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THE LIVED EXPERIENCES OF ELEMENTARY TEACHERS IN IMPLEMENTING OUTDOOR LEARNING INQUIRY-BASED ACTIVITES (OLIBA) IN SCIENCE: A PHENOMENOLOGY

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ABSTRACT

This phenomenological study explored the lived experiences of elementary Science teachers in Nabunturan East District as they implemented Outdoor Learning Inquiry-Based Activities (OLIBA) in their Science classes. Anchored on Kolb's Experiential Learning Theory, Piaget's Constructivism, and Dewey's Inquiry-Based Learning framework, the study examined how teachers applied OLIBA, the challenges they encountered, and their used coping mechanisms to overcome challenges. Fourteen (14) Science teachers participated in the study through in-depth interviews and focus group discussions, selected purposely based on criteria: teaching experience, use of OLIBA, and willingness to share their experiences. Data were analyzed using Braun and Clarke's thematic analysis, revealing rich and meaningful narratives. Findings revealed that OLIBA enhanced learner engagement, curiosity, and conceptual understanding through hands-on and real-world activities. However, teachers faced constraints such as limited materials, safety concerns, large class sizes, time limitations, and inadequate training. Despite these challenges, they coped through collaboration, creativity, and reflective practice. Teachers emphasized the need for stronger institutional support and adequate resources. Furthermore, the study highlighted OLIBA's potential to enrich science learning and underscored the importance of sustained support to optimize its classroom implementation.

Keywords: *Outdoor learning, inquiry-based learning, phenomenology, experiential learning, science education*

INTRODUCTION

The Philippine educational system is facing a crisis, as shown by the poor performance of Filipino learners in national and international assessments. In the 2022 Programme for International Student Assessment (PISA), the country ranked 79th out of 81 participating countries, and this situation was further worsened by learning losses during the COVID-19 pandemic due to the sudden shift to alternative delivery modalities, which affected learners' engagement and academic performance.

In Malaysia, Nagihan and Erbu (2022) reported that teachers struggle to integrate outdoor learning into science education due to safety concerns, logistical difficulties, and a lack of teaching resources, which limit its effective classroom implementation. Similarly, in the United Kingdom, teachers face gaps in training and support when implementing outdoor inquiry learning, resulting in improper guidance, limited professional preparation, and insufficient instructional support, which lead to inconsistent implementation and underutilization of outdoor spaces (Waite & Davis, 2019). In Bhutan, Kezang (2019) found that outdoor inquiry learning has not effectively helped students connect classroom lessons to real-life situations, making it difficult for them to fully understand and apply scientific concepts. These global issues highlight shared challenges despite its benefits, outdoor inquiry learning remains underused due to systemic issues in training support and resources.

In Lanao del Sur, Philippines, Hadji Abas and Marasigan (2020) reported that the implementation of inquiry-based learning is hampered by the absence of science laboratory facilities in public schools. The situation bars the hands-on activities required for easier understanding of scientific concepts. In Davao Region, Berandoy and Villones (2024) learned that the implementation of Outdoor Learning Inquiry-Based Activities (OLIBA) is hindered by the absence of science laboratory facilities and science learning materials and resources. The situation leads to the shortage of adequate hands-on and interactive learning activities that affect the understanding of Science concepts among students as provided in the department of education's curriculum guide. As a result, learners have limited hands-on activities, affecting their understanding of science concepts. This is reflected in the 2024 Grade 6 National Achievement Test, where the region scored an MPS of 50.88%, "Nearly Proficient", indicating that most students fall short of the expected competencies despite the interventions.

Despite the recognized benefits of Outdoor Learning Inquiry-Based Activities (OLIBA) in enhancing science learning, 22 elementary teachers in Nabunturan East District reported challenges in integrating OLIBA due to limited resources and the 45-minute class time per subject (D.O. 010, s. 2024). These constraints hinder the implementation of effective outdoor inquiry-based activities that sustain student engagement and deepen understanding of scientific concepts. Although the district recorded an 84.58% MPS in science for Grades 3-6 in 2024-2025, the 2024 National Achievement Test for Grade 6 revealed a lower MPS of 52.75% ("Nearly Proficient"), highlighting gaps in learners' problem-solving, information literacy, and critical thinking

skills. This underscores the need to explore strategies, such as OLIBA, to improve science learning outcomes.

Although OLIBA has been shown to enhance student performance (Berandoy & Villones, 2024), current research overlooks the challenges faced by teachers, including time and resource constraints. Similarly, inquiry-based learning has demonstrated classroom effectiveness (Gamalo, 2023) but has not been extensively studied in outdoor contexts. This study addresses this gap by exploring teachers' lived experiences, insights, and challenges in implementing OLIBA, generating evidence to improve elementary science education in the Philippines. In doing so, it aligns with SDG 4 by investigating how outdoor, inquiry-based activities promote meaningful learning and environmental awareness.

Tal et al. (2019) clarified that phenomenological studies focus on individuals' personal experiences to understand the deeper meaning behind events Thus, this study adopts phenomenological approach as it aims to understand teachers' experiences, challenges, and how they apply Outdoor Learning Inquiry-Based activities (OLIBA) to make Science lesson more engaging and interesting for learners.

The results of this study emphasize the significance of Outdoor Learning Inquiry-Based Activities (OLIBA) in enhancing both teaching and learning. Elementary teachers will learn practical strategies to incorporate Outdoor Learning Inquiry-Based Activities (OLIBA) into their lessons, enhancing their confidence and effectiveness in teaching science. As these strategies are implemented, learners will show improved academic performance, develop critical thinking problem-solving skills, and engage more deeply with science concepts. Furthermore, the school administrator shall utilize the result of this study as a guide in providing instructional support, mentoring development, budget allocation for better resources, and networking for effective integration of OLIBA to the respective science classes. Also, this study will enable DepEd key officials to better understand the impact of OLIBA, the program it supports, and the policies that enhance teacher practice. Lastly, the future researcher, this study will be the starting point to study topics related to and do further inquiry into Outdoor Learning Inquiry-Based Activities (OLIBA).

Therefore, this study highlights the challenge and potential of implementing OLIBA in Science subjects, offering insights that can support teachers, guide school leaders, and inform future improvement in science education to address the issues related to and to improve the learning outcomes of science education in both national and international assessment. Hence, the findings of this study will be shared with key stakeholders through local and international research conferences to promote best practices among school administrators, instructional leaders and DepEd officials.

Research Questions

1. What are the experiences of elementary teachers in the field when implementing Outdoor Learning Inquiry- Based Activities (OLIBA) in science?

2. How do elementary teachers cope with the challenges of implementing Outdoor Learning Inquiry-Based Activities (OLIBA) in science?
3. What suggestions can elementary teachers offer to help other educators successfully adopt the Outdoor Learning Inquiry- Based Activities (OLIBA) in science?

METHODOLOGY

This study was conducted in 5 public elementary schools in Nabunturan East District, Schools Division of Davao de Oro. The district was selected due to its proximity to the researcher and because its teachers had previously undergone training on Outdoor Learning Inquiry-Based Activities (OLIBA), making it an appropriate setting for exploring teachers' lived experiences. The study employed a qualitative research design using a phenomenological approach to capture and describe the meanings elementary science teachers ascribed to their experiences in implementing OLIBA in Grades 3 to 6 science classes.

Purposive sampling was used to select fourteen (14) public elementary science teachers who met the following inclusion criteria: (1) currently teaching science in public elementary schools in Nabunturan; (2) with at least three years of experience teaching science; (3) with experience integrating OLIBA in their classes; and (4) willing to voluntarily participate in the study. Seven participants underwent in-depth interviews (IDIs), while six to eight teachers participated in focus group discussions (FGDs), consistent with qualitative standards for data saturation.

Primary data were gathered through researcher-made semi-structured interview guides used during in-depth interviews and focus group discussions. All sessions were conducted in quiet school settings, audio-recorded with consent, and supported by field notes. Ethical clearance was secured from the institutional Research Ethics Committee prior to data collection. Participants attended orientation sessions and signed informed consent forms to ensure voluntary participation, confidentiality, and compliance with the Data Privacy Act. Secondary data from peer-reviewed journals and scholarly literature on outdoor learning and inquiry-based education were used to contextualize and support the findings.

Data were analyzed using thematic analysis following Braun and Clarke's six-step framework: familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and writing the report. Coding consistency was strengthened through code-recode procedures, investigator triangulation, and external expert validation. To ensure trustworthiness, the study established credibility through prolonged engagement, member checking, and follow-up questioning; dependability through detailed documentation and audit trails; transferability through thick description of the research context; and confirmability through reflexivity and the use of direct participant quotations.

The study was limited to public elementary science teachers in Nabunturan East District who had implemented OLIBA; therefore, findings are context-specific but may offer insights applicable to similar educational settings.

RESULTS

Experiences of Elementary Teachers in the Field when Implementing Outdoor Learning Inquiry-Based Activities (OLIBA) in Science

In response to the first research question, "What are the experiences of elementary teachers in the field when implementing Outdoor Learning Inquiry-Based Activities (OLIBA) in science?", teachers shared their firsthand experiences in conducting OLIBA within their respective Science classes. Their narratives provide valuable insights into both the opportunities and challenges of implementing inquiry-based outdoor learning.

Analysis of the participants' responses revealed seven key themes regarding their experiences: (a) enhanced learner engagement and motivation, (b) development of 21st-century skills and collaboration, (c) deepened conceptual understanding through experiential learning, (d) increased instructional preparation and safety responsibilities, (e) time and curriculum, (f) behavioral management and supervision challenges, and (g) limited resources and environmental constraints. These themes, along with the core ideas reflecting teachers' lived experiences in implementing OLIBA, are summarized in Table 1.

Table 1

Major Themes and Core Ideas on the Lived Experiences of Elementary Teachers in Implementing Outdoor Learning Inquiry-Based Activities (OLIBA) in Science

Themes	Core Ideas
Enhanced Learner Engagement and Motivation	• Observing learners actively engaged in hands-on outdoor learning activities • Witnessing increasing learners' anticipation and motivation for outdoor lessons • Engaging learners through hands-on and real-life science activities • Observing learners becoming highly engaged and attentive during outdoor activities • Witnessing learners enjoying learning experiences outside the classroom • Seeing learners being more engaged as they get involved in hands-on tasks

	• Seeing learners making real-world connections based on experiential learning • Having learners remember lessons better through hands-on activities and experiences
Development of 21st-Century Skills and Collaboration	• Observing the development of collaboration and teamwork skills during activities • Developing shy learners' teamwork and participation through outdoor activities • Allowing learners time to develop critical thinking and problem-solving skills • Encouraging learners to ask questions and form hypotheses • Fostering collaboration and sharing of ideas during group activities • Allowing students to work in groups to communicate, listen, share responsibilities, and boost collaboration skills • Witnessing learners gaining confidence in expressing ideas based on their own experiences
Deepened Conceptual Understanding through Experiential Learning	• Explaining science concepts more effectively compared to traditional chalk-and-talk methods • Seeing students create connections between science concepts and the environment through hands-on experiences • Witnessing students develop deeper understanding through hands-on exploring and direct observation in natural settings • Recognizing authentic learning when students convert knowledge into their own words • Allowing students to gain deeper understanding through hands-on experiences and real-world connections

	• Learning by doing through hands-on application of science concepts • Leading students to achieve deeper understanding of lessons through experiential learning • Witnessing learners remember lessons better through actual experience
Increased Instructional Preparation and Safety Responsibilities	• Spending extra time on planning, preparation, and execution of outdoor activities • Preparing thoroughly and planning carefully before conducting the activity • Consuming too much time in implementing outdoor activities • Creating and preparing back-up plans for unfavorable time or weather conditions • Adjusting or skipping OLIBA when school activities take up the schedule • Ensuring learner safety while performing experiments • Monitoring learner progress during activities • Counting and monitoring learners to ensure they stay within the designated outdoor area • Managing learners outside the classroom environment
Time and Curriculum Constraints	• Struggling with time constraints due to the 45-minute class period • Struggling with time management as one class period is often not enough • Facing time constraints due to limited class periods and large class size • Struggling with the 45-minute time allotment under the MATATAG curriculum • Consuming too much time in preparing and implementing outdoor lessons • Facing challenges in time management • Facing time constraints that require careful and strategic planning

Coping Strategies of Elementary Science Teachers in Overcoming Challenges in Implementing Outdoor Learning Inquiry-Based Activities (OLIBA)

In response to the second research question, "How do elementary teachers cope with the challenges of implementing Outdoor Learning Inquiry-Based Activities (OLIBA) in science?", teachers shared the various difficulties they encountered during implementation. Their insights not only highlight these challenges but also reflect their resilience, creativity, and commitment to providing engaging, hands-on, inquiry-based learning experiences despite the obstacles.

From the analysis of participants' responses, six key themes emerged as strategies teachers use to cope with these challenges: (a) strategic planning and flexible adaptation, (b) classroom management and learner discipline practice, (c) collaboration and peer-administrative support, (d) resourcefulness and effective use of available materials, (e) professional growth and continuous learning, and (f) support from the school, parents, and the community. These themes, along with the core ideas on the challenges faced and coping strategies applied, are summarized in Table 2.

Table 2

Major Themes and Core Ideas on Coping Strategies of Elementary Science Teachers in Overcoming Challenges in Implementing Outdoor Learning Inquiry-Based Activities (OLIBA)

Theme	Core Ideas
Challenge: Time and Curriculum Constraints	
Strategic Planning and Flexible Adaptation	● Coping through careful and flexible lesson planning to effectively adjust within the 45-minute class period. ● Being flexible with school activities and time limitations ● Planning ahead by checking weather conditions ● Coping with weather by using sheltered or covered areas ● Preparing materials and setting clear objectives prior to outdoor activities. ● Planning activities to suit the 45-minute period ● Planning based on available time ● Applying time-management strategies to accommodate inquiry-based processes
Challenge: Behavioral Management and Classroom Management	

Classroom Management and Learner Discipline Practices	• Setting clear expectations and routines for learners. • Assigning roles and responsibilities to learners and establishing structured standards • Maintaining students' behavior while conducting the activity • Giving orientation before the session • Managing learners' behavior using positive reinforcement • Setting group rules • Ensuring student safety through planning • Preparing learners' emotional stability to ensure smooth and safe outdoor experiences
Challenge: Need for Collaboration and Peer Administrative Support	
Collaboration and Peer-Administrative Support	• **Collaborating with colleagues and asking for help** • **Conducting Learning Action Cell (LAC) sessions** • **Seeking ideas, references, and support from colleagues, co-teachers, district coordinators, master teachers, and school administrators** • **Collaborating with colleagues for materials and sharing of ideas** • **Engaging in collaborative planning and sharing of strategies** • **Receiving support from principals, school heads, science coordinators, and co-teachers** • **Using district science coordinators' group chats for resources**
Challenge: Limited Resources and Environmental Constraints	
Resourcefulness and Utilization of Available Materials	• Using indigenous, local, or low-cost materials to address resource limits • Maximizing and utilizing available materials, educational tools, and school facilities to achieve learning competencies • Providing resources when learners lack materials

	• Utilizing DepEd modules, science tools, and accessing online or local resources
Challenge: Limited Access to Professional Development Programs	
Professional Growth and Continuous Learning	• Enhancing professional growth through seminars, trainings, and workshops. • Conducting LAC sessions • Learning through YouTube and internet platforms • Accessing online resources and research • Accessing DepEd Commons and online portals • Utilizing online science platforms such as YouTube • Leveraging technology and digital tools for efficiency
Challenge: Lack of Strong Stakeholder Support	
Support from School, Parents, and Community	• Seeking community support to expand learning opportunities • Engaging parents in supporting outdoor learning activities • Receiving support from fellow teachers, school heads, and co-teachers • Benefiting from the strong support of school heads and administrators • Securing administrative approval, time allocation, and small funding • Relying on flexible scheduling and support from school heads for successful implementation

Elementary Teachers' Recommendations for Effective Implementation of Outdoor Learning Inquiry Based Activities (OLIBA) in Science

In response to the third research question, "What suggestions can elementary teachers offer to help other educators successfully adopt Outdoor Learning Inquiry-Based Activities (OLIBA) in science?", teachers shared practical strategies grounded in their experiences and the challenges they encountered. Their insights reveal not only the difficulties of implementing OLIBA but also their strong commitment to promoting meaningful, hands-on, and inquiry-based learning among learners.

Analysis of the participants' responses revealed six major themes on how teachers address these challenges: (a) thorough preparation and advance planning, (b) integration of inquiry and hands-on learning, (c) promotion of student engagement and curiosity, (d) strengthened teacher collaboration and support, (e) continuous training and institutional support, and (f) support from the school, parents, and the wider community. These themes are summarized in Table 3, which presents the key recommendations of elementary science teachers for the effective adoption of OLIBA.

Table 3

Major Themes and Core Ideas on the Teachers' Recommendations for Effective Implementation of Outdoor Learning Inquiry-Based Activities (OLIBA) in Science

Themes	Core Ideas
Prepare Thoroughly and Plan Ahead	● Designing flexible and focused lessons and providing training for new teachers ● Adjusting plans for weather and unexpected events ● Managing time effectively and preparing students for hands-on activities ● Preparing activities thoroughly, including materials, assessments, and objectives ahead. ● Giving orientation, setting standards and expectations, and conducting pre-activity discussions ● Effective lesson implementation through thorough preparation, clear communication of expectations, structured distribution of tasks, and organized classroom management ● Successful activity implementation through establishing rules and routines, and motivating students beforehand
Integrate Inquiry and Hands-On Learning	● Focusing on observation, questioning, and exploration, encouragement of first-hand observation and guidance of student exploration ● Framing of open-ended questions and modeling of specific questioning ● Introduction of inquiry-based learning and its benefits ● Guidance of open-ended inquiry and provision of guiding questions

	● Use of hands-on investigations and facilitation of student-led discovery, including hands-on experiments ● Guidance of group work and inquiry ● Promotion of experiential learning ● Teaching of observation and use of science tools
Promote Student Engagement and Curiosity	● Enhancement of learner engagement and performance; fostering of excitement and active participation ● Encouragement of student responsibility for learning and provision of opportunities for independent learning ● Exposure of students to the environment and hands-on learning; promotion of experiential learning to aid retention ● Enhancement of engagement and understanding; facilitation of exploration and reflection ● Encouragement of practical problem-solving ● Encouragement of holistic learning by engaging students' hearts, minds, and hands
Strengthen Teacher Collaboration and Support	● Collaboration with colleagues and local educators ● Seeking of help, ideas, and references from colleagues ● Provision of training and guidance for new teachers ● Provision of teacher training, resources, and access to outdoor spaces for gradual improvement ● Sharing of best practices with colleagues ● Strengthening of collaboration with stakeholders ● Connection with the community to leverage resources and expertise ● Collaboration with colleagues and seeking of support

Provide Continuous Training and Institutional Support	● Offering of administrative support through flexible scheduling and recognition of outdoor time as valid instruction ● Conducting of professional development for teachers to ensure competency ● Provision of risk management and inquiry-based training to build teacher confidence ● Provision of comprehensive teacher training and workshops on OLIBA and science apparatus use ● Ensuring of continual professional support for teachers, especially in rural areas ● Provision of additional training for new teachers ● Provision of teacher training and professional development to equip teachers with necessary skills on implementing OLIBA strategies through practical workshops and inquiry-based activities ● Increase of institutional and administrative support to boost teacher confidence and sustainability ● Provision of training, funding, and access to outdoor spaces ● Inclusion of OLIBA in school improvement plans (SIP) and in-service training (INSET)

DISCUSSION

Lived Experiences of Elementary Teachers in Implementing Outdoor Learning Inquiry-Based Activities (OLIBA) in Science

The participants shared their different experiences in implementing OLIBA in science. From the responses gathered through in-depth and focus group discussion, the following seven (7) themes emerged: (a) enhanced learner engagement and motivation, (b) development of 21st-century collaborative skills, (c) deepened conceptual understanding through experiential learning, (d) heightened instructional preparation and safety responsibilities, (e) constraints of time and curriculum allotment, (f) behavioral management and supervision challenges, and (g) limited resources and environmental constraints.

Enhanced Learner Engagement and Motivation

Engaging learners in science is a persistent challenge, especially when conventional methods such as textbook-based or chalk-and-talk lessons dominate the classroom. This study revealed that Outdoor Learning Inquiry-Based Activities (OLIBA) significantly improved learner engagement and motivation by connecting scientific ideas to real-life contexts, making learning both meaningful and hands-on.

Students demonstrated sustained focus, attentiveness, and active involvement in discussions and tasks, showing higher participation than in traditional lessons. These results support Salsabila et al. (2024), who emphasized that hands-on and contextualized learning promotes better understanding of scientific concepts. Similarly, Rottle and Johnson (2023) found that outdoor learning enhances attention, motivation, and retention. In our study, linking lessons to real-life situations helped learners engage cognitively and emotionally, making science more relevant and memorable.

Moreover, OLIBA encouraged learners to explore ideas independently, work collaboratively, and engage in critical thinking. Wen et al. (2023) highlighted that inquiry-based outdoor learning increases curiosity, collaboration, and active participation. In our context, students became more confident in posing questions and solving problems, demonstrating that outdoor inquiry-based activities foster proactive learning and make science learning meaningful beyond mere content acquisition.

Development of 21st-Century and Collaborative Skills

In today's changing educational setting, developing 21st-century skills goes beyond content knowledge and focuses on improving learners' collaboration, communication, and critical and creative thinking to prepare them for real-life situations. The teacher-participants shared that Outdoor Learning Inquiry-Based Activities (OLIBA) were effective in helping learners develop these important skills through active and meaningful tasks. During OLIBA, learners worked in small groups where they shared ideas, listened to one another, and solved problems together, which helped improve both social and thinking skills. This is supported by Naylor et al. (2021), who explained that outdoor education promotes teamwork, communication, and problem-solving among learners.

The findings also showed that OLIBA encourages critical thinking, inquiry, and problem-solving by allowing learners to analyze information and think creatively. Learners were given opportunities to ask questions, form hypotheses, and solve problems in groups, which helped even shy or less confident students participate more actively. These activities allowed learners to make decisions and apply ideas in real-life contexts. This supports Kelley et al. (2024), outdoor inquiry-based activities improve learners' critical thinking and their ability to collect and analyze data.

Moreover, the results indicated that OLIBA enhances social-emotional skills and independent learning. Through hands-on activities and group work, learners developed respect for others' ideas, empathy, flexibility, and confidence in making decisions. These

experiences helped learners build positive relationships and take responsibility for their learning. This is supported by Amaefule et al. (2023) found that outdoor learning promotes teamwork, creativity, and effective collaboration, helping learners develop essential 21st-century skills for school and future work.

Deepened Conceptual Understanding through Experiential Learning

Experiential learning connects abstract scientific concepts to tangible experiences, deepening understanding and promoting retention. This study found that OLIBA enabled learners to comprehend science concepts more effectively by engaging in hands-on, real-life activities that extended learning beyond the classroom.

Teachers observed that learners could relate lessons to everyday life, remember concepts more effectively, and actively construct knowledge. This aligns with Hamilton and Hile (2022) described OLIBA as a means to enhance science learning through real-world experiences. Similarly, Waller (2023) and Remmen and Iversen (2022) emphasized that outdoor and nature-based experiences improve comprehension and engagement. In our study, learners' active participation demonstrates that experiential learning strengthens conceptual understanding.

OLIBA also nurtured curiosity, inquiry, and problem-solving skills. Students asked questions, tested hypotheses, and discovered solutions independently. This supports the work of Lowell and Tagae (2023), who emphasized the value of first-hand inquiry, and Wen et al. (2023), who highlighted increased active participation through outdoor inquiry. In the context of our study, learners became independent and proactive, showing that inquiry-based outdoor learning not only deepens conceptual understanding but also prepares students to face real-life challenges confidently.

Increased Instructional Preparation and Safety Responsibilities

Implementing OLIBA requires careful instructional planning and heightened responsibility to ensure both effective learning and student safety. This study highlighted that teachers invested additional time and effort in preparation, adjusting for environmental conditions, schedules, and student supervision.

Monitoring learners outside the classroom demanded extra attention and diligence. Teachers were responsible for supervising movements, tracking progress, and ensuring safety in open spaces. This is supported by Anjarwani et al. (2020), who emphasized the importance of planning, manageable class sizes, and close supervision for safe outdoor learning. Achurra et al. (2024) also noted that limited resources and safety concerns make outdoor science teaching challenging. Our study shows that thorough preparation and constant vigilance were critical for successful OLIBA implementation.

Moreover, outdoor activities required more time than traditional classroom teaching and needed flexible integration with other school programs. Baskaran and Abdullah (2020) highlighted that motivated and well-prepared teachers are essential to the success of outdoor learning. In the context of our study, teachers' careful planning

and dedication ensured that outdoor lessons remained engaging, effective, and safe, confirming that instructional preparation and proactive safety management are crucial for positive learning outcomes.

Time and Curriculum Constraints

Time limitations and curriculum demands were significant challenges in implementing OLIBA. Teachers reported that the standard 45-minute class period was often insufficient for conducting outdoor inquiry-based activities while meeting the required learning competencies.

Large class sizes and content-centered curricula further constrained the time available for meaningful, hands-on learning. Abdi (2020) explained that conventional curricula leave limited space for inquiry-based activities, while Kidman and Casinader (2019) noted the trade-off between covering content and developing higher-order thinking skills. In our study, these constraints often forced teachers to adjust activities, highlighting the need for strategic planning to maximize learning within limited time.

Furthermore, outdoor activities required intensive preparation to align with curriculum objectives and school schedules. Baskaran and Abdullah (2020) emphasized that effective outdoor learning depends on strong planning, clear goals, and teacher motivation. In the context of our study, teachers demonstrated adaptability by adjusting schedules and integrating lessons thoughtfully, ensuring that OLIBA remained impactful despite time and curriculum constraints.

Behavioral Management and Supervision Challenges

Managing students' behavior during outdoor science activities emerged as a critical challenge in the study. Teachers reported difficulties in maintaining discipline, ensuring safety, and keeping learners focused in open, less-controlled environments.

Students were easily distracted by the surroundings, and large class sizes compounded the difficulty of providing adequate supervision. Oberle et al. (2021) and Gholam (2019) highlighted that limited resources and class sizes often hinder effective implementation of outdoor inquiry-based activities. In our study, teachers had to employ additional strategies to monitor learners, maintain order, and guide active participation while ensuring safety.

Another challenge involved keeping learners within designated activity areas and observing their progress. Ayeme (2021) emphasized that outdoor learning requires careful supervision and risk management. Contextually, our study showed that effective behavioral management is integral to the success of OLIBA, requiring vigilance, preparation, and proactive strategies to maintain a safe and productive learning environment.

Limited Resources and Environmental Constraints

The implementation of OLIBA was further constrained by limited resources and environmental factors. Teachers reported insufficient materials, tools, and infrastructure necessary for hands-on science activities, which restricted the full potential of inquiry-based learning.

Achurra et al. (2024) highlighted that inadequate resources and safety provisions make outdoor lessons challenging, while Nagihan and Ebru (2022) noted that poorly maintained or insufficient outdoor spaces hinder effective implementation. In our study, some schools lacked suitable areas for outdoor learning, limiting students' ability to explore and engage in hands-on experiments.

Additionally, unpredictable weather and overlapping school events disrupted lesson flow, reducing learning time. Oberle et al. (2021) emphasized that financial constraints and poorly maintained facilities limit consistent use of outdoor learning. In our context, teachers had to modify or cancel activities due to these environmental challenges, demonstrating that resource allocation and infrastructure improvements are essential for sustainable OLIBA implementation.

Coping Strategies of Elementary Science Teachers in Overcoming Challenges in Implementing Outdoor Learning Inquiry-Based Activities (OLIBA)

Implementation is never free from challenges, and challenges cannot be addressed without effective coping strategies. Based on the responses from the teachers we interviewed, six (6) key themes emerged: (a) strategies planning and flexible adaptation, (b) classroom management and learner discipline practice, (c) collaboration and peer-administrative support, (d) resourcefulness and utilization of available materials, (e) professional growth and continuous learning, and (f) support from school, parents, and community. These themes reflect the lived experiences of teachers as they navigate the demands of conducting Outdoor Learning Inquiry-Based Activities in elementary science.

Strategic Planning and Flexible Adaptation

Teachers managed to conduct the outdoor inquiry successfully through careful planning and changing their approaches. They made the activities still meaningful for learners by adjusting their strategies according to time, weather, and places available. Such adaptability is aligned with the idea that outdoor learning can be very efficient if teachers have specific steps to follow but are also open to changes. Wen et al. (2023) pointed out that preparation with guidance allows students to have a better learning experience during outdoor activities.

Strategic planning also entails modifying lessons to shorter times or unexpected interruptions. Teachers ensured that activities could fit into a 45-minute class period by eliminating unnecessary steps and directing their focus on the essential objectives. This indicates that outdoor learning needs both a systematic approach and a rapid decision-making process to ensure safety and organization of activities. This accords with

Almusaed et al. (2023) who claimed that outdoor learning becomes more meaningful when teachers adjust the scope of work to the surroundings.

Lastly, teachers planned for the weather by looking ahead and preparing alternative places like covered areas. As a result of these preparations, they managed to maintain the schedule, and the students stayed safe while learning outdoors. The flexibility of moving to another location or changing the activity is a sign of good planning which facilitates successful OLIBA. And according to Kiviranta et al. (2023), outdoor education is efficient only when teachers are aware of the surroundings and their impact on learning.

Classroom Management and Learner Discipline Practices

Clear rules and expectations established before outdoor lessons helped learners understand their roles and responsibilities. Tal et al. (2019) highlighted that inquiry activities are more effective when learners are aware of their tasks. In this study, such clarity enabled teachers to maintain discipline while fostering student attentiveness and ownership of the learning process.

Brief orientations and reminders prepared learners emotionally and mentally for outdoor activities. Through preparation improves participation and reduces unsafe behavior. Here, these orientations contributed to a safer, more focused, and learner-friendly outdoor environment.

Teachers also used positive reinforcement to encourage compliance and collaboration during activities. Natural settings help learners exercise emotional regulation and teamwork. In this study, acknowledging students' efforts reduced misbehavior and increased active engagement throughout OLIBA.

Collaboration and Peer–Administrative Support

Collaborative planning among co-teachers strengthened the implementation of outdoor inquiry lessons. Naylor et al. (2021) highlighted that teacher collaboration improves the effectiveness of inquiry activities. In our study, sharing ideas and strategies for adjustments enhanced readiness and confidence in conducting OLIBA.

Administrative support, including feedback and recommendations, empowered teachers to refine both indoor and outdoor lessons. Park et al. (2023) stated that strong institutional support increases teacher confidence. Teachers in this study felt encouraged to innovate and apply strategies effectively due to consistent guidance from school leaders.

LAC Sessions and online group chats facilitated peer collaboration and problem-solving. Calara et al. (2024) emphasized that a collaborative school culture enhances efficiency and innovation. In our context, these interactions strengthened teacher adaptability and contributed to the overall success of OLIBA activities.

Resourcefulness and Utilization of Available Materials

Teachers maximized the use of nearby natural materials, such as leaves, stones, and soil, to enhance outdoor activities. Natural resources enable learners to experience authentic, hands-on learning. In this study, using available materials not only enriched learning but also helped teachers manage activities effectively despite limited tools.

Teachers borrowed or reused materials from co-teachers and school storerooms to maintain lesson continuity. Abell and Lederman (2023) observed that practical, interactive resources improve outdoor learning outcomes. Here, teacher inventiveness ensured that students could participate fully in inquiry-based tasks.

Digital resources, including learning activity sheets (LAS), videos, and DepEd modules, were also employed when physical materials were insufficient. Kelley et al. (2022) highlighted that access to high-quality information supports critical thinking. In our findings, the combination of natural, borrowed, and digital materials ensured that OLIBA activities remained complete, engaging, and educationally meaningful.

Professional Growth and Continuous Learning

Teachers' knowledge and skills in outdoor inquiry were strengthened through seminars and workshops. Hamilton and Hile (2022) emphasized that professional development improves teacher readiness. In this study, training enabled teachers to supervise students more effectively and apply OLIBA methods with confidence.

Teachers also used online videos and tutorials as additional resources to enhance planning and adaptability. Wen et al. (2023) suggested that guided learning supports teacher preparedness. These resources allowed teachers to tailor activities to their specific classroom contexts, making OLIBA more flexible and effective.

Furthermore, discussions with science coordinators and review of DepEd materials broadened teachers' knowledge base. Davenport et al. (2022) argued that inquiry-based teaching requires ongoing professional improvement. In this study, continuous learning enabled teachers to fine-tune methods, resulting in structured, impactful, and engaging outdoor lessons.

Support from School, Parents, and Community

The support that came from the school heads consisted of granting approvals, giving time, and providing small amounts of money which made it easier for teachers to put OLIBA into action. Such assistance is acknowledged by Oberle et al. (2021) as a means of promoting the establishment of safe outdoor learning. Teachers' confidence was boosted by the knowledge of the administration's support. The support made outdoor activities more manageable.

Schools were helped out by parents too in the form of materials which were needed for the children. The involvement of parents made the students more ready and also eager to take part in the activities. Molyneux, Zeni, & Oberle (2022) stated that learning outside

the classroom develops emotional and social bonds, which is a major concern for parents. This understanding opened up the parents to support OLIBA more.

The involvement of the community and local expertise was also a factor in the teachers' conducting of activities. They allowed students to associate learning with the real world. According to Ayotte-Beaudet et al. (2021), tangible places make learning relevant. The partnership made OLIBA richer and more important.

Elementary Teachers' Recommendations for Effective Implementation of Outdoor Learning Inquiry Based Activities (OLIBA) in Science

To deepen the successful integration of Outdoor Learning Inquiry Based Activities (OLIBA) in science, elementary science teachers shared their practical insights drawn from their first experiences. Based on the responses from the teachers with interviewed, six (6) key themes emerged: (a) prepare thoroughly and plan ahead, (b) integrate inquiry and hands-on learning, (c) promote student engagement and curiosity, (d) strengthen teacher collaboration and support, (e) provide continuous training and institutional support, and (f) support from school, parents, and community. When these elements come together, outdoor inquiry becomes a powerful tool for enriching science learning and nurturing authentic learner experiences.

Prepare Thoroughly and Plan Ahead

To succeed, Outdoor Learning Inquiry-Based Activities need good preparation and better planning. As OLIBA integrates outdoor activities that require structure and creativity, it becomes necessary for teachers to clearly detail their learning intentions, prepare materials, and establish safety precautions prior to the activity. In fact, outdoor experiences become truly alive and exciting when teachers are prepared and have objectives in mind (Berandoy & Villonez, 2024).

To start with, one of the main problems teachers face in OLIBA, according to Corcoran and O'Flaherty (2022), is a lack of preparation. Lack of preparation makes other factors, such as lack of resources, large numbers within a class, and safety concerns, practically insurmountable. Preparation thus enables a teacher to anticipate and identify what is needed, while students can be grouped and managed effectively, while safety outside the classroom is ensured.

It is a challenging task to find the best combination between fulfilling the curriculum standards and developing the students engaged in outdoor activities. As expressed by Oberle (2021), effective planning and use of resources facilitate our ability to include the important lessons while giving the students chances to learn through meaningful outdoor experiences. By planning ahead, the teachers can make OLIBA activities more engaging and help students learn better.

Integrate Inquiry and Hands-on Learning

The hands-on activities really help the learners understand the lesson better because they experience real activities instead of just listening. Teachers always say that

learning can be much more meaningful when students participate in experiments, observe real situations, and reflect on them. This idea emphasizes student centered learning and giving the learners the chance to discover and gain new learnings and hands-on experiences.

Teachers believe that combining asking and doing activities greatly supports students' learning. Through asking questions, exploring, and solving problems, students can discover new ideas and understand lessons more deeply. Hand-on learning can help the learners to use what they learn in real life situations. Activities done outside the classroom strengthen this connection, allowing students to investigate information, and perform real tasks. Learners test ideas and learn through hands-on outdoor experiences, (Hughes et al. 2023).

Along with that, students learn best when they are involved in real experiences, Kolb (1984) . Real tasks help them understand lessons more deeply because they work with real situations, try different ideas, and learn from what happens. Outdoor Learning Inquiry-Based Activities (OLIBA) can help learners become more curious, active, and motivated to do well in the class.

Promotes Students Engagement and Curiosity

The interviews highlight that one of the goals of the teachers is the learners' participation and curiosity because in science lessons which we believe is what makes learning meaningful. We see a great value in Outdoor Learning Inquiry Based Activities (OLIBA) which put into practice the opportunity for students to get out of the classroom and into hands-on learning. This not only prompts them to ask questions but also we see that it helps them to connect theory with practice in the real world Haraldsson et al, (2024). In turn what we see is that students become very much motivated which in turn sets their fire for the subject alight.

Through OLIBA, students also have the chance to increase their knowledge with experience and reflection. Into the outdoors, they step into inquiry that in turn helps them develop critical thinking, problem solving and teamwork which in turn changes them from passive to more active learners (Thornhill-Miller et al, 2023). Curiosity becomes the main motivator of their education which in turn results in a rich and lasting passion for science.

It is the teachers’ role to ensure outdoor activities are both effective and enjoyable for learners for them to have a meaningful learning. Even though teachers face difficulties like large class sizes, a lack of resources, and safety issues, this OLIBA increases the levels of student participation, excitement, and learning (Nagihan & Ebru, 2022). By keeping the learners engaged and motivated with OLIBA , they not only achieve more academically but also develop emotionally, socially, and personally.

Strengthen Teacher Collaboration and Support

Teachers need to work together and support one another to make OLIBA activities more engaging and successful. As mentioned by Calara et al. (2024), this collaboration develops new ideas that help teachers come up with lessons that really catch the

students' interests. Sharing resources, tips, and experiences enables the teachers to find solutions for everyday challenges of a lack of materials or managing a large number of class sizes during outdoor learning.

It also allows the teachers themselves to feel confident in using OLIBA for science lessons and develop self-confidence. Fiocca et al. (2024) stated that supportive groups among teachers will help them learn more about outdoor teaching and feel comfortable leading hands-on, inquiry-based activities. Teachers can enhance their teaching by mentoring one another, observing each other, and planning together so that the learners will experience a fun and valuable learning.

Teachers supporting one another make learning easier and more engaging for the students. Support from peers enables them to plan outdoor lessons which provide opportunities for critical thinking, problem solving, and teamworking skills (Beames et al., 2012). With this enhanced collaboration among teachers, there is likely to be an improved supervision, guidance, and ability to adapt such activities for the diverse needs of learners.

Provide Continues Training and Institutional Support

To make this work well in science classes, teachers should undergo training and get enough support from their schools for OLIBA. Their major challenges, faced by many teachers, are issues such as a lack of materials, having huge classes, or uncertainty about teaching lessons outdoors (Nagihan & Ebru,2022). With practical workshops, teachers are exposed to hands-on training that will help them acquire confidence and easily learn how to apply strategies for OLIBA in their lessons.

The support from the school is also very important in keeping the programs going well. If schools can provide budgets for outdoor learning tools, safe spaces for activities, and time for teachers to plan together, then teachers will have more time to help students learn by doing. With regular support from school leaders, teachers can run inquiry lessons that help build critical thinking, problem-solving, and engagement-just what OLIBA is after for Rottle and Johnson (2023).

Above all, ongoing training and school support help teachers share their ideas and try new things in a collaborative manner. Sharing tips, mentoring, and reflecting on teaching practices allow the teachers to think creatively about how to conduct lessons in science outdoors while still maintaining safety and inclusion of students (Calara et al., 2024). This will keep teachers motivated and passionate. This can make outdoor learning fun and meaningful for the learners.

Conclusions

Based on the findings of this study, it can be concluded that the implementation of Outdoor Learning Inquiry-Based Activities (OLIBA) in elementary science classes significantly influences teachers' instructional practices, classroom engagement, and overall teaching experiences. First, regarding how teachers perceive and

interpret their experiences with OLIBA, the study revealed that teachers view outdoor inquiry-based learning as a valuable pedagogical approach that promotes active learning, curiosity, and student-centered engagement while fostering deeper understanding of scientific concepts. Second, in terms of the challenges faced, teachers reported difficulties such as limited resources, time constraints, and the need for additional preparation, yet they emphasized that these challenges were outweighed by the observed benefits to student learning and motivation. Third, the study concluded that OLIBA positively affects teachers' professional growth by encouraging reflective practice, adaptability, and innovation in lesson planning, while also fostering collaboration among colleagues through shared experiences. Lastly, the findings indicate that the use of OLIBA has broader implications for improving science teaching strategies, highlighting the need for schools and administrators to provide adequate support, training, and resources to sustain and expand outdoor inquiry-based learning in the curriculum. Overall, the study confirms that OLIBA is an effective approach that enriches both teaching and learning experiences, addressing real classroom needs while enhancing the quality of science education in elementary schools.

Recommendations

This study focused on the lived experiences of a limited group of teachers in implementing OLIBA, which may not fully represent the diversity of experiences in other schools or districts. Future research is recommended to include a larger and more varied sample of teacher-participants across multiple schools or divisions, allowing for broader insights into how OLIBA is implemented in different contexts.

It is also suggested that future studies gather perspectives not only from teachers but also from school administrators, learners, and community stakeholders. A multi-perspective approach can provide a more comprehensive understanding of the impact of OLIBA on teaching and learning processes, as well as the interactions between different participants in outdoor inquiry-based activities.

Lastly, further research could explore the challenges and coping strategies of teachers in conducting OLIBA, including approaches to resource management and support systems. Insights from such studies can guide improvements in teacher preparedness, instructional planning, and the development of responsive educational programs that enhance both teaching and learning in the Philippine context.

Compliance with Ethical Standards

The authors declare that this study was conducted in full compliance with established ethical standards for research involving human participants and was approved by the St. Mary's College of Tagum, Inc. Research Ethics Committee (SMCTI-REC). Informed consent was obtained from all participants, who were informed of the study's purpose, procedures, potential risks and benefits, and their right to withdraw at any time without penalty. Anonymity and confidentiality were strictly maintained, and all

data were securely stored and managed in accordance with the Data Privacy Act of 2012. The well-being and rights of participants were safeguarded throughout the study, and a respectful and non-threatening environment was ensured during interviews and discussions. The authors affirm that there is no conflict of interest, plagiarism was avoided, and findings were based solely on participants' data with measures to minimize bias through reflexivity, triangulation, and validation. Any AI used was limited to language refinement, with full responsibility for the study's content and integrity remaining with the authors, and results were used purely for academic purposes.

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REFERENCES

Abdi, A. (2014). The effect of inquiry-based learning method on students' academic achievement in science course. Universal Journal of Educational Research, 2(1), 37–41.

Abell, S. K., & Lederman, N. G. (2023). Handbook of research on science education. Retrieved from https://api.taylorfrancis.com/content/books/mono/download?identifierName=doi&identifierValue=10.4324/9780367855758&type=google pdf

Almusaed, A., Almssad, A., Yitmen, I., & Homod, R. (2023). Outdoor learning environments and their role in enhancing students' engagement and meaningful learning. Sustainability, 15(3), 1–16. https://doi.org/10.3390/su15032345

Amaefule, B. C., Nwoke, B. I., & Okoye, R. O. (2023). Outdoor learning as a strategy for enhancing students' creativity, teamwork, and collaboration skills. Journal of Education and Learning Research, 10(2), 45–53.

Anjarwani, R., Doyin, M., & Indiatmoko, B. (2020). Guided inquiry learning with outdoor activities setting to improve critical thinking ability and science process skills of elementary school students. Journal of Primary Education, 9(2), 129–135.

Ayotte-Beaudet, J.-P., P. Chastenay, M.-C. Beaudry, K. L'Heureux, M. Giamellaro, J. Smith, E. Desjarlais, and A. Paquette. 2023b. "Exploring the Impacts of Contextualised Outdoor Science Education on Learning: The Case of Primary

School Students Learning About Ecosystem Relationships." Journal of Biological Education 57 (2): 277–294. https://doi.org/10.1080/00219266.2021.1909634.

Baskaran, V., & Abdullah, A. H. (2020). Teachers' readiness and motivation in implementing outdoor learning activities. International Journal of Academic Research in Progressive Education and Development, 9(2), 494–506.

Beames, S., Higgins, P., & Nicol, R. (2012). Learning outside the classroom: Theory and guidelines for practice (2nd ed.). Routledge.

Belen, C., & Caballes, E. (2020). Teachers' motivation in inquiry-based learning: Enhancing outdoor education practices. Journal of Educational Research and Development, 8(1), 45–59.

Berandoy, M. L. I., & Villonez, G. L. (2024). Effect of outdoor learning inquiry-based activities on learners' performance in science: A sequential explanatory design. Contemporary Educational Researches Journal, 14(2), 103–119. https://doi.org/10.18844/cerj.v14i2.9327

Braun, V., Clarke, V., & Hayfield, N. (2019). Thematic analysis. In P. Liamputtong (Ed.), Handbook of research methods in health social sciences (pp. 843–860). Springer. Retrieved from https://study.sagepub.com/sites/default/files/additional_chapter_-_teaching_supervising_assessing_and_examining_ta.pdf

Calara, N. L. S., Mendoza, M. L. D., & Gabriel, B. D. (2024). Science teachers' use of inquiry-based teaching methods in teaching junior high school science among select secondary schools in Baliwag. Ignatian International Journal for Multidisciplinary Research, 2(9), 402–424. https://doi.org/10.5281/zenodo.13745286

Corcoran, R. P., & O'Flaherty, J. (2022). Social and emotional learning in teacher preparation: Pre-service teacher well-being. Teaching and Teacher Education, 110, 1–12. https://doi.org/10.1016/j.tate.2021.103563

Creswell, J. W., & Creswell, J. D. (2022). Research design: Qualitative, quantitative, and mixed methods approaches (6th ed.).

Davenport, R., Curtis-Jackson, P., Dalkmann, P., Davies, J., Fenner, K., Hand, L. H., … Redman, A. (2022). Scientific concepts and methods for moving persistence assessments into the 21st century. Integrated Environmental Assessment and Management, 18, 1454–1487.

De Neve, D., Bronstein, M. V., Leroy, A., Truyts, A., & Everaert, J. (2023). Emotion regulation in the classroom: A network approach to model relations among emotion regulation difficulties, engagement to learn, and relationships with peers and teachers. Journal of Youth and Adolescence, 52(2), 273–286. https://doi.org/10.1007/s10964-022-01678-2

DepEd Order No. 010 s. 2024. Policy guidelines on the implementation of the MATATAG curriculum. Retrieved from https://www.deped.gov.ph/wp-content/uploads/DO_s2024_010.pdf

Fiocca, S., Carrier, S., & McGowan, J. (2024). Turning science lessons inside out: Professional development for elementary school teachers' outdoor instruction. Journal of Outdoor Recreation, Education, and Leadership, 16. https://doi.org/10.18666/JOREL-2024-12469

Gamalo, I. (2023). Problem based inquiry approaches in enhancing the grade seven scientific discovery skills.

Gholam, A. (2019). Inquiry-based learning: Student teachers' challenges and perceptions. Journal of Inquiry & Action in Education, 10(2).

Hamilton, F. A., & Hile, K. A. (2022). On your mark, get set, explore! Promoting outdoor exploration for early learners across settings. Journal of Outdoor and Environmental Education, 26, 49–69.

Haraldsson, K., Göranson, M., & Lindgren, E.-C. (2024). "It is easier to learn when you are out": An ethnographic study of teaching science subjects through outdoor learning at compulsory school. Journal of Outdoor and Environmental Education, 28. https://doi.org/10.1007/s42322-024-00172-6

Hughes, T., McCarty, T., & Fowler, S. (2023). The role of outdoor inquiry activities in enhancing student motivation and engagement. Journal of Environmental Education, 54(3), 228–241.

Kelly, O., Buckley, K., Lieberman, L. J., & Arndt, K. (2022). Universal design for learning: A framework for inclusion in outdoor learning. Journal of Outdoor and Environmental Education, 25(1), 75–89. https://doi.org/10.1007/s42322-022-00096-z

Kezang, N. (2024). The application of place-based inquiry approach on Grade 6 Bhutanese students in learning environmental science (Master's thesis, Rangsit University). Rangsit University Institutional Repository. Retrieved from https://rsuir-library.rsu.ac.th/bitstream/123456789/172/1/Norbu%20Kezang.pdf

Kidman, G., & Casinader, N. (2019). Inquiry-based learning in geography: Exploring perspectives and practice. Springer.

Kiviranta, L., Lindfors, E., Rönkkö, M. L., & Luukka, E. (2023). Outdoor learning in early childhood education: Exploring benefits and challenges. Educational Research, 66(1), 102–119. https://doi.org/10.1080/00131881.2023.2285762

Lowell, V. L., & Tagare, D. (2023). Authentic learning and fidelity in virtual reality learning experiences for self-efficacy and transfer. Computers & Education: X Reality, 2100017. Retrieved from https://www.sciencedirect.com/science/article/pii/S294967802300119

Molyneux, T. M., Zeni, M., & Oberle, E. (2022). Choose your own adventure: Promoting social and emotional development through outdoor learning. Early Childhood Education Journal, 1–15. Advance online publication. https://doi.org/10.1007/s10643-022-01394-3

Nagihan, T. O., & Ebru, E. C. (2022). Science education in outdoor learning environments from the perspective of preschool teachers: Definitions, opportunities, obstacles, and possible solutions. Retrieved from https://eric.ed.gov/?q=Science+Outdoor+Learning&id=EJ1332948

Naylor, R., Davis, P., & Lee, A. (2021). Outdoor inquiry-based activities: Encouraging collaboration, teamwork, and communication while fostering interpersonal skills. Journal of Educational Psychology, 113(4), 567–579.

Oberle, E., Zeni, M., Munday, F., & Brussoni, M. (2021). Support factors and barriers for outdoor learning in elementary schools: A systemic perspective. American Journal of Health Education, 52(5), 251–265. https://doi.org/10.1080/19325037.2021.1955232

Remmen, K. B., & Iversen, E. (2022). A scoping review of research on school-based outdoor education in the Nordic countries. Journal of Adventure Education and Outdoor Learning, 23, 433–451.

Rottle, N., & Johnson, J. M. (2023). Youth design participation to support ecological literacy: Reflections on charrettes for an outdoor learning laboratory. Children, Youth and Environments, 17, 484–502. https://muse.jhu.edu/pub/330/article/897638/summary

Salsabila, A., Rahmat, A., & Hamdiyati, Y. (2024). Improving students' metacognitive and self-efficacy in learning biology through reducing academic stress and cognitive anxiety using IBSR technique. Jurnal Pendidikan Biologi Indonesia, 10(2), 404–429. https://doi.org/10.22219/jpbi.v10i2.33297

Tal, T., Levin-Peled, R., & Levy, K. S. (2019). Teacher views on inquiry-based learning: The contribution of diverse experiences in the outdoor environment. Innovation and Education, 1(1), 1–17. https://doi.org/10.1186/s42862-019-0004-y

Thornhill Miller, B., Camarda, A., Mercier, M., Burkhardt, J. M., Morisseau, T., Bourgeois Bougrine, S., … Lubart, T. (2023). Creativity, critical thinking, communication, and collaboration: Assessment, certification, and promotion of 21st century skills for the future of work and education. Journal of Intelligence, 11(3), 54. https://doi.org/10.3390/jintelligence11030054

Waite, S., & Davis, B. (2006). Collaboration as a catalyst for critical thinking in undergraduate research. Journal of Further and Higher Education, 30, 405–419. https://doi.org/10.1080/03098770600965417

Waller, T. (2023). "Don't come too close to my octopus tree": Recording and evaluating young children's perspectives on outdoor learning. Children, Youth and Environments, 16, 104–175.

Wen, Y., Wu, L., He, S., Ng, N. H.-E., Teo, B.-C., Looi, C., & Cai, Y. (2023). Integrating augmented reality into inquiry-based learning approach in primary science classrooms. Educational Technology Research and Development, 1–21.

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