



Nature's Classroom: Enhancing Student Literacy Skills through Immersive Learning Experiences

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ARTICLE INFO	ABSTRACT
<p>Keywords: Bandung Nature School; Environmentalism; Innovate integration; Learning with Nature; Writing skill.</p>	<p>Nature school is an educational institution that implements a learning model by nature. This learning model combines exploration and theory to provide balanced skills. This study aims to analyze the efforts to improve student literacy and identify the obstacles faced in its implementation at Nature School (Sekolah Alam) of Bandung. This research specifically discusses the effectiveness of literacy activities in the learning model with nature. The research approach used is a qualitative approach with a case study type. The results show that literacy activities in the nature learning model help improve students reading and writing skills. Each level has different achievements, but with the same process, including reading literature to gain initial knowledge, exploration of the surrounding environment to broaden horizons, and application of the results of reading and exploration into writing. The obstacles in this process include differences in student abilities, where there are students who read quickly and slowly, as well as difficulties in communicating what has been read and vice versa.</p>
<p>Article history: Received 2024-12-06 Revised 2025-01-01 Accepted 2025-01-02</p>	<p>Contribution: This study highlights the innovative integration of nature-based learning with literacy development, demonstrating that engaging students in their environment can significantly enhance their reading and writing skills.</p>

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1. INTRODUCTION

Nature School of Bandung is one of the schools in Bandung City that implements learning with nature in its learning process. The nature-based learning model is defined as a learning concept that prioritizes the principles of learning about nature, using nature as a learning tool, and collaborating with nature in the learning process (Aprilia & Trihantoyo, 2018). Based on the results of interviews with elementary school principals, this learning uses a proportion of 70% exploration and 30% theory which has been implemented from the start (Interview, November 2023). Learning, with a proportion of 70%, is an exploration activity that includes activities outbound, outing class, market day, and so forth. Meanwhile, the 30% proportion includes activities carried out in the classroom, one of which is basic literacy activities such as reading and writing.

Literacy refers to the knowledge and ability to read, write, search, browse, process and understand information. These skills are needed to analyze, respond to, and utilize written texts to achieve goals, expand understanding and potential, and play an active role in social life (Priyono et al., 2022). Reading and writing literacy is important to implement in the school environment because this skill is the basis for students in carrying out the learning process. Students who have good reading and writing literacy skills, known as literacy, can easily understand the meaning of the material presented so that students can achieve success in the learning process.

In facing the era of revolution 4.0, literacy skills in reading and writing are needed through education which is able to form a creative, innovative and competitive generation (Alfin, 2018). In this case, Sekolah Alam Bandung, as an educational institution, strives to provide learning that supports students' reading and writing literacy skills by combining reading and writing literacy activities with learning models with nature in the learning process, which is adapted to grade level. This learning concept has a positive impact on students' skills by providing new experiences. This is what differentiates it from other schools because generally people only know that natural schools only focus on exploratory learning processes outside the classroom, even though this is not the case (Zhang et al., 2023).

The 2021 National Assessment revealed a pressing literacy crisis in Indonesia, where half of the students failed to meet the minimum literacy competency standards (Ssenyonga, 2021). These findings align with PISA (Programme for International Student Assessment) results from the past two decades, which indicate that Indonesian students' reading literacy scores have remained stagnant and significantly below the average of OECD (Organisation for Economic Co-operation and Development) member countries (Samala et al., 2024). This stagnant condition calls for a collective effort from various stakeholders, including teachers and parents, to foster the development of students' reading and writing literacy skills. These essential skills require gradual introduction and consistent training from an early age to ensure long-term proficiency.

On a global scale, nature-based learning has emerged as an innovative approach to enhance literacy among students. In Finland, recognized for its world-leading education system, nature-based learning is an integral part of the curriculum. Studies indicate that this approach enhances reading literacy by connecting texts with direct exploration experiences, thereby stimulating comprehension and creativity (Spanaki, 2024). In the United States, the *Nature Literacy* program has proven successful in improving students' literacy capabilities (Southworth et al., 2023). This program combines environmental exploration with literacy activities, encouraging students to understand texts through real-world natural contexts. For instance, students read stories or informational texts about ecosystems, followed by a hands-on exploration of nature to observe what they have read (Costa et al., 2022). This approach not only strengthens reading and writing skills but also enhances students' analytical and critical thinking abilities.

Similarly, in Australia, the *Outdoor Learning* program integrates nature-based education with literacy to prepare students for global challenges. The program emphasizes engaging students in reading and writing activities that are locally and globally relevant, such as analyzing texts on climate change or writing reports based on environmental explorations (Mann et al., 2021). The development of nature-based learning models in these advanced education systems demonstrates that literacy is more than mastering foundational skills—it also cultivates critical, innovative, and contextual thinking (Barrette et al., 2024). Inspired by these international practices, Sekolah Alam Bandung holds immense potential to become a national model for nature-based education. By integrating literacy development into its nature-based learning framework, Sekolah Alam Bandung not only addresses the national literacy crisis but also prepares students for future global challenges.

This study aims to explore how reading and writing literacy activities are integrated into the nature-based learning model at Sekolah Alam Bandung. It seeks to understand the concept of learning through nature, the school's efforts in its implementation, and the challenges encountered along the way. By doing so, this research contributes to developing innovative educational strategies that support literacy growth and equip students for success in a dynamic, interconnected world. Considering the importance of reading and writing literacy skills for elementary school students, the author is interested in researching reading and writing literacy activities in the learning model with nature to improve students' reading and writing literacy. This research was conducted at the Sekolah

Alam Bandung. There are several objectives of this research activity, namely: *First*, to understand the concept of learning with nature. *Second*, what are the Sekolah Alam Bandung's efforts to implement the concept of learning with nature? And *third*, what are the obstacles in implementing learning with nature that has been carried out?

In conducting a study on increasing reading and writing literacy in natural schools, there are several previous research bases, such as research conducted by (Wenny Julianti Majid and Sri Nurhayati (2020) who conducted research with the title "Readhaton early literacy movement as an effort to stimulate student reading in schools Insan Litera Middle School - Cihampelas Village ". The methodology used in this research uses a qualitative method with a descriptive approach. The data collection techniques used are observation, interviews and documentation Insan Litera has been successful. This program consists of four stages, namely weekly routine implementation, Field Experience Practice (PPL) student tutors who help students read books, discussions about books with fun game or quiz aspects, and making trees as a symbol of success. Further research was conducted by (Fery Wijayanto, Ai Hidayatunnajah, and Amilia Lestari (2024) with the title "Development of Natural School Innovation: Efforts to Increase Children's Literacy in Rural Areas".

2. METHOD

The methodology used in this research uses participatory action research through stages/cycles of action research methods, namely initial socialization, social mapping, participatory planning, action implementation, and evaluation monitoring (Dudgeon et al., 2020). The results of the research show that the level of success of natural school innovation is significant, including children's participation in learning increasing to 80%, the number of books and literacy resources increasing to 60%, reading and writing skills reaching 90%, Koran reading skills increasing to 70%, the quality of learning soaring to 85% %, potential interest in talent increases to 50%, and motivation or interest in learning reaches a high level of 95%.

Related to the subject in this research is the management of the Sekolah Alam Bandung. Meanwhile, the object of research is the Bandung Natural School's efforts to improve students' literacy skills. Sources in the research include primary data, namely people involved in designing reading and writing literacy activities in the learning with nature model, namely the management of the Sekolah Alam Bandung. Meanwhile, secondary data is additional information that will complement primary data in the form of printed documents or recorded/audio documents. Such as books, journals and articles related to reading and writing literacy activities carried out in other natural schools. Data collection techniques were carried out through observation, interviews and literature study. Data analysis techniques are carried out through data reduction, presentation and verification stages (Kemmis et al., 2014).

3. RESULTS AND DISCUSSION

Nature School (Sekolah Alam) in Indonesia was first introduced in 1998 by Lendo Novo, who was a pioneer in establishing the Indonesian Natural School as the first natural school in this country (Kristina et al., 2021). As time goes by, natural schools are increasingly in demand and are starting to be established in various regions in Indonesia. One of them is the Sekolah Alam Bandung which is located on Jalan Cikalapa 2 No. 4, Dago Pojok, Bandung City, West Java. The Sekolah Alam Bandung building is in a cool and beautiful area, surrounded by green trees which create a comfortable and enjoyable learning atmosphere. The location is not far from the center of Bandung City, making it easily accessible for students and parents.

Sekolah Alam Bandung was founded by Eko Kurnianto with the aim of being a balance to the conventional education system which has long been oriented towards cognitive aspects such as numbers and grades but tends to exclude the development of human potential as a whole (Ningrum & Purnama, 2019). Sekolah Alam Bandung has various levels of education, starting from Kindergarten (TK), elementary school (SD), junior high school (SMP), to senior high school (SMA). Each level is designed to integrate academic learning with environmental diversity or what is known as learning with nature.

Image 1. Sekolah Alam Bandung



Source: Self Documentation, 2023

Learning with nature model prioritizes three main principles, namely learning about nature, learning by using nature and learning with nature. Learning about nature means studying natural concepts as part of the learning material. Learning by using nature means utilizing learning resources found in nature as a means to deepen the material (Wulansari & Sugito, 2016). Meanwhile, learning with nature means the learning process is carried out by utilizing the natural environment as a learning place (Alimah et al., 2016). This means that the learning model has three focuses that complement each other, but each has a different approach to integrating nature into the learning process.

As explained in the opinion expressed above, the concept of learning with nature is only understood as a learning process carried out in an outdoor exploration manner (Spalie et al., 2011). However, the Sekolah Alam Bandung has the concept that learning with nature is carried out theoretically in the room or classroom. This is because students are directed to integrate the material they have read with the surrounding environment, then, in the final results, students are directed to write down the results of their reading and observations. This is what makes students have reading and writing literacy skills.

Reading and writing literacy is one of the six basic literacies that every student needs to have. Reading and writing are the first forms of literacy that emerged in the history of human civilization, both are included in the category of functional literacy which is very important and useful in everyday life (Saryono et al., 2017). Considering the importance of reading and writing literacy in everyday life, the Sekolah Alam Bandung integrates reading and writing literacy activities in a learning model with nature. This effort is carried out as a form of providing balanced skills for students so they can compete in the future. By having reading and writing literacy skills, every individual can achieve a quality life (Chandra, 2022).

Strategy in Increasing Students' Reading and Writing Literacy

Sekolah Alam Bandung has adopted an innovative approach to education by integrating nature-based learning as one of its core strategies. The term "nature" in this context is interpreted through two interconnected perspectives. *First*, it refers to the universe and its contents, emphasizing humans' role in appreciating and caring for the environment as part of their obligations to the Creator. *Second*, it signifies experience, where individuals gain knowledge through active engagement and exploration of their surroundings. These dual perspectives form the foundation of the school's learning philosophy, implemented with a proportion of 70% exploration from the environment and 30% theory derived from literature and structured lessons (Aprilia & Trihantoyo, 2018).

Despite its strengths, the heavy emphasis on exploratory learning initially posed challenges to students' reading and writing literacy development (Aprilia & Trihantoyo, 2018). Recognizing this gap, Sekolah Alam Bandung took proactive steps to integrate literacy activities into its nature-based learning model. This effort focuses on three key processes: reading literature to build foundational knowledge, exploring the surrounding environment to expand understanding, and translating insights from reading and exploration

into written expression. These steps aim to enhance students' literacy skills, enabling them to think critically, process information effectively, and articulate ideas clearly.

The integration of literacy activities within the nature-based learning framework has proven transformative. By aligning reading and writing exercises with exploratory activities, students gain a deeper and more meaningful understanding of their lessons. For instance, students begin by engaging with literature that provides foundational knowledge about topics such as ecosystems, local flora and fauna, or environmental sustainability. These readings serve as a springboard for further exploration, equipping students with the necessary background to appreciate and analyze their surroundings (Priyono et al., 2022).

Armed with this knowledge, students embark on exploratory activities, including outdoor adventures, scientific observations, and interactive projects that encourage the application of theoretical concepts in real-world settings. This hands-on approach reinforces their understanding while fostering curiosity and critical thinking. The final step involves translating their experiences and insights into written form. Students create essays, reports, or creative narratives encapsulating their learning, helping solidify understanding and enhancing communication skills (Alfin, 2018).

To ensure the program's success, Sekolah Alam Bandung employs a multi-step planning and implementation process. At the beginning of each academic year, the principal and a dedicated team collaboratively design a comprehensive learning program integrating nature-based activities with literacy development. This program is disseminated to teachers, who tailor it into weekly and daily lesson plans to ensure consistency (Interview, November 2023). Recognizing the importance of parental support, the school involves parents in early program planning stages. The learning module is presented to parents, who are encouraged to provide feedback and suggestions. This collaborative process ensures that the program addresses diverse stakeholder needs (Alfin, 2018).

Once finalized, the program is implemented over a semester, with parents playing a supportive role. Evaluations and adjustments are reserved for the semester's end, ensuring uninterrupted learning. At the semester's conclusion, the school conducts a comprehensive evaluation to refine the program further, ensuring continuous improvement aligned with students' needs. By involving parents in planning and evaluation, the program remains dynamic and responsive (Interview, November 2023).

While the program has been largely successful, it is not without challenges. A notable issue is the varying literacy levels among students (Sitopu et al., 2024). Some excel in reading and writing, while others struggle. To address this disparity, the school has implemented differentiated instruction, tailoring activities to meet individual needs. For example, advanced readers receive more complex texts, while struggling students receive additional support. Another challenge is ensuring consistent parental involvement. While many parents participate enthusiastically, others face constraints (Kartel et al., 2022). To mitigate this, the school offers flexible involvement options, such as virtual meetings and take-home activities.

Globally, Sekolah Alam Bandung's approach aligns with trends in nature-based education. Finland integrates nature-based learning into its curriculum, enhancing reading comprehension and creativity by linking texts with direct exploration. Similarly, the United States' "Nature Literacy" program combines environmental exploration with literacy activities, reinforcing understanding and critical thinking. Australia's "Outdoor Learning" program connects literacy activities with environmental issues, preparing students to address global challenges like climate change (Wang et al., 2021).

These international examples underscore the potential of nature-based learning to address literacy challenges while promoting environmental awareness and global citizenship. By fostering critical thinking, communication skills, and environmental stewardship, Sekolah Alam Bandung's model offers valuable insights for schools worldwide, positioning it as a leader in innovative education in Indonesia. The school's commitment to continuous improvement ensures its program's ongoing success, preparing students to thrive in an interconnected, rapidly changing world.

Reading and Writing Literacy Activities

The integration of reading and writing literacy into the nature-based learning model at Sekolah Alam Bandung is meticulously designed to cater to students' developmental needs. These activities are structured according to class levels, ensuring that the approach remains both age-appropriate and effective in nurturing literacy skills (Stewart, 2024). This section elaborates on the implementation and evolution of these literacy activities across different grade levels, incorporating analyses and references to highlight their significance.

For lower-grade students (grades 1 and 2), the focus of literacy activities lies in building foundational skills through simple yet engaging tasks. *First* graders are introduced to the concept of emotions and expression by using emoticons to depict their feelings. They progress to writing simple sentences, such as "I'm happy" or "I'm sad," and explaining the reasons behind their emotions. This gradual approach not only helps students associate words with their personal experiences but also nurtures their ability to express themselves. According to Vygotsky's theory of social constructivism, such interactive and contextually meaningful activities significantly enhance cognitive development (Alkhudiry, 2022). Moreover, this aligns with modern frameworks like the Universal Design for Learning (UDL), which emphasizes providing multiple means of engagement to meet diverse learner needs (Rogers-Shaw et al., 2018).

In middle grades (grades 3 and 4), literacy activities shift towards fostering creativity and independence. Students begin documenting their exploration experiences in written form. For example, after an outdoor excursion, they are encouraged to record their observations and reflections. Although the writing output is initially minimal, this practice helps students transition from verbal to written expression. These activities are aligned with Piaget's developmental stages, where children in this age group begin to engage in logical reasoning and can organize thoughts more coherently (Piaget & Inhelder, 2014). This phase also serves as a bridge, preparing students for more advanced writing tasks. Recent educational theories, such as experiential learning by Kolb (2014), also support this approach, highlighting the importance of concrete experiences in facilitating learning (Kolb, 2014).

By the time students reach upper grades (grades 5 and 6), the emphasis shifts towards structured and goal-oriented writing. Journaling becomes a core component of their literacy development. Students are encouraged to maintain daily or weekly journals, documenting their thoughts, observations, and learnings. The culmination of this practice is the production of a written work, often a book, by the end of their academic journey. This process not only enhances their writing skills but also instills a sense of accomplishment and ownership over their learning. The methodology resonates with the principles of Bloom's taxonomy, emphasizing higher-order thinking skills such as analysis, synthesis, and creation (Bloom, 1956). Additionally, the focus on producing a tangible output aligns with project-based learning (PBL) principles, which emphasize active exploration and the creation of meaningful products (Larmer, 2015).

The structured progression from emoticons to full-fledged journaling reflects a well-thought-out strategy to build literacy incrementally. The involvement of nature in these activities adds an experiential dimension, enabling students to relate their textual learning to real-world contexts. For instance, when writing about a plant they observed during exploration, students connect scientific observations with creative expression. This interdisciplinary approach not only makes learning more engaging but also fosters critical thinking and problem-solving skills (Khan, 2024). Furthermore, modern perspectives on integrated learning, such as STEAM (Science, Technology, Engineering, Arts, and Mathematics), underscore the value of blending artistic and scientific exploration to develop a holistic understanding (Kumar & Deák, 2023).

One of the unique features of Sekolah Alam Bandung's literacy program is its adaptability to individual student needs. Differentiated instruction is employed to accommodate varying literacy levels, ensuring that each student progresses at their own pace. For instance, students who struggle with reading are given additional support through peer-assisted learning, while advanced students are encouraged to undertake more challenging writing tasks. This approach aligns with Tomlinson's differentiated instruction framework, which emphasizes modifying content, process, and product based on student readiness, interest, and learning profile (C. A. Tomlinson, 2017).

Furthermore, the integration of literacy with nature-based learning addresses broader educational challenges, such as Indonesia's literacy crisis. The 2021 National Assessment revealed that half of Indonesian students had not achieved the minimum literacy competency level, a concern echoed by PISA findings over the past two decades (Rosser et al., 2021). By implementing a unique model that blends exploration with structured literacy activities, Sekolah Alam Bandung offers a potential blueprint for addressing these systemic issues. It demonstrates that innovative teaching methods can significantly enhance literacy outcomes, even in challenging contexts.

The active involvement of teachers and parents further strengthens the implementation of these activities. Teachers play a crucial role in designing and facilitating literacy tasks that are both

challenging and enjoyable. They provide constructive feedback, helping students refine their reading and writing skills. Parents, on the other hand, support these efforts by encouraging reading habits at home and participating in school activities. This collaborative approach ensures consistency and reinforcement of literacy skills across different environments, aligning with Bronfenbrenner's ecological systems theory, which highlights the interconnectedness of various influences on a child's development (Bronfenbrenner, 1994).

The success of literacy activities at Sekolah Alam Bandung underscores the potential of nature-based learning models in fostering essential skills. By seamlessly integrating reading and writing into exploratory learning, the school not only addresses immediate educational goals but also prepares students for future challenges. The approach aligns with global trends, such as Finland's nature-based curriculum and the United States Nature Literacy programs, which emphasize the importance of experiential learning in developing literacy and critical thinking (OECD, 2019). Additionally, Australia's Outdoor Learning initiative highlights the role of contextual learning in addressing global challenges, such as climate change and sustainability, through literacy activities (Lynch & Mannion, 2016).

As Sekolah Alam Bandung continues to refine its strategies, it has the potential to serve as a model for integrating literacy into experiential learning frameworks. Future research could explore the long-term impact of such programs on student outcomes, including their ability to adapt to diverse educational and professional contexts. Furthermore, scaling this model to other schools in Indonesia could contribute significantly to addressing the nation's literacy challenges. By fostering a love for reading and writing through meaningful and engaging activities, Sekolah Alam Bandung exemplifies how innovative education can transform lives and build a literate, thoughtful, and resilient generation.

Challenges in Improving Students' Reading and Writing Literacy

At the Bandung Nature School, an institution that employs a nature-based learning model, a variety of challenges emerge in fostering students' reading and writing literacy. The educational approach at Sekolah Alam prioritizes experiential and outdoor learning, which contrasts with traditional models that are often more structured and academic. This blend of hands-on learning with academic skill development, such as reading and writing, presents unique challenges. These challenges reflect a broader issue in educational systems globally, especially those that aim to integrate alternative learning models with literacy education. In addressing these challenges, it is essential to explore the theoretical and empirical literature, international educational practices, and insights on how such challenges can be mitigated.

A key challenge faced by Sekolah Alam is the wide disparity in students' reading ability levels. Students at the school come from diverse backgrounds and exhibit a broad range of reading proficiencies. Some students read fluently and with comprehension, while others struggle with basic decoding and reading speed. Research has shown that numerous factors, including cognitive development, access to print-rich environments, and exposure to literacy practices at home influence differences in reading ability (Remigio-Baker et al., 2020a). For example, children from socioeconomically disadvantaged backgrounds may have had less exposure to reading materials, which impacts their reading skills and development. This issue becomes more pronounced in experiential learning environments, where less time is typically dedicated to formal literacy instruction. Given that Sekolah Alam emphasizes outdoor activities and nature-based learning, the need for structured literacy support for struggling readers is heightened (Remigio-Baker et al., 2020b).

In addressing this challenge, the concept of differentiated instruction is highly relevant. Studies have shown that differentiated teaching, which tailors educational content, resources, and delivery to students' individual learning needs, can significantly improve reading outcomes (B. Tomlinson, 2023). In traditional classrooms, teachers can implement differentiated strategies by modifying reading materials or offering varying levels of support based on students' abilities. However, in nature-based learning environments, such differentiation can be difficult to achieve. To address this, Sekolah Alam could consider incorporating more targeted literacy interventions, such as personalized reading plans, small-group instruction, or peer tutoring (C. A. Tomlinson & Imbeau, 2023). Research from Finland, a country known for its strong education system, suggests that combining individualized instruction with a focus on real-world connections in reading can lead to significant improvements in literacy (Hautamäki et al., 2023).

In addition to the disparities in reading ability, a related challenge is the gap between students who are proficient readers and those who struggle with comprehension. While some students are able to read fluently,

they often face difficulty in understanding the material and articulating their thoughts about the text. This is a critical issue because comprehension, not just reading fluency, is a key indicator of literacy proficiency (Pressley, 2021). According to recent research, reading comprehension involves both the ability to decode words and the ability to understand and engage critically with the text (Meyer, 2022). At Sekolah Alam, where much of the learning is outdoors and experiential, the challenge arises in helping students connect their reading with real-world experiences. Without consistent opportunities to discuss and reflect on the content of the text, students may struggle to integrate what they read with their broader knowledge base.

One way to address this issue is by integrating reading comprehension strategies that emphasize active engagement with the text. For example, research has shown that discussing texts in groups or using question-based strategies can enhance students' comprehension skills (Han et al., 2022). Sekolah Alam could adopt an approach that integrates outdoor learning with structured reading and discussion sessions. After a nature walk or outdoor activity, students could read related texts and engage in group discussions that draw connections between their outdoor experiences and the content they have read. Such strategies would promote critical thinking and help students develop a deeper understanding of the material, addressing the gap between fluency and comprehension (Han, 2021).

In addition, the role of oral language skills in reading comprehension should not be overlooked. Studies show that oral language skills, such as the ability to express ideas clearly and engage in discussions, are strongly correlated with strong reading comprehension (Smith et al., 2021). At Sekolah Alam, where verbal expression is often encouraged in outdoor activities, teachers can capitalize on this by integrating oral language development into literacy instruction. Encouraging students to explain what they have read, discuss it with peers, or even present it in creative ways would not only support comprehension but also develop their oral language abilities. Research on bilingual education programs further supports the idea that oral language proficiency is integral to overall literacy development (Hamman-Ortiz et al., 2024).

The nature-based learning environment itself can either support or hinder literacy development, depending on how it is structured. On the one hand, outdoor learning provides opportunities for creativity, critical thinking, and problem-solving, all of which can enhance cognitive development (Aladağ et al., 2021). However, the emphasis on hands-on, outdoor experiences can also detract from the time and structure needed to develop formal literacy skills. A study by McLellan (2021) on outdoor education in New Zealand suggests that while outdoor learning can be highly beneficial for developing students' creativity and problem-solving skills, there is a need for careful planning to ensure that literacy development is not neglected (McLennan, 2021). McLellan highlights that integrating literacy tasks with outdoor learning activities, such as nature writing or reflective journaling, can help bridge the gap between experiential learning and literacy development.

Internationally, there are several examples of how outdoor education programs have successfully integrated literacy development. For example, in Canada, nature-based programs have incorporated reading and writing tasks into their curricula by encouraging students to write about their observations in nature or by reading books related to their outdoor experiences (Jones, 2023). This strategy not only reinforces students' literacy skills but also allows them to make meaningful connections between what they read and their real-world experiences. Sekolah Alam could adopt similar strategies by integrating nature writing or other literacy tasks that encourage students to reflect on and document their outdoor learning experiences.

Additionally, the integration of digital tools in education can offer new ways to support literacy development in nature-based learning environments. With the increasing role of technology in education, digital tools such as e-books, audiobooks, and interactive literacy apps can help students engage with reading and writing tasks in dynamic and flexible ways (Edlund & Alshairawi, 2022). Studies have shown that digital tools can provide personalized learning experiences that cater to student's individual learning needs, allowing for more effective support of struggling readers and writers (Murage, 2021). Furthermore, digital tools can bridge the gap between outdoor and indoor learning by providing additional resources and activities that reinforce literacy skills outside of the classroom.

Looking at international best practices, countries with high literacy rates, such as Finland, have successfully combined outdoor learning with structured literacy programs. Finnish schools integrate reading, writing, and critical thinking activities into their outdoor curricula, ensuring that students develop strong literacy skills while also benefiting from nature-based experiences. Finland's emphasis on a balanced,

integrated approach to education provides valuable insights for Sekolah Alam, particularly in terms of aligning literacy tasks with experiential learning (Fredriksson, 2015).

The challenges in improving students' reading and writing literacy at Sekolah Alam reflect broader issues seen in alternative and experiential education systems worldwide. By adopting strategies such as differentiated instruction, integrating oral language skills, and using digital tools to support literacy, Sekolah Alam can address the diverse needs of its students. Furthermore, drawing on international examples and research can provide valuable insights into how nature-based learning and literacy development can be successfully integrated. With careful planning and innovative strategies, Sekolah Alam can overcome these challenges and provide students with a comprehensive education that fosters both academic and personal growth.

4. CONCLUSION

Reading and writing literacy activities in the learning model with nature at the Sekolah Alam aim to improve students' reading and writing literacy skills through an approach that integrates exploration and theory. This activity is carried out in three main stages, namely reading habits, environmental exploration connected to the literature read, and the final stage is writing the results of the reading and exploration. This activity succeeded in improving students' reading and writing literacy skills with different experiences. This can be seen from the increasing vocabulary of lower-class students and the increasing ability of middle and upper-class students to create journals and books. However, in its implementation, there are several obstacles, including differences in students' abilities and understanding as well as an imbalance between their ability to read and communicate reading results. The findings suggest that a structured approach combining literature reading, environmental exploration, and practical writing exercises can create a holistic literacy education framework that fosters both academic skills and a connection to nature.

REFERENCES

- Aladağ, E., Arıkan, A., & Özenoğlu, H. (2021). Nature education: Outdoor learning of map literacy skills and reflective thinking skill towards problem-solving. *Thinking Skills and Creativity*, 40, 100815.
- Alfin, J. (2018). Membangun Budaya Literasi dalam Pembelajaran Bahasa Indonesia Menghadapi Era Revolusi Industri 4.0. *Pentas: Jurnal Ilmiah Pendidikan Bahasa Dan Sastra Indonesia*, 4(2), 60–66.
- Alimah, S., Susilo, H., & Amin, M. (2016). Natural Environment Exploration Approach: The Case Study in Department of Biology, Universitas Negeri Semarang. *International Journal of Environmental and Science Education*, 11(12), 5710–5717.
- Alkhudiry, R. (2022). The contribution of Vygotsky's sociocultural theory in mediating L2 knowledge co-construction. *Theory and Practice in Language Studies*, 12(10), 2117–2123.
- Aprilia, L., & Trihantoyo, S. (2018). Pembelajaran Berbasis Alam Dalam Membentuk Karakter Siswa Cinta Lingkungan Dan Berbasis Religi Islami Di Jenjang Sd Sekolah Alam Al-Izzah Krian. *Inspirasi Manajemen Pendidikan*, 6(2), 1–8.
- Barrette, M., Boyer, W., Naylor, P.-J., & Harper, N. (2024). Defining a nature-based literacy: A research synthesis review of health-promoting literacies to promote nature engagement. *Journal of Adventure Education and Outdoor Learning*, 24(3), 365–385.
- Bloom, B. S. (1956). Taxonomy of. *Educational Objectives*.
- Bronfenbrenner, U. (1994). Ecological models of human development. *International Encyclopedia of Education*, 3(2), 37–43.
- Chandra, R. (2022). Literasi Al-Qur'an Melalui Kegiatan NGAOS (Ngaji On The School) Untuk Meningkatkan Keterampilan Baca Tulis Al-Qur'an pada Siswa SD N 1 Panca Marga. *GUAU: Jurnal Pendidikan Profesi Guru Agama Islam*, 2(II), 229–238.
- Costa, D. de A., de Lucena, R. F. P., Christoffersen, M. L., Piñeiro-Corbeira, C., & Dolbeth, M. (2022). Improving environmental awareness and ocean literacy through hands-on activities in the tropics. *Applied Environmental Education & Communication*, 21(2), 120–139.

- Dudgeon, P., Bray, A., Darlaston-Jones, D., & Walker, R. (2020). *Aboriginal participatory action research: an indigenous research methodology strengthening decolonisation and social and emotional wellbeing*.
- Edlund, F., & Alshairawi, I. (2022). *The use of Digital Teaching Tools to Support Students with Reading and Writing Difficulties in the Subject English for Grades 7-9*.
- Fredriksson, M. (2015). *Gendering religious change: Negotiations of boundaries of institutional religion in women's angel practices and LGBTQ activism in Finland*. Åbo Akademi.
- Hamman-Ortiz, L., Reyes, J., & Sada, E. (2024). Exploring Latinx and non-Latinx families' experiences of dual language Catholic schools: A national survey of parent engagement and satisfaction. *Bilingual Research Journal*, 47(2), 211–228.
- Han, S., Li, Y., & Haider, S. A. (2022). Impact of foreign language classroom anxiety on higher education students academic success: Mediating role of emotional intelligence and moderating influence of classroom environment. *Frontiers in Psychology*, 13, 945062.
- Han, Z. (2021). Usage-based instruction, systems thinking, and the role of Language Mining in second language development. *Language Teaching*, 54(4), 502–517.
- Hautamäki, J., Ahtiainen, R., Gustavson, N., Hotulainen, R., Kupiainen, S., Tamm, M., Thuneberg, H., & Vainikainen, M.-P. (2023). Finland: Improving Pupils' Opportunities for Experiencing the Joy of Learning, for Deep Learning, and for Good Learning Achievement. In *Key Competences and New Literacies: From Slogans to School Reality* (pp. 197–233). Springer.
- Jones, B. L. (2023). *Copycats, Stickybeaks and Scallywags, Our Children All: Kids Don't Fail School, Schools Fail Kids*. Xlibris Corporation.
- Kartel, A., Charles, M., Xiao, H., & Sundi, D. (2022). Strategies for Parent Involvement During Distance Learning in Arabic Lessons in Elementary Schools. *JILTECH: Journal International of Lingua & Technology*, 1(2).
- Kemmis, S., McTaggart, R., Nixon, R., Kemmis, S., McTaggart, R., & Nixon, R. (2014). Introducing critical participatory action research. *The Action Research Planner: Doing Critical Participatory Action Research*, 1–31.
- Khan, A. (2024). The Role of Interdisciplinary Methods in Promoting Critical Thinking Skills. *Frontiers in Interdisciplinary Educational Methodology*, 1(01), 19–27.
- Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*. FT press.
- Kristina, M., Sari, R. N., & Puastuti, D. (2021). Implementasi Kurikulum Sekolah Alam Dalam Pembentukan Pendidikan Karakter Peserta Didik Di Sekolah Alam Al Karim Lampung. *Idaarah: Jurnal Manajemen Pendidikan*, 5(2), 347. <https://doi.org/10.24252/idaarah.v5i2.24376>
- Kumar, B., & Deák, C. (2023). Evolving Minds: A Literature-Driven and Empirical Exploration of STEAM Skill Development and Learning Approaches. *Journal of Innovation Management*, 11(4), 71–96.
- Larmer, J. (2015). Setting the standard for project based learning. *A Proven Approach to Rigorous Classroom Instruction/ASCD*.
- Lynch, J., & Mannion, G. (2016). Enacting a place-responsive research methodology: Walking interviews with educators. *Journal of Adventure Education and Outdoor Learning*, 16(4), 330–345.
- Mann, J., Gray, T., Truong, S., Sahlberg, P., Bentsen, P., Passy, R., Ho, S., Ward, K., & Cowper, R. (2021). A systematic review protocol to identify the key benefits and efficacy of nature-based learning in outdoor educational settings. *International Journal of Environmental Research and Public Health*, 18(3), 1199.
- McLennan, S. (2021). *New Zealanders as international volunteers Who, what, why... and should I?*
- Meyer, D. W. (2022). *Boys, Reading, and Video Games: A Mixed-Methods Case Study Examining the Effects of Using a Recreational Video Game to Improve Reading Comprehension Performance at an Elementary School in Texas*. University of South Carolina.

- Murage, V. M. (2021). *An Analysis of Trends in Digital Book Publishing Amongst Educational Publishers in Kenya: a Case Study of Longhorn Publishers*. University of Nairobi.
- Ningrum, Ifa Khoiria; Purnama, Y. I. (2019). Buku Sekolah Alam Pdf.pdf. In *Sekolah Alam* (pp. 1–45). OECD. (2019). An OECD Learning Framework 2030. *The Future of Education and Labor*, 23–35.
- Piaget, J., & Inhelder, B. (2014). Intellectual operations and their development. In *Experimental Psychology Its Scope and Method: Volume VII (Psychology Revivals)* (pp. 144–205). Psychology Press.
- Pressley, T. (2021). Returning to teaching during COVID-19: An empirical study on elementary teachers' self-efficacy. *Psychology in the Schools*, 58(8), 1611–1623.
- Priyono, P., Muslim, I. F., & Widiyanto, S. (2022). Pemahaman Bacaan Siswa SMP Alikhlas Melalui Literasi Baca dan Tulis. *Jurnal Ilmiah Wahana ...*, 8(13), 494–498.
- Remigio-Baker, R. A., Kiser, S., Ferdosi, H., Gregory, E., Engel, S., Sebesta, S., Beauchamp, D., Malik, S., Scher, A., & Hinds, S. R. (2020a). Provider training in the management of headache following concussion clinical recommendation: promoting a standardized means for efficient patient recovery and timely return to duty. *Frontiers in Neurology*, 11, 559311.
- Remigio-Baker, R. A., Kiser, S., Ferdosi, H., Gregory, E., Engel, S., Sebesta, S., Beauchamp, D., Malik, S., Scher, A. I., & Hinds, S. R. (2020b). Current patterns of primary care provider practices for the treatment of post-traumatic headache in active duty military settings. *Plos One*, 15(7), e0236762.
- Rogers-Shaw, C., Carr-Chellman, D. J., & Choi, J. (2018). Universal design for learning: Guidelines for accessible online instruction. *Adult Learning*, 29(1), 20–31.
- Rosser, A., King, P., & Widoyoko, D. (2021). The Political Economy of the Learning Crisis in Indonesia. *RISE Annual Conference, University of Oxford*, 22–24.
- Samala, A. D., Rawas, S., Bondarenko, O., Samala, A. G., & Novaliendry, D. (2024). Harmony in Education: An In-Depth Exploration of Indonesian Academic Landscape, Challenges, and Prospects Towards the Golden Generation 2045 Vision. *TEM Journal*, 13(3).
- Saryono, D., Ibrahim, G. A., Muliastuti, L., Akbari, Q. S., Hanifah, N., Miftahussuri, Nento, M. N., & Efgeni. (2017). Materi Pendukung Literasi Baca Tulis: Gerakan Literasi Nasional. *Kemdikbud*, 1–39.
- Sitopu, J. W., Khairani, M., Roza, M., Judijanto, L., & Aslan, A. (2024). The importance of integrating mathematical literacy in the primary education curriculum: A literature review. *International Journal of Teaching and Learning*, 2(1), 121–134.
- Smith, R., Snow, P., Serry, T., & Hammond, L. (2021). The role of background knowledge in reading comprehension: A critical review. *Reading Psychology*, 42(3), 214–240.
- Southworth, J., Migliaccio, K., Glover, J., Reed, D., McCarty, C., Brendemuhl, J., & Thomas, A. (2023). Developing a model for AI Across the curriculum: Transforming the higher education landscape via innovation in AI literacy. *Computers and Education: Artificial Intelligence*, 4, 100127.
- Spalie, N., Tahir, M., & Ani, C. (2011). Reconstructing sustainable outdoor learning environment in Malaysia from the understanding of natural school design and approaches in Indonesia. *Procedia-Social and Behavioral Sciences*, 15, 3310–3315.
- Spanaki, M. Z. (2024). *Management of new procedures' implementations risks in the hotel industry: A case study from Crete, Greece*.
- Ssenyonga, M. (2021). Imperatives for post COVID-19 recovery of Indonesia's education, labor, and SME sectors. *Cogent Economics & Finance*, 9(1), 1911439.
- Stewart, R. (2024). *Early Childhood Teachers' Perspectives on the Challenges of Teaching Students Who Lack Age-Appropriate Social and Emotional Skills*. Walden University.
- Tomlinson, B. (2023). *Developing materials for language teaching*. Bloomsbury Publishing.
- Tomlinson, C. A. (2017). *How to differentiate instruction in academically diverse classrooms*. Ascd.
- Tomlinson, C. A., & Imbeau, M. B. (2023). *Leading and managing a differentiated classroom*. Ascd.

- Wang, Z., Buser, A. M., Cousins, I. T., Demattio, S., Drost, W., Johansson, O., Ohno, K., Patlewicz, G., Richard, A. M., & Walker, G. W. (2021). A new OECD definition for per-and polyfluoroalkyl substances. *Environmental Science & Technology*, 55(23), 15575–15578.
- Wulansari, B. Y., & Sugito, S. (2016). Pengembangan model pembelajaran berbasis alam untuk meningkatkan kualitas proses belajar anak usia dini. *JPPM (Jurnal Pendidikan Dan Pemberdayaan Masyarakat)*, 3(1), 16–27.
- Zhang, H., Lee, I., Ali, S., DiPaola, D., Cheng, Y., & Breazeal, C. (2023). Integrating ethics and career futures with technical learning to promote AI literacy for middle school students: An exploratory study. *International Journal of Artificial Intelligence in Education*, 33(2), 290–324.