews and notes into written text. Afterward, the transcripts were reviewed to understand the general context and gain an initial understanding of the interview content. Information directly related to the research objectives or questions was sorted, while irrelevant, insignificant, or repetitive information was ignored. Then, relevant data was coded according to specific themes. Similar codes were grouped to facilitate further analysis. After the reduction process, the data was presented in tables highlighting the main themes and showing any similarities or differences in answers between respondents. In presenting the data, it was essential to consider respondents' various points of view so that all data received equal attention. The final stage concludes by interpreting and evaluating the data that has been presented to find patterns, themes, or more profound understanding.

In the analysis of observation data, the first step is data reduction, where researchers record and record observation data in the form of field notes, video recordings, or photographs. Furthermore, parts of the data relevant to the research objectives are selected, and repetitive or irrelevant data are ignored. The reduced data was then presented in a table, with themes that emerged during the observation noted. The final stage was to conclude the data that had been presented, intending to answer the research questions and identify significant patterns.

Documentation data analysis began with selecting relevant documents for the research topic. Once the documents were selected, the researcher read the entire content to understand the context, structure, and critical information conveyed. Relevant parts of the documents were selected, while general information that did not support the research objectives was ignored. After the reduction, the data was organized into a summary containing the critical information from the documents. The data is presented in tabular form to facilitate document comparison if necessary. The final stage concludes by looking for patterns, relationships, or meanings relevant to the research objectives. Overall, these three methods of analysis, "interviews, observations, and documentation," contributed to gaining a deep understanding of the data and producing meaningful findings for the research.

## Result and Discussion

*School Profile of SMP Alam Al Fath Jambi*

SMP Alam Al Fath Jambi is an educational institution under the Al Fath Rahmatan Lil Alamiin Jambi Foundation and is the first nature school in Jambi Province. Established with a vision to provide education based on hands-on experience and interaction with nature, the school is a pioneer in education that emphasizes freedom of learning and exploration. The school offers a unique learning atmosphere where students are encouraged to explore their interests and talents while staying connected to the natural environment. Sekolah Alam Al Fath paved the way for alternative educational approaches in Jambi. The school originated from the idea of three founders who envisioned creating quality human beings in this world and the hereafter. The Al Fath Foundation was established in 2004, starting with a playgroup and kindergarten. In 2010, the education level expanded to elementary and junior high.

Alam Al Fath Jambi Junior High School was established in 2018 and has three batches of graduates. This school was founded based on a vision and mission to produce students who lead themselves and others. The core values applied from Play Group to Junior High School include four main values: leadership, "akhlaqul karimah", scientific thinking logic, and economic independence (business). The four core values are organized in stages according to students' psychological, psychomotor, physical, and affective development, starting from Play Group to Junior High School. The aim is for these values to be internalized and applied sustainably throughout the education process.

*Education Concept of Al Fath Jambi Junior High School*

SMP Alam Al Fath Jambi uses the National Education Curriculum and the Jaringan Sekolah Alam Nusantara (JSAN). The curriculum covers three years of learning, from grade VII to grade IX. The school offers boarding and non-boarding programs and a full-day school system. Learning hours run from 07:00 to 15:10, Monday through Friday. Saturdays are devoted to boarding activities such as outbound, swimming, cycling, outings, and mentoring. The learning program allows students to explore nature, with teachers acting as facilitators.

Learning evaluation is done through written and non-written tests. Written tests include daily tests, midterm exams, semester exams, school exams, and national exams, while non-written tests include field studies and practical exams. The assessment covers three aspects: knowledge, skills, and attitudes. The educational paradigm of SMP Alam Al Fath combines Islamic values with science, which is the basis for curriculum preparation, interest and talent development programs, and student development.

*Curriculum*

As described by Paulina et al. (2024), the Sekolah Alam curriculum incorporates several unique elements designed to provide a holistic educational experience. The Moral Curriculum emphasizes teaching true morality through an exemplary approach, where teachers model virtuous behavior. The Knowledge Curriculum leverages nature as a living laboratory, allowing students to engage directly with the natural environment through enjoyable and active learning. This approach fosters discussions and holistic understanding, enabling children to explore the universe meaningfully.

The Leadership Curriculum integrates outbound activities as a core teaching tool, encouraging students to participate in real-world experiences that build leadership qualities. Additionally, the Business Curriculum introduces students to entrepreneurship through market day or apprenticeship programs, providing early exposure to business practices, environments, and interactions with industry professionals. This comprehensive curriculum nurtures well-rounded individuals by blending moral, cognitive, leadership, and entrepreneurial development.

Van den Akker represents curriculum in various forms: ideal curriculum (the vision or rationale underlying a curriculum); formal/written curriculum (intentions as stated in curriculum documents and materials); perceived curriculum (curriculum as interpreted by its users, especially teachers); operational curriculum (actual teaching and learning process); experiential curriculum (learning experience as perceived by learners); and learned curriculum (resulting in learner learning outcomes) (Marsh, 2009).

**Table 1.** Curriculum representations

| Type | Representations |
|---|---|
| The ideal curriculum | The original vision underlying a curriculum (government/ education board) |
| The formal/written curriculum | The intentions as specified in curriculum documents and/ or materials |
| The perceived curriculum | The curriculum as interpreted by its users (especially teachers) |
| The operational curriculum | The actual process of teaching and learning (curriculum-in-action) |
| The experiential curriculum | The learning experience as perceived by learners |
| The learned curriculum | The resulting learning outcomes of learners |

SMP Alam Al Fath Jambi implements the curriculum of the Ministry of National Education, enriched with the unique curriculum of the Jaringan Sekolah Alam Nusantara (JSAN) through the Belajar Bersama Alam (BBA) approach. The national curriculum used is the revised 2013 Curriculum (grades VIII and IX) and the Merdeka Curriculum (grade VII). The JSAN curriculum includes four main pillars: knowledge, morals, leadership, and entrepreneurship. The BBA approach is applied in all branches of Sekolah Alam in Indonesia, including Al Fath Jambi Junior High School, which is equipped with competency standards, indicators, and evaluation instruments.

Implementing the JSAN curriculum and the BBA approach at SMP Alam Al Fath Jambi reflects the school's commitment to providing holistic education based on hands-on experience. This approach is applied in all subjects, including science, to create a learning environment that encourages students to be active and deeply understand the material. This experiential learning philosophy is consistent with the vision of a natural school, which emphasizes direct student involvement in the learning process.

*Science Learning Activity*

The learning process at Al Fath Jambi Junior High School is carried out inside and outside the classroom and is adjusted to the topic being studied. The time allocation for each lesson hour is 40 minutes, with science subjects given for 4 hours per week on two days. The learning approach in Sekolah Alam differs from that of formal schools because they use the natural environment more as a learning space. Time inside and outside the classroom is organized according to the curriculum and methods that allow students to learn directly from nature, creating a more prosperous and profound experience.

*Proportion of Time Outside of Class*

Active Learning outside the classroom: Outdoor learning activities usually receive much attention in nature schools. Exercises such as forest investigations, nurseries, lakes, or other standard areas are often crucial to the educational program. Outdoor activities can take up 50 to 70 percent of the learning time. Projects and

Field Experiments: Many nature schools utilize project activities and field tests as learning techniques. These could involve gardening, observing plants and animals, or working on other environmental projects.

*The Proportion of Time in the Classroom*

In-depth theory and discussion: Class time is usually used to discuss and review field meetings, focus on speculations that help with exercises completed outside, and work on written assignments or collection projects. Use of technology and additional learning resources: Although nature-based schools prioritize open learning, innovations and traditional learning materials, such as books and computers, are still used in the classroom to support the educational experience.

*Routine Activities*

Character and Social Skills Development: The educational program in regular schools also includes routine exercises to develop students' personalities and interactive abilities, such as collaboration, initiative, and social responsibility. Physical and Skill Activities: In addition to scholastic learning, physical and creative exercises such as games, expression, and artwork are often part of the daily schedule.

As such, the specifics of learning time-sharing in nature schools vary significantly from one nature school to another, but on average, nature schools try to integrate around 50-70% outdoor learning activities and 30-50% indoor activities, depending on the season, the weather, and the learning topics being discussed. Al Fath Junior High School also implements learning time by the nature school concept. Teaching science outside the classroom can give students a more contextualized and exciting learning experience. The following are examples of science materials that can be taught outside the classroom along with the activities carried out.

*Ecosystems and Biodiversity*

Facilitators in natural schools have a unique approach to implementing learning outside the classroom, especially for ecosystem and biodiversity materials. The out-of-class learning methods are interactive and contextual, allowing students to connect directly with the surrounding environment. Here is how nature school facilitators implement outdoor learning on ecosystems and biodiversity.

Direct Observation in Nature: Teachers take students to the forest's natural ecosystem. There, students are invited to observe the diversity of living things, such as plants and animals, and interactions between species in the ecosystem. They learn about symbiotic relationships, food chains, and the role of living things in maintaining the balance of nature.

Field Exploration and Research: The teacher invites students to conduct simple exploration and research in the field, collecting samples of leaves, soil, or water to be analyzed in class. Furthermore, students are trained to use scientific tools such as microscopes and temperature-measuring instruments to study the quality of the environment and the characteristics of biodiversity in that location.

Ecosystem Maintenance Project: This project involves students in real projects, such as planting trees that support biodiversity. In this process, students not only learn theory about ecosystems but also contribute directly to preserving the environment. Nature-based Educational Games: Teachers create educational games that teach the concepts of ecosystems and biodiversity. These games include food chain simulations in which students act as various living things in an ecosystem. This helps students understand complex concepts in a fun and interactive way (Fitriani et al., 2023; Maison et al., 2023).

Discussion and Reflection in Nature: After making observations or field activities, the teacher invites students to sit in nature, talk, and reflect on their learning. Students are invited to discuss the importance of maintaining biodiversity and the impact of ecosystem damage on human life.

Learning from Practitioners or Conservation Experts Teachers invite environmental practitioners and conservation activists to speak to students about nature. This allows students to gain first-hand insights from those who work to protect ecosystems and biodiversity. Using Natural Media for Learning: Teachers utilize natural elements such as leaves, tree trunks, rocks, or water to create simple experiments. For example, they can observe photosynthesis using leaves found during exploration.

This approach helps students build stronger connections with the subject matter, as they can directly see and experience how the theories taught in the classroom are applied in real-world environments. Learning becomes more relevant, engaging, and meaningful for students in nature-based schools.

*Photosynthesis*

Facilitators in nature schools usually apply outdoor learning methods on photosynthesis in a more interactive and nature-based way. The usual steps in applying the nature school concept to this material are:

Direct Observation in Nature: Students are invited to the environment around the school to observe plants directly. They are asked to study the parts of plants involved in the photosynthesis process, such as leaves, stems, and roots. In this activity, students are asked to observe the leaves.

Simple Experiments: The teacher guides students through a simple experiment by putting the leaves in the sun and in the shade and then asking them to compare the results to see what role light plays in photosynthesis for the leaves under the sun and the leaves in the shade.

Group Discussion: The teacher invites students to discuss their findings after observation and experimentation. Students can explain the process of photosynthesis based on direct experience from simple experiments, not just from books.

Creative Projects: Students create diagrams or models of the photosynthesis process using natural materials that they find during activities outside the classroom. This can help integrate creativity into understanding the material.

Contextualized Learning: The teacher relates photosynthesis to everyday life, such as how photosynthesis provides oxygen and food and the importance of protecting plants and the environment.

This approach helps students understand the concept of photosynthesis through direct experience and contextual learning, making the material easier to understand and relevant to real life. By teaching science materials outside the classroom, students can gain a deeper and more accurate understanding of scientific concepts while developing observation and investigation skills.

*Class VII Science Learning Activities*

When the research activities were carried out, science learning in class VII of Alam Al Fath Jambi Junior High School discussed material about the nature of science and the scientific method. Based on observations, classroom learning uses various creative methods such as lectures, questions and answers, observations, and presentation discussions. The media used include learning videos and the surrounding environment while learning resources come from books, the internet, and direct observation at school.

This approach is designed to attract students' interest, facilitate understanding of the material, and encourage them to participate more actively. In the second meeting observation, we found the explore nature learning model, where students were divided into groups to observe the nature of science and the scientific method in the school environment. The results of their observations are then discussed in class, creating an interactive learning atmosphere relevant to the real world.

The Explore model is a learning approach that gives students direct experience through exploration and interaction with learning objects in their environment. This method involves activities inside and outside the classroom, allowing students to acquire knowledge, skills, and attitudes through five critical phases: exploration, interaction, communication, reflection, and evaluation.

During science learning, there is an active interaction between students and teachers, where students enthusiastically answer and ask questions about the material. The teacher provides alternating opportunities for students to participate, creating a dynamic discussion atmosphere. In addition to delivering science material, the teacher relates the concept of natural schools with the Belajar Bersama Alam (BBA) approach. The steps of activities carried out by the teacher on the material of the nature of science and the scientific method are as follows.

The teacher starts the lesson by introducing the nature of science and explaining the basics: Science is a human effort to understand the universe through observation, experimentation, and analysis (Harizon et al., 2023). Then, the teacher starts the lesson by discussing simple scientific questions, such as "How can plants grow?" Students are invited to think critically and propose initial hypotheses based on their daily experiences. The teacher introduces the stages of the scientific method, starting from formulating problems, formulating hypotheses, conducting experiments, collecting data, analyzing data, and concluding. Furthermore, the teacher gives a simple example of the scientific method about the effect of light on plant growth and how science works to find answers to these questions. Observation and Data Collection in Nature: The teacher takes the students to the outdoor school garden to observe natural phenomena relevant to the studied topic. Students observe plant growth patterns and are asked to record everything they see, feel, or hear. The teacher gives the guide observation sheet or guide for observation so students can focus on things related to their formulated hypothesis. Simple experiments in nature, the teacher directs students to design experiments based on their scientific questions about the effect of Light. With the formulating hypothesis step, Students hypothesize from the observation, "If plants get more light, they will grow faster. Then, Determining Variables: Students learn to recognize the independent variable (amount of light), dependent variable (plant growth), and control variable (same plant). After determining the variables, students conduct experiments in nature: planting two plants with different conditions (one in the light, one in the shade) and observing their growth. The last step is data collection: Students record experimental results such as plant height every few days, leaf condition, etc. Analysis and Discussion of Results: Students and the teacher analyze the collected data after the experiment. They can compare the experimental results with the hypothesis

made at the beginning and try to explain the results. With Step,, Students compile data tables or make graphs of the observations. The teacher guides the discussion on how the experimental results support or reject the initial hypothesis. Students summarize the experimental results and learn that not all hypotheses will be proven correct in science. Reflection and presentation: Students are asked to reflect on the whole process, from observation to conclusion. They can also present the results of their experiments in front of their classmates, explaining the methods, data, and conclusions they found.

By implementing learning outside the classroom, students in nature schools will better understand that science is a theory learned in the classroom and a living and evolving process in the real world.

**Figure 1.** Outdoor Learning of the Sekolah Alam Concept

Students do outdoor learning at the vegetable farm around the school. The activities carried out by students are: Environmental Observation: Students make direct observations of various types of vegetable plants, including physical characteristics, growth, and favorable environmental conditions. This includes studying soil type, moisture, and other factors that affect plant growth. Vegetable Planting: Students learn how to plant vegetables, from choosing the right seeds and preparing the land to proper planting techniques. Students are also taught about the importance of appropriate spacing and depth for each type of vegetable. Plant Care: Students are involved in caring for the plants, which includes watering, fertilizing, and natural pest control. This activity helps students understand the responsibility of caring for living things and the process of plant growth. Introduction to Sustainable Agriculture Techniques: Students are taught about sustainable farming practices, such as using organic fertilizers, crop rotation, and water conservation, to keep the soil and environment healthy. Harvesting Activities: Students engage in harvesting activities when the vegetables are ready for harvest. They learn about the right harvesting time and good techniques to keep the vegetables fresh and undamaged.

**Figure 2.** Presentation of outdoor learning observation results

Students present their outdoor learning observations at the vegetable farm. Students do discussion and reflection: During this activity, students have a group discussion to reflect on their hands-on learning experience, share the knowledge gained, and evaluate the learning process. Next, students do creative activities: Students do creative activities by making posters or presentations about their learning outcomes, which include information about vegetable plants, growth processes, and harvesting as a medium for presenting results.

*Class IX Science Learning Activities*

When the research was conducted at SMP Alam Al Fath, class IX ran Environment-Based Learning (EBL), which focused on plant breeding material. This activity allows students to learn outside the classroom, providing a more authentic and in-depth learning experience. Before starting, the teacher explains the steps students will take during the activity outside the classroom.

First, students make observations in the school garden, where they observe different types of plants and focus on the parts related to reproduction, such as flowers, fruits, and seeds. Students record and draw what they see, enhancing their observation skills and creativity. Next, they collect plant samples for further analysis in class, deepening their understanding of plant structure. Afterward, students conduct experiments outside the classroom, such as artificial pollination or observation of plant growth from seeds. In this way, students are directly involved in the learning process, practically seeing the concept of reproduction and understanding the importance of interaction with nature.

**Figure 3.** Observing plant reproduction

After students do activities outside the classroom, they observe the school environment to get data. Students then make projects from the data obtained and present the results of the activities carried out outside the classroom. Students also make eco-print projects by utilizing plants observed in the school environment.

**Figure 4.** The process of making ecoprints

*Science Learning Resources*

Learning in an open space in a Sekolah Alam with active learning, also known as action learning, teaches students to learn by doing. Improving the quality of education, utilizing the surrounding natural environment as a learning medium, and adding to the area's nature-based learning system and edu-tour-based learning capabilities. Building educational facilities that utilize natural materials in the area to encourage the creativity of children of residents and surrounding areas (Hakim, 2016; Nurhafizah, 2018).

Belajar Bersama Alam (BBA) is used in Sekolah Alam to teach. With this method, students are (supposed to be) able to apply the teaching to real-world situations and also understand the connection between the given lesson and the integrated one. Not only do students learn in Sekolah Alam, but educators and even parents can learn from each other and the children. Children not only learn at school, but they also gain knowledge from their surroundings. They learn to use information daily rather than studying for grades.

Learning resources in Sekolah Alam can be found in the environment around students, such as plants, soil, and trees. The natural conditions of the countryside, such as houses, plants, rivers, and soil, provide opportunities to learn directly from nature. The life of flora, fauna, and social interactions make exciting observations and can be used as discussion material in environmental education. In addition, other educational resources include libraries, print media, teaching aids, and natural learning environments (Hasanah et al., 2024).

*Use of the Environment as a Classroom*

One of the main findings of this study is that nature schools use the surrounding environment as a classroom. This allows students to learn through hands-on experiences, such as studying ecosystems by exploring the forest, studying the water cycle by observing the flow of rivers and studying renewable energy by using solar panels installed at the school. One example of an activity is when students are invited to observe different types of plants and animals around the school. They then discuss how these living things interact with each other and their environment and how they adapt to environmental changes. This method makes learning more exciting and helps students relate the theory to the real world.

*Project-Based Learning Approach*

Sekolah Alam also applies the *project-based learning* approach. In this approach, students work in groups to complete projects related to science materials. For example, students are asked to create a simple model of the water cycle using natural materials they find in the surrounding environment. This project improves students' understanding of science concepts and develops collaboration, problem-solving, and presentation skills. Observations and interviews with

teachers and students show that this approach effectively increases students' engagement and motivation in learning.

*Interdisciplinary Learning*

Sekolah Alam also implements interdisciplinary learning, combining concepts from different subjects in one learning activity. For example, when learning about ecosystems, students not only study biology but also math (counting population), geography (studying location and environmental conditions), and art (drawing ecosystems). Interviews with teachers show that this approach helps students to see the interconnections between subjects and understand how knowledge from different fields can be applied simultaneously to solve real problems.

The learning resources applied at Al Fath Jambi Junior High School vary greatly depending on the teaching method, where the sources used in the learning process are not only sourced from textbooks. In Sekolah Alam, science learning resources often focus more on a natural approach and hands-on experience. Nature schools often utilize the surrounding natural environment as the primary source of science learning. This includes conducting nature explorations and studying plants, animals, and ecosystems around the school. Some natural resources that can be used as learning resources include rocks, soil, water, and plants, which can be used for simple scientific experiments and understanding the properties of matter and natural processes. In natural experiments directly sourced from nature, students can conduct simple experiments in nature, such as observing weather changes, observing animal behavior, or investigating various soil types with the material being studied in class.

At SMP Alam Al Fath Jambi, the science learning process is often carried out by direct observation, where students can take field trips to forests, rivers, and gardens to understand different ecosystems and learn directly about various plant and animal species. With direct observation, learners can conduct independent research from the activities carried out, such as direct observation of what natural phenomena occur during observation activities and make scientific questions to be answered. Direct observation activities can provide direct experience to students. Students can understand what is being learned quickly and will find the learning process very interesting, so it becomes a separate experience after making observations of the surrounding nature.

**Figure 5.** Direct observation of field learning to the river

In the concept of Sekolah Alam, science learning is often integrated with the surrounding natural environment. Science learning resources in Sekolah Alam applied at Al Fath Junior High School can include direct observation, which utilizes the surrounding environment as a natural laboratory for direct observation of plants, animals, and natural phenomena. Nature Expeditions: Involving students in expedition activities or trips to the outdoors to study aspects of science. Farming and School Gardens and Around the School: Growing plants and maintaining the school garden to understand plant life cycles, ecosystem interactions, and science concepts. Field Research: Encourage students to conduct field research by observing flora and fauna, collecting data, and analyzing their findings. Collaboration with Local Experts (Learn From Maestro): Engage local science experts or the local community to provide additional insights and organize joint activities. Using Natural Materials: Natural materials such as rocks, leaves, and branches are used as teaching materials for experiments or learning science concepts. Project-based Learning: Organizing problem-based science projects relevant to the surrounding environment, encouraging students to find solutions. Knowledge Exchange with Local Communities: Engaging students in knowledge exchange with local communities, such as meeting with farmers, fishermen, or local environmental experts.

Data analysis shows that the science learning approach at Al Fath Jambi Junior High School prioritizes direct experience and interaction with the natural environment. This approach enhances students' understanding of scientific concepts and develops practical skills and a sustainable attitude towards the environment. Through these engaging and immersive learning experiences, students are expected to develop a deeper understanding of the natural world and its connection to their daily lives.

In conclusion, the approach to science learning at SMP Alam Al Fath Jambi, which focuses on direct experience and integration with the surrounding natural

environment, provides a strong foundation for developing students' scientific understanding and skills. By combining theory with practice, students are expected to become active, critical, and caring learners of the environment.

*Learning Environment*

The environment can be defined as a unity of space that encompasses all objects, forces, conditions, living beings, humans, and their behaviors, influencing the survival and well-being of humans and all living creatures. The environment includes the surrounding objects that affect their properties and growth. Therefore, other humans, cultural artifacts, regulations, air, water, sunlight, and other objects around humans are included in the human environment (Miharja, 2016).

Sekolah Alam utilizes the potential of their environment to teach primarily in open spaces. This approach aligns with learning through nature. Generally, nature schools adopt a learning model that employs ethical procedures. Therefore, any suitable method can be used, and we can find various learning models in nature schools in any field. To engage students in studying and understanding the sciences or material being taught, learning and activities in the open environment often follow exciting and challenging activities. An important aspect to note and be aware of as a fundamental guideline in every learning activity at nature schools is our responsibility to preserve and protect the environment. Usually, outdoor activities also provide experiences related to this obligation (Hadziq, 2016; Rahmi et al., 2021).

The learning environment at SMP Alam Al Fath Jambi is assessed from several dimensions based on the WIHIC questionnaire to determine the dimensions of the learning environment, including social relationships, teacher support, and student engagement at SMP Alam Al Fath Jambi.

*Student Cohesiveness*

In Sekolah Alam, cooperation among students is one of the critical elements in the learning process. Students often engage in group projects and collaborative activities inside and outside the classroom. Their cohesion is evident in how they help each other, share responsibilities, and work together to complete tasks. This strong culture of cooperation continues to grow, supported by the active assistance they provide one another, whether in discussions or practical activities.

Student involvement in nature schools is not limited to academic aspects but also extends to social ones. This high level of social engagement strengthens solidarity among students. Group discussions, observational activities, and practical projects that require cooperation and effective communication serve as platforms for them to deepen their collaboration skills. These interactions help create an inclusive classroom atmosphere where students feel comfortable asking questions, expressing opinions, or seeking help without fear of judgment.

Moreover, social support in the classroom fosters a safe and supportive environment for each student. This encourages closer bonds among students, making their cohesion more apparent in every learning challenge they face. The open learning atmosphere also allows students to learn effective communication. Their ability to work in teams is further honed through group discussions and collaborative problem-solving.

*Teacher Support*

In Sekolah Alam, teachers play an active role in every learning process. They serve as content deliverers and facilitators who help students find answers through exploration and observation. Teachers provide clear guidance while allowing space for students to think independently and learn from direct experiences. This approach encourages students to be more active in their learning and engage deeply. Additionally, teachers are always ready to assist when students face difficulties. Students feel their teachers are easily accessible and quick to offer helpful feedback. Teachers' support is personal because they understand students' academic and socio-emotional needs. This creates a safe environment for students to ask questions, share, and actively participate in learning activities. Teachers in nature schools know their students not only academically but also personally. They understand each student’s interests, talents, and needs. The role of teachers goes beyond merely teaching; they act as mentors who provide guidance tailored to the personal development of each student. This close relationship boosts students' self-confidence and strengthens the bond between teachers and students, positively impacting the learning process.

In Sekolah Alam, teachers encourage students to learn independently and develop their creativity. Students are motivated to solve problems in their ways, encouraging them to think critically and creatively. Teachers present appropriate challenges while offering guidance when needed so students feel challenged yet remain within manageable limits. Teachers' emotional support is also crucial in creating a positive learning atmosphere. Teachers often offer motivation, acknowledge students' efforts, and appreciate their achievements. This environment makes students feel valued, heard, and respected, contributing to their psychological well-being. This support balances the

freedom of exploration with clear learning structures. Overall, the role of teachers in nature schools creates an environment that supports holistic learning. Students feel appreciated, supported, and given the space to grow independently. This support encompasses emotional, academic, and the development of independence and creativity, all contributing to students' well-being and success.

*Involvement*

Student involvement in nature schools is evident in their active participation in teaching and learning. Students regularly engage in discussions, group projects, and various hands-on activities that encourage them to participate actively in each lesson. This approach emphasizes the importance of exploration and direct interaction, making learning more meaningful and profound for students. In Sekolah Alam, students learn individually and collaborate with their classmates in various activities, such as experiments, group discussions, and field projects. This involvement deepens students' understanding of the material and builds strong social bonds. They feel part of a dynamic and supportive learning community, which fosters cooperation and solidarity. The positive relationship between students and teachers further strengthens this involvement. In Sekolah Alam, teachers act as facilitators who support academic development and students' personal growth. Students feel comfortable asking questions, expressing opinions, and seeking help, which enhances their participation in the learning process.

Sekolah Alam also encourages student independence and responsibility in learning. Students are encouraged to take initiative, manage their time, create learning plans, and conduct independent observations and experiments. Through this active involvement, students develop a sense of responsibility for their learning process while honing critical thinking and problem-solving skills. Relevant learning experiences connected to real life also make students in nature schools more engaged and enthusiastic. Learning activities often conducted outdoors or in hands-on situations make the subject feel more tangible and applicable. Students feel that what they learn has direct benefits and relevance to their world.

Students in Sekolah Alam demonstrate high emotional engagement not only through academic involvement but also through high emotional engagement. Teachers relate lessons to students' interests and daily experiences, making students feel more connected to the studied material. This fosters intrinsic motivation, making them more enthusiastic and actively involved in each learning session. The inclusive and open learning environment in nature schools encourages students to express their ideas and opinions confidently. Class discussions become a safe space for students to participate actively, making them feel that their voices matter in the learning process. Overall, a holistic learning approach greatly influences student involvement in Sekolah Alam. Students learn from books, direct experiences, and social interactions. A supportive, flexible, and relevant learning environment engages students more academically and emotionally (Asma et al., 2020).

*Task Orientation*

Task orientation in Sekolah Alam emphasizes deep understanding rather than completing tasks quickly. Students are encouraged to truly grasp the concepts being learned rather than just memorizing facts. The tasks assigned, both in and out of the classroom, are designed to challenge students to explore scientific concepts and apply them in real-life contexts. Thus, learning in Sekolah Alam is theoretical and practical, providing students with the opportunity to see the relevance of the material being studied directly.

Sekolah Alam often uses a project-based task approach that integrates various aspects of knowledge. Students engage in projects that require observation, experimentation, and exploration outside the classroom, such as studying the ecosystems around them or conducting simple research. Such tasks make students more engaged and focused on completing projects with tangible and applicable results. This process enhances academic understanding and fosters a sense of concern for the environment. Students are also given significant responsibility in managing their tasks. Teachers provide clear guidance, but students can organize their time and how they complete their tasks. This helps them develop time management skills and self-discipline while reinforcing their orientation toward personal responsibility. By managing tasks independently, students learn to be more self-reliant and organized in completing their work.

In addition to individual tasks, Sekolah Alam emphasizes the importance of teamwork. Many tasks are collaborative, where students work in groups to achieve a common goal. These collaborative tasks allow students to learn to coordinate, share roles, and collaborate in completing projects. By working together, students achieve clear learning objectives and essential interpersonal skills for the real world. Task orientation in Sekolah Alam focuses on the quality of work produced rather than the quantity of tasks to be completed. Students are encouraged to approach tasks with dedication and care, ensuring that they thoroughly understand the concepts and can apply them correctly.

Teachers provide constructive feedback to ensure that each task is completed according to learning standards while motivating students to continue developing. Teachers in Sekolah Alam also create an environment that supports students in completing their tasks. They provide instructions and are ready to offer guidance and assistance when students encounter difficulties. This creates a conducive learning atmosphere where students feel supported and not overwhelmed in completing the assigned tasks. The support provided by teachers is crucial in building students' confidence. Sekolah Alam integrates nature as a primary learning source, which is reflected in task orientation. Tasks often relate to the surrounding environment, such as observing ecological processes, researching plants, or studying natural phenomena. Such tasks make students feel more connected to the subject matter and understand the relevance of the tasks they undertake daily. Task evaluation in Sekolah Alam is based on the final results and the completion process. Teachers observe how students work through various stages of the tasks and provide comprehensive assessments. Aspects of knowledge, skills, and attitudes in completing tasks become integral parts of the evaluation. This provides opportunities for students to develop holistically. Overall, task orientation in nature schools is highly focused on meaningful, collaborative, and experiential learning. These tasks are designed to achieve academic targets and develop practical skills and character in students. With this approach, the learning environment created encourages independence, responsibility, and a deep connection between students and the subject matter.

*Cooperation*

In Sekolah Alam, students are often divided into small groups to complete tasks or projects. In this context, they work together to achieve common goals by dividing roles and responsibilities among team members. This team-based learning helps students develop communication skills and allows them to share ideas and discuss solutions. This effectively strengthens their cooperation and creates deeper bonds among students. The learning environment in Sekolah Alam encourages students to participate actively in group discussions. Students are often asked to share their understanding of a specific topic while also listening to the views of other group members. These discussions enhance students' abilities to express opinions, listen actively, and respect differing viewpoints. In this way, students learn to appreciate the diversity of ideas and perspectives, which are essential skills in collaboration.

Many learning activities in Sekolah Alam involve collaborative projects outside the classroom. In these projects, students must work together to observe the natural environment, collect data, and draw conclusions. For example, they might research ecosystems by collecting plant samples or studying interactions between flora and fauna around the school. Such projects strengthen student relationships and foster cooperation in completing shared tasks. Cooperation in Sekolah Alam's learning environment also develops students' social skills. Through these interactions, students learn how to communicate effectively, resolve conflicts constructively, and work together to achieve group goals. The social skills acquired are crucial for daily life and will be helpful in future work environments.

Teachers in Sekolah Alam play an active role in creating an environment that supports collaboration. They act as facilitators, providing guidance and helping students collaborate effectively. Teachers also encourage cooperation by assigning tasks that require contributions from every group member, ensuring that all students are actively involved in the learning process. Here, cooperation is not just about sharing tasks but also about sharing responsibilities. Each group member is expected to contribute maximally and be accountable for the group's success.

Evaluating cooperation in Sekolah Alam assesses the outcomes and the teamwork process. Teachers provide feedback on how students work in groups, identifying their collaborative strengths and offering encouragement to improve areas that still need work. In this way, students learn that the group's success results from good collaboration. Students in Sekolah Alam often face challenges that require cooperation to overcome. For example, during natural exploration activities, they must work together to solve problems, such as identifying plant species or designing solutions to challenges. This experience teaches students about the importance of cooperation in solving problems collectively.

Overall, cooperation in Sekolah Alam's learning environment emphasizes effective collaboration and mutual support among students. The environment built in nature schools teaches them the importance of working together in teams, helping each other, and achieving common goals. Thus, a dynamic, inclusive learning atmosphere filled with positive interactions significantly benefits students' individual and collective development.

*Equity*

In Sekolah Alam, all students have equal access to learning materials, including books, teaching aids, and digital media. There is no discrimination in the use of learning resources. Teachers are committed to ensuring

that every student, regardless of social background, has an equal opportunity to utilize the various resources provided. The principle of equity is applied by actively involving every student in the learning process, encouraging participation from all students in class discussions, group work, and individual projects. In this way, no student feels marginalized or ignored in learning activities.

Fairness in learning is essential for creating an inclusive atmosphere where every student feels valued. In Sekolah Alam, the learning environment appreciates individual student differences, including diverse interests, talents, and learning styles. Teachers adapt their teaching approaches to serve all students equitably, accommodating various needs and potentials in the classroom. This ensures that no student feels left behind due to differences in ability or learning style. By providing fair and equal feedback, teachers encourage all students to continue learning and developing without feeling unfairly judged or discriminated against.

Students have equal opportunities outside the classroom to participate in nature-based projects or experimental activities. Teachers ensure that all students have equal roles in these activities, whether in data collection, observation, or experimentation. Classroom management in Sekolah Alam focuses on fairness in allocating time, attention, and opportunities. Teachers provide balanced attention to all students, whether they excel academically or need more guidance. Thus, no student feels neglected; all students can learn according to their abilities.

In the assessment process, equity is also strictly upheld. Evaluations in Sekolah Alam are conducted by considering various aspects, such as knowledge, skills, and attitudes. These assessments are designed to be fair to all students, allowing them to demonstrate their abilities in various academic and practical skills and behaviors. Students' learning processes and efforts are valued equally so that students who show hard work or contribute to group collaboration are recognized, not just those with high academic scores.

Sekolah Alam creates a learning environment where students can thrive according to their potential. Teachers pay special attention to students' individual development, ensuring that every child can succeed in their areas of interest, whether in science, arts, sports, or other nature-related activities. Overall, the implementation of equity in nature schools encompasses equality in access to learning, active engagement of all students, and appreciation of individual efforts and diversity. All of this creates a fair, inclusive learning environment that supports the development of each student according to their potential.

*Enjoyment*

Active and interactive learning in Sekolah Alam makes students feel more engaged in the learning process. The teaching methods here often involve exploring the environment, hands-on experiments, and group discussions. This approach allows students to participate actively, enhancing their understanding and making learning a fun and engaging experience.

One way to enhance classroom enjoyment is by using various teaching methods and media. In Sekolah Alam, teachers do not solely rely on lectures; they also integrate videos, educational games, and outdoor activities. This keeps students' interest high, allowing them to enjoy the learning process without boredom. A relaxed and supportive classroom atmosphere also plays a significant role; students can learn without excessive pressure. Learning activities that involve nature create a more accessible and relaxed impression, making students feel more comfortable and engaged.

Learning outdoors is one factor that enhances students' enjoyment in the learning process. The open environment offers a different atmosphere from formal classrooms, making students more enthusiastic and involved. They can directly observe and practice the material being studied, such as in science or biology activities, making learning more concrete and enjoyable. In nature schools, students can explore personal interests through individual or group projects. With flexible assignments, students can choose topics that align with their interests, making them more excited and motivated to learn.

Teacher support in Sekolah Alam is also crucial in creating a sense of safety and comfort for students. In addition to teaching the material, teachers act as mentors ready to assist students when they encounter difficulties. This positive relationship between teachers and students increases enjoyment, as students feel valued and supported in their learning process. A sense of togetherness in the classroom, where students often collaborate in groups to complete tasks or projects, also adds to the enjoyable learning experience. Close social interactions and teamwork create valuable moments where students can help each other and share ideas.

Projects related to the environment, such as gardening, nature research, or social projects, greatly attract students' interest in nature schools. They feel more satisfied and enjoy learning when they can engage directly in activities related to nature and real-life situations. These activities make learning feel more relevant and meaningful to them. Students experience enjoyment when presented with challenges that sufficiently stimulate their minds and creativity, such as problem-solving activities, group projects, or

educational competitions conducted in a fun atmosphere.

One factor that enhances enjoyment in the classroom is the presence of recognition and positive feedback from teachers. In Sekolah Alam, teachers often praise and appreciate students' efforts and achievements. This encourages students to enjoy learning more because they feel recognized and valued for their efforts. Overall, enjoyment in the learning environment of nature schools is enhanced through an active, interactive, and hands-on learning approach. The freedom to explore interests, teacher support, a friendly learning atmosphere, and involvement in outdoor activities all contribute to students' motivation and enjoyment in the learning process at Sekolah Alam.

*Academic Efficacy*

Self-confidence in learning is one of the essential aspects that makes students in Sekolah Alam feel confident in their academic abilities. Through an experiential learning approach, students are allowed to apply their knowledge practically. This hands-on learning experience reinforces students' belief that they can understand and master the material, making the learning process more meaningful.

Teachers in Sekolah Alam play a crucial role in enhancing students' academic efficacy. By providing positive feedback and encouraging students to try new things, teachers create a supportive atmosphere for students. When students feel supported by their teachers, they are more confident in taking risks in their learning, boosting their belief in their academic capabilities. Outdoor learning activities, such as environmental exploration and nature-based projects, also provide real-world contexts for students. When students can relate the subject matter to real experiences, they feel more capable of understanding and applying the knowledge they learn.

Additionally, students in Sekolah Alam are encouraged to participate in discussions and group activities actively. This active participation not only enhances student engagement but also fosters a sense of confidence. When students contribute and receive recognition from their peers, they feel more competent in academic fields. In a supportive learning environment, students often set their own learning goals. Having control over these goals and seeing their progress increases their academic efficacy, making them feel more responsible for their learning process.

Learning in Sekolah Alam focuses not only on theoretical knowledge but also on developing critical and creative skills. When faced with learning challenges, students can think critically and solve problems. Engagement in creative projects also boosts their confidence in tackling academic challenges. Students in nature schools often work in groups to complete tasks or projects, providing them with opportunities to learn from one another. Group discussions create a supportive environment where students feel more capable of contributing and expressing their ideas.

Constructive feedback from teachers is also vital. By knowing their strengths and weaknesses, students can set steps to achieve academic success. This feedback helps students understand areas where they need improvement and enhances their confidence in their learning abilities. In Sekolah Alam, students are taught to be independent in learning. Students feel more empowered and assured when given the chance to take initiative and responsibility for their learning. This sense of independence significantly contributes to their academic efficacy.

Through project-based learning methods, students in Sekolah Alam learn to apply their knowledge in broader contexts. Involvement in these projects enhances students' confidence as they can see concrete results from their efforts. Such activities cultivate the belief that they can better face academic challenges. Overall, academic efficacy in the learning environment of Sekolah Alam is characterized by students' confidence in their academic abilities, strong support from teachers, relevant learning experiences, and active participation in the learning process. This supportive environment helps students feel more confident and empowered in facing academic challenges, enhancing their school success.

## Conclusion

Based on the research conducted at Sekolah Alam Al Fath Jambi, the following conclusions can be drawn: Based on the data obtained, the curriculum at Sekolah Alam Al Fath Jambi aligns with the Sekolah Alam concept. This is evident from the learning approach that focuses on direct experiences in nature, using the surrounding environment as a learning resource, and integrating natural concepts into the curriculum. Thus, the curriculum at this school supports the goals of natural education promoted by the Sekolah Alam concept. The science learning activities at Sekolah Alam Al Fath Jambi are based on the Sekolah Alam concept. Teachers use various methods (Project-Based Learning, experiential learning, nature-based learning, collaborative learning, holistic approaches, and contextual teaching and learning) and utilize the surrounding environment as the primary learning resource. Learning occurs in the classroom and through outdoor activities such as nature exploration and field experiments. This reflects a learning approach emphasizing direct experiences and active student

engagement in the learning process. The science learning resources at Sekolah Alam Al Fath Jambi are consistent with the Sekolah Alam concept. Teachers utilize the surrounding environment as learning resources, including the school garden and student outbound areas. Furthermore, there is collaboration with local experts and using natural materials as teaching materials. This demonstrates the school's commitment to expanding learning opportunities beyond the classroom and utilizing natural resources as practical learning tools. The learning environment for students at Sekolah Alam Al Fath Jambi also aligns with the Sekolah Alam concept. It is assessed using several dimensions based on the WIHIC questionnaire to identify the key characteristics that support successful learning processes, including Student Cohesiveness, Teacher Support, Involvement, Task Orientation, Cooperation, Equity, Enjoyment, and Academic Efficacy.

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