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# Integration of Learning Beyond the Classroom and Project-Based Learning Model in Nature-Based Elementary School

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**Abstract.** This study is motivated by the limited effectiveness of conventional teaching methods that continue to dominate elementary education practices, particularly in fostering students' conceptual understanding and 21st-century skills. The main objective is to explore the integration of Learning Beyond the Classroom (LBC) and Project-Based Learning (PjBL) as innovative strategies to improve learning quality. Employing a qualitative approach with a case study design, the research involved four teachers and twelve students from a Nature-Based Elementary School selected purposively. Data were collected through observations, interviews, and documentation, and analyzed using the Miles and Huberman model. Validation was ensured through source triangulation and member checking. The findings indicate that the integration of LBC and PjBL significantly enhanced students' critical thinking, collaboration, and conceptual understanding. Students also demonstrated improvements in metacognitive awareness, learning independence, and socio-emotional skills. Learning became more meaningful as activities were connected to real-life experiences, increasing student engagement and motivation. However, challenges emerged, including limited facilities, varying levels of teacher readiness, and technical constraints in online learning integration. Overall, the approach proved effective in enhancing the quality of elementary education. The implications emphasize the importance of teacher professional development, flexible and context-responsive curricula, and adequate infrastructure to support the sustainable implementation of contextual and experiential learning.

**Keywords:** Contextual Learning; Innovative Education; Learning Beyond Classroom; Nature-Based Elementary School; Project-Based Learning.

## 1. Introduction

Modern education demands a transformation in learning methods in order to create a more meaningful learning experience for students. Conventional learning models that have focused on theoretical delivery of material in the classroom are often considered ineffective in building deep understanding (DeCoito & Estaiteyeh, 2022; Falloon, 2020). Students tend to be passive and only memorize information without really understanding how the material can be applied in real life (Smith et al., 2023). More contextualized learning approaches, such as Learning Beyond Classroom, PjBL in Nature Based Elementary School, are becoming increasingly relevant in addressing the challenges of 21st century education. These learning approaches allow students to interact directly with the surrounding environment, hone their critical thinking skills, and improve their social and emotional abilities. As stated by Budiman et al. (2020), the application of contextual learning models can improve students' understanding of the material being taught In the context of elementary education, this approach has also proven effective in helping students connect theory with real-life experiences (Martinez, 2022). Recent studies show that contextual learning not only enhances students' conceptual understanding but also fosters active engagement and reflective thinking skills. As Hidayana & Lianingsih (2025) point out, a contextual approach to science learning at the elementary level strengthens the link between instructional content and everyday life, enabling students to grasp and apply knowledge more readily. Similar research by Dare et al. (2021)confirms that integrating real-life experiences into the learning process boosts students' analytical abilities

and increases their interest in science. This suggests that students who engage in experiential learning understand concepts more easily because they can see the direct relevance of what they are learning.

Furthermore one of the most often employed strategies in out-of-class and project-based learning is experiential learning. Asad et al. (2021) said that the experiential learning approach helps students grasp the taught content better. This kind of learning lets pupils learn via direct experience, introspection and practice—all of which help to strengthen analytical and creative thinking abilities. Early childhood education has also found great use in enhancing children's social and emotional development by using this approach. According to Theodotou (2020), the application of the experiential learning model in improving the abilities of early childhood reveals that active participation in the learning process helps children develop stronger interpersonal skills and self-awareness.

Conversely, one kind of educational innovation—nature-based elementary schools—have also shown their success in holistically developing pupils' potential. These institutions stress environment-based learning, in which students learn directly from their natural surroundings in addition to from textbooks. This learning method conforms with the ideas of contextual learning, which holds real-life events central in the course of instruction. Students at a nature-based school are urged to actively investigate, watch natural events, and tackle daily life issues (Price et al., 2022; Yu & Reiss, 2025). By means of this strategy, learning becomes more dynamic and interesting, thus raising the motivation and participation of students in the learning process (Susanti et al., 2022). Though its advantages are well-documented, using experiential learning also presents difficulties. One of the key challenges is the scarcity of resources, especially facilities for outdoor learning activities and teachers qualified to implement this approach (Barco et al., 2021; Wesselius et al., 2020). Furthermore, a curriculum still mostly shaped by traditional methods often makes it difficult for these creative learning models to be included into the official schooling system (Akib et al., 2020; Giesenbauer & Christ, 2020). Thus, a thorough plan is required to modify this learning approach so that it may be used more generally and successfully.

Based on this background, this research aims to further explore the integration of out-of-classroom learning, project-based learning and Nature Based Elementary Schools in improving the quality of student learning. In addition, this research will also identify the challenges faced in the implementation of these methods and provide recommendations to optimize their application in formal and informal education contexts. Improved knowledge of the advantages and drawbacks of various learning strategies could help the study findings support the creation of more inclusive and creative educational policy. Out-of-classroom learning, project-based learning and the concept of Nature Based Elementary School are not just trends in the world of education, but are real solutions to the challenges of learning in the modern era. Through a more interactive, contextual and experiential approach, students not only gain knowledge, but also the skills needed to face life in the future. As stated by Chaeroh et al. (2021) The application of the contextual learning model can improve students' understanding of the material being taught.

### 1.1. Problem Statement

The conventional education system, which still dominates teaching practices in many primary schools in developing countries, has proven ineffective in fostering deep conceptual understanding among students. This concern is supported by a World Bank report stating that around 57% of children in low- and middle-income countries are unable to read and comprehend a simple text by the age of 10. Following the pandemic, this figure surged to approximately 70%, indicating a global learning poverty crisis in these regions (World Bank, 2022). If this situation persists, science learning risks being reduced to rote memorization activities, devoid of meaningful scientific concept comprehension. As a result, students struggle to develop critical thinking, observation skills, and problem-solving abilities—core competencies in science education. Moreover, memorization-based teacher-centered educational strategies often cause students to become docile, less critical, and unable to link theory to real-life settings (Hadi et al., 2025; Oo & Deocampo, 2025; Wati et al., 2021). Long

term, this results in a notable scientific literacy disparity that makes it more difficult for pupils to adjust to global issues and technology developments. Furthermore, poor quality of scientific education might lower students' enthusiasm in the area, therefore hindering the production of creative and ecologically sensitive people (Saha et al., 2024; Shofwan et al., 2022).

The absence of integration of contextual learning strategies including LBC and PjBL as well as the less than ideal use of nature-based primary school ideas aggravate this problem. Actually, project-based learning strategies may greatly raise critical thinking abilities and academic achievement. For learning outcomes, a meta-analysis of 66 PjBL studies carried out between 2003 and 2023 found a modest to strong impact size with a standardized mean difference (SMD) of 0.441; for higher-order thinking abilities, the effect size was 0.387. Furthermore, research including primary school students in underdeveloped nations have indicated that this strategy is highly successful when followed over 9–18 weeks, particularly in small, cooperative groups (Zhang & Ma, 2023).
Still, difficulties persist. Because of low teacher competences, inadequate supporting infrastructure, and the rigidity of conventional curriculum, PjBL's basic ideas are often neglected in implementation (Subiyantoro, 2023). Research looking at the advantages and difficulties of implementing contextual and project-based learning in elementary schools is thus very vital. Such studies fit the objectives of modern education, which calls for teaching strategies that support critical thinking, social skills, and students' ability for reflection in confronting a world growingly complicated and dynamic.

### 1.2. Related Research

Regarding the learning strategies used and the emphasis on environmental education, this study has many parallels with other studies. Salvadó & Novo (2025) used a PjBL method focused on environmental concerns, which fits this study's combination of PjBL and outdoor learning to raise students' environmental consciousness. Similarly, the study by Khofi (2024) focused on environmental-based elementary education through the Green School concept, emphasizing sustainable behavior and ecological awareness from an early age. García et al. (2023) also demonstrated similarities by utilizing outdoor education in geoparks to instill conservation values and community involvement, in line with the nature-based education spirit highlighted in this study. Furthermore, Restović & Bulic (2024) emphasized the importance of direct student involvement in nature conservation activities, consistent with the contextual and project-based learning methods applied here. Hsu (2025) also shares common ground by implementing outdoor-based environmental education as a solution to educational and environmental challenges, similar to the Learning Beyond Classroom approach in this study. Likewise, Xu & Dai (2025) highlighted the crucial role of nature-based education in shaping low-carbon awareness and sustainable behavior, which is also a focus within the context of Nature-Based Elementary Schools.

However, this study also presents fundamental differences compared to the previous research. Salvadó & Novo (2025) focused on pre-service teacher training and culminated in a science exhibition, while this study concentrates on the direct implementation of learning with elementary students. Khofi's study (2024) applied a Systematic Literature Review (SLR) method, whereas this research adopts a qualitative case study with field data gathered through observation, interviews, and documentation. García et al. (2023) placed more emphasis on geopark conservation and land management initiatives rather than school-based learning activities. Restović & Bulic (2024) involved university students and utilized statistical instruments to measure changes in knowledge and attitudes, while this study prioritizes the learning process and students' experiential understanding in a qualitative manner. Hsu (2025) developed a new conceptual framework (PPEF) within coastal community contexts, unlike this study, which combines two learning models within the context of elementary education. Finally, Xu & Dai (2025) analyzed the linkage between education and macro-level low-carbon development policies, while this study focuses on microscopic and practical implementation in elementary schools.

The novelty of this research lies in the direct integration of two contextual learning approaches—Learning Beyond Classroom and Project-Based Learning—within the context of

a Nature-Based Elementary School in Indonesia. Unlike previous studies that tend to focus on a single approach or emphasize policy and teacher training, this study combines two active learning models in an applied manner to examine their impact on conceptual understanding, problem-solving skills, and student motivation in a nature-based learning environment. The qualitative case study approach with field data contributes new empirical insights to sustainable education practices at the elementary level, while offering an innovative, contextual learning strategy that is locally grounded yet globally relevant.

### 1.3. Research Objectives

Based on the formulated objectives, the following research questions can be proposed:

a. How does the integration of learning beyond classroom, project-based learning, and nature-based elementary schools improve the quality of student learning?

b. What challenges are encountered in implementing learning beyond classroom and project-based learning models in nature-based elementary schools?

c. What suggestions exist for best using them in formal and informal learning environments?

## 2. Theoretical Framework

### 2.1. Contextual and Experiential Learning

Contextual learning stresses the need of relating educational materials to the experiences of the students. This method fits the still applicable Experiential Learning Theory proposed by David Kolb. Effective learning, according to the idea, proceeds in four stages: tangible experience, reflective observation, abstract conceptualization, and active experimentation (Rahmi, 2024; Subiyantoro, 2023). Experiential learning has lately been shown to improve conceptual knowledge and 21st-century abilities like critical thinking and problem-solving (Tohani & Aulia, 2022; Ulaini & Fitrisia, 2025). In the framework of nature-based primary schools, kids participate actively in exploratory activities in their surroundings, therefore enabling them to personally encounter natural events, consider them, and create meaning from these encounters. In the twenty-first-century education environment, this strategy helps the learning process to be more relevant, meaningful, and in line with the developmental requirements of the students. Thus, the cornerstone in encouraging more creative and transforming elementary education is the combination of contextual and experience learning.

### 2.2. LBC as an Alternative Learning Transformation

LBC is a creative method that makes best use of the surroundings as a real and significant learning tool. By means of investigation, observation, and real-world engagement outside the classroom, this approach helps students to actively participate in the learning process. LBC is used in Nature Schools via events like environmental observations, community projects, and nature walks—all meant to combine academic ideas with contextual experience (Fan et al., 2024). By a comprehensive and interactive approach, recent research reveal that outdoor learning may enhance students' collaboration abilities, environmental literacy, and conceptual knowledge (Lubis et al., 2022; Mann et al., 2022). LBC therefore turns into a transforming tool for designing relevant learning opportunities for students' life and promotes environmental consciousness.

### 2.3. PjBL in Enhancing Learning Independence

Emphasizing students' active involvement by means of real-life projects pertinent to their experiences, PjBL is an educational tool. PjBL has been shown to successfully inspire students to develop, study, and solve issues cooperatively, thereby promoting learning independence, critical thinking, creativity, and problem-solving ability (Lestari et al., 2024; Suradika et al., 2023). Within Nature Schools, PjBL lets students engage in socially or ecologically focused projects include community empowerment campaigns, organic waste use, or biodiversity preservation. By means of this method, kids not only acquire knowledge but also grow in social responsibility and concern for their surrounding surroundings.

### 2.4. Integration of LBC and PjBL as a Holistic Approach

LBC and PjBL used together provide a comprehensive approach that ties direct experience with methodical problem-solving techniques. By means of direct participation in real-world settings, this mix helps students to acquire better conceptual comprehension (Barzegar et al., 2024). This method is used in nature-based schools by means of exploratory activities in the immediate surroundings in conjunction with community initiatives, therefore promoting 21st-century skills like cooperation, communication, critical thinking, and digital literacy. Furthermore, this integration promotes the internalization of ecological ideals and social responsibility, which define the essence of comprehensive education. Through real-world learning experiences, integrated models such as this have been demonstrated recently to be successful in improving student participation, environmental awareness, and character development (Sukackė et al., 2022).

### 2.5. Nature-Based Elementary Schools as a Socio-Pedagogical Context for Alternative Learning

An alternative learning paradigm combining direct experience learning, active student involvement with the surroundings, and natural-based techniques is nature-based schools. This method is based on the conviction that children learn better when allowed the freedom to investigate nature in line with their interests and abilities. In this setting, the learning process spans outdoor activities targeted at holistically developing students' cognitive, emotional, and psychomotor domains in addition to traditional classrooms. This approach also underlines the need of integrating environmental sustainability ideas and local knowledge into every day instruction. While enhancing student involvement and learning motivation (García et al., 2023; Wijayanti et al., 2024) recent research show that nature-based schools may provide more contextual and relevant learning opportunities.

## 3. Method

### 3.1. Research Design

This study employed a qualitative approach with a case study design. The qualitative approach was chosen because it allows the researcher to explore in depth the experiences of students and teachers in implementing outdoor and project-based learning in a Nature-Based Elementary School. The case study design was selected as it enables comprehensive and in-depth investigation of a particular phenomenon or case (Paparini et al., 2020). This case study is descriptive in nature, aiming to understand real teaching practices within a complex social and natural context.

### 3.2. Participants

The participants in this study consisted of teachers and students from a Nature-Based Elementary School, including 4 classroom teachers and 12 students who were selected purposively based on their involvement in the observed learning activities.
Participant Characteristics:

a. Teachers**:** Aged between 28 and 45 years, both male and female, holding at least a bachelor's degree in Primary School Teacher Education, and having a minimum of 5 years of teaching experience.
b. Students**:** Aged 9 to 11 years, consisting of fourth- and fifth-grade students, both male and female, from lower-middle to upper-middle socioeconomic backgrounds.

### 3.3. Data Collection

Data collection in this study was conducted using three main techniques: direct observation, in-depth interviews, and document analysis. These techniques were applied in an integrated manner to explore in-depth information about the implementation of learning beyond classroom and project-based learning at the Nature-Based Elementary School.

a. Direct Observation: The researcher directly observed the learning beyond classroom processes and thematic projects carried out by the students. The instrument used was an

observation guideline developed based on indicators such as student engagement, exploratory activities, and student interactions with the environment and teachers.

b. In-Depth Interviews: Teachers and students who took part in the research had semi-structured interviews. Developed based on elements like preparation, execution, difficulties, and opinions about the efficacy of the applied learning approaches, the interview guide Transcripts from interviews capturing the participants' experiences, opinions, and thoughts on outdoor and project-based learning comprised part of the gathered data.
c. Document Analysis: Curriculum materials, lesson plans, student project worksheets, student deliverables, and learning activity paperwork were gathered and examined in order to undertake document analysis. Document analysis form with indications of model implementation, activity sustainability, and material relevance to the environmental setting was the tool used. The acquired data helped to clarify the trends of application and integration of learning models within the educational process.

### 3.4. Data Analysis

Using Miles et al. (2018) four primary stages—Data Collection, Data Reduction, Data Display, and Conclusion Drawing/Verification—data analysis was done thematically (Figure 1). Simultaneous analysis of the gathered data via observation, interviews, and documentation occurred throughout the data collecting process. The researcher filtered and organized the data according on categories including modalities of learning, student involvement, and effect on conceptual comprehension. To help understanding, the data presentation was presented as descriptive narratives. Aiming to fully and in-depthly address the study objectives, the last step involves basing findings on patterns and connections among the data types.

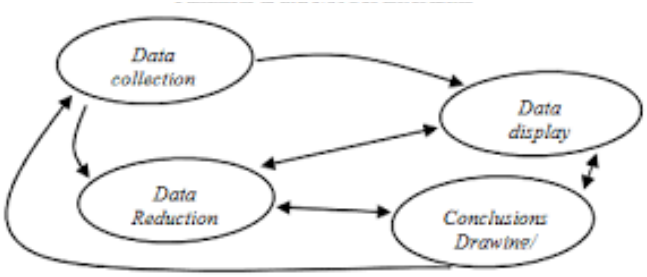


**Figure 1.** Interactive model data analysis (Miles et al., 2018)

### 3.5. Validity and Reliability

In qualitative research, triangulation is the method used to evaluate data validity and dependability. Triangulation suggests that when many sources or techniques provide the same results, research results are more persuasive. This idea guided the research in using member checking and data source triangulation to guarantee the validity and trustworthiness of the data. Direct observation, in-depth interviews, and document analysis were used in data source triangulation to investigate consistency of information acquired from many approaches and individuals. Participants were asked to evaluate the interview material and the researcher's first judgments in order to engage member checking. This sought to guarantee that the given facts really reflected the viewpoints and experiences of the participants. By means of these two approaches, the validity and dependability of the data in this study were optimized in line with the exploratory and contextual character of qualitative research.

## 4. Findings

### 4.1. The Effect of Outdoor and Project-Based Learning on Student Skills

This study reveals that the integration of outdoor and project-based learning approaches significantly impacts the development of students' skills, particularly in real-world problem

solving, critical thinking, and social collaboration. Students involved in experiential learning activities demonstrated tangible improvements in various cognitive and socio-emotional aspects. This was evident from field observations and in-depth interviews with several teachers and students at the Nature-Based Elementary School where the research was conducted. A teacher stated: "*The children become much more enthusiastic and independent when invited to learn outside the classroom. They can observe directly, take notes on their findings, and discuss with their peers. That doesn't happen when they just sit in class listening to me talk*" (I/T1/2025). One student's interview served to confirm this as well. *"I enjoy learning in the school garden or doing group projects because I can directly see the plants, animals, and do experiments with friends*, "*I still recall our science class about the food* chain" (I/S1/2025). Through observation, experimenting, and inquiry, the learning beyond classroom method allows students chances to actively connect with their environment. This helps individuals to relate academic ideas to directly experienced real-life events.

Students were assigned to find local plant species, record seasonal changes, and create both written and graphic reports for a two-month environmental project. Along with improving their project management skills, these exercises raised environmental consciousness. The principle of the school said in an interview: *"We urge teachers not to depend only on textbooks. Children pick up much more thoroughly when they can touch, smell, and really feel the lesson. When students sow and tend to crops, for instance, kids concurrently learn sciences, responsibility, and collaboration*" (I/T2/2025). In addition, the PjBL approach contributed to the improvement of students' metacognitive skills. These include the ability to be aware of their own thinking processes, plan problem-solving strategies, and evaluate the approaches used. In one project related to cleanliness and environmental health, students were divided into groups to identify cleanliness issues in the school environment, collect data, design a cleanliness campaign solution, and present it to their peers and teachers. This activity required them to analyze, strategize, and reflect on the effectiveness and challenges of their proposed solutions.

One teacher explained: "*Each group had different ideas. Some made a food chain poster, others created a short video. But what matters most is the process. They learned how to manage time, delegate tasks, and think critically about solutions. One group even revised their idea after a reflective discussion*" (I/T3/2025). This is supported by documentation showing the students' project work below (Figure 2).

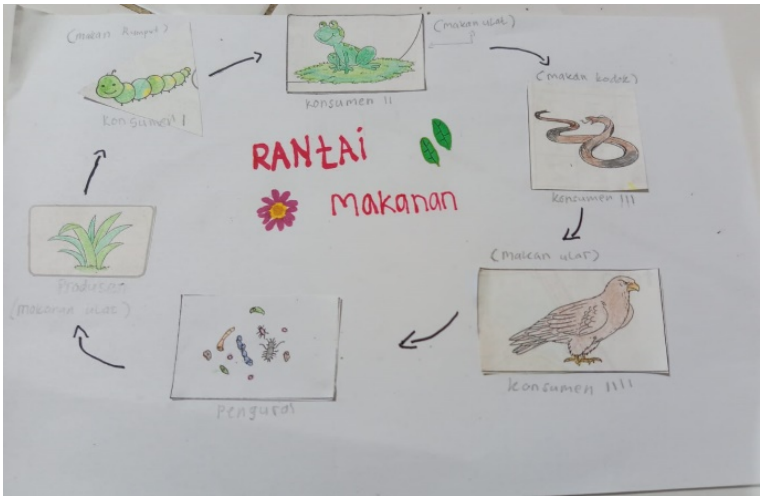


**Figure 2.** Students' Work

Figure 2 shows a student-created poster illustrating a food chain, which represents the relationships of consumption among living organisms in an ecosystem. This poster not only reflects the students' understanding of the basic concept of the food chain but also demonstrates their ability to visually present information through collaborative group work. Important abilities include critical thinking, task division, group debate, and cooperative decision-making defined the development process. This is reflected in the statement of a

student who said: "*At first, I didn't know what I was doing, but after discussing and seeing examples on the internet, I could contribute ideas and help make the presentation. I also learned how to work well in a group, not to get angry if my ideas weren't used*" (I/S2/2025).

This statement indicates that the learning process focused not only on cognitive aspects but also on developing students' social-emotional skills such as communication, tolerance, and conflict resolution. Teachers also emphasized the importance of collaborative learning in these projects: "*Children often have different opinions when working on projects. But we teach them how to express their ideas respectfully and how to appreciate others' opinions. As a result, they become more patient and tolerant*" (I/T1/2025). Thus, the variety of activities presented here serves as concrete evidence of the success of project-based learning in fostering exploration, creativity, and active student participation in meaningful and in-depth understanding of the subject matter.

Nevertheless, this study also noted some challenges in implementing this method. One of them is teacher preparedness in designing meaningful and flexible learning activities. Not all teachers have experience in creating interdisciplinary projects or managing outdoor classrooms. Interviews with teachers revealed: "*At first, I found it difficult to determine the project assessment indicators, as they had to cover both the process and the outcome. But after attending training and having discussions with other teachers, I became more accustomed to it and even more enthusiastic because the students were also more active*" (I/T4/2025). Therefore, the findings of this study show that outdoor and project-based learning are not only effective in enhancing students' conceptual understanding but also in building essential 21st-century skills such as metacognition, collaboration, and independence. This becomes increasingly relevant in the context of education that demands active student engagement in the learning process.

### 4.2. Comparison with Conventional Methods

A comparison between project-based and learning beyond classroom approaches with conventional methods reveals significant advantages in enhancing students' motivation, engagement, and learning outcomes. Fourth-grade class observations of the learning activities revealed a systematic combination of topic teaching, character habituation, and spiritual reinforcement. Dhuha prayer and morning rituals (07:45–08:00) started the activities; next were classes in Qur'an studies, ISMU (Islamic integrated topics), narrative writing, Arabic language, and communal Dhuhr prayer. Along with breaks, extracurricular sports like futsal, and a focus on daily rituals like meals, prayer equipment, and batik uniform wearing, the timetable included featured "*We design the daily schedule not only to focus on academic aspects but also to instills values of discipline, independence, and spirituality. Dhuha prayer, for instance, is a daily ritual before classes begin, and we teach the kids to get their own resources ready at home*" (I/T1/2025).

This method emphasizes the use of contextual and holistic learning, which seeks to enhance students' character and activeness in addition to being focused on cognitive performance. Another teacher said: "*We don't simply give them the material while learning about plants. The kids are taken to the school garden, where they directly observe, create reports, and share their results. This fuels their greater confidence and activity*" (I/T4/2025). This illustrates that the integration of thematic instruction with real-world projects can create a meaningful learning environment and empower students to learn through direct experience. In contrast, conventional methods centered on lectures and rote memorization tend to make students passive. A teacher confirmed: "*If I use the lecture method, the students quickly get bored. They just sit and take notes. But when I took them to the garden for observation, they became enthusiastic and asked many questions*" (I/T4/2025). Project-based and learning beyond classroom approaches encourage active participation and more contextual understanding. A student expressed: "*I enjoy learning outside because I can see nature directly, and the atmosphere is pleasant. If I'm only in class, I get sleepy and forget things quickly*" (I/S3/2025). In the context of project work, students become more independent and responsible. Another student stated: "*During the cooking entrepreneurship project, we worked in groups, decided*

*on the menu ourselves, bought the ingredients with our parents' help, and what I liked the most was the bazaar at the end. It made me more confident and brave to speak up"* (I/S4/2025).

This was also reinforced by a teacher:

> *"I was very happy to see the children's enthusiasm during the bazaar. Through this activity, we wanted to instill entrepreneurial values from an early age, while also training social skills like communication, teamwork, and responsibility. The children learned to cook under teacher supervision, calculate money, design promotional posters, and assign roles within their group. This is far more meaningful than classroom-only learning because they experience the process and learn through real practice. Moreover, such activities also strengthen students' character and independence"* (I/T1/2025).

This can be seen in Figure 3, which shows a project-based learning activity— a simulation of a traditional food market bazaar carried out by elementary school students. The children, wearing green uniforms, appeared enthusiastic in selling food and drinks they had prepared themselves, with decorations and labels on their individual booths.

A teacher added during the interview:

> *"During the bazaar activity, we also linked it to science lessons, especially about the changes in states of matter and material properties. The children didn't just learn the theory from books, but directly observed sugar dissolving when making sweet drinks or watched ice melt after being taken out of the thermos. They also learned to distinguish between natural and artificial materials and the importance of food hygiene. I noticed they understood better because they experienced it themselves, not just from reading or listening to my explanation in class"* (I/T3/2025).

**Figure 3**. Simulation Activity

Thus, this activity not only trained entrepreneurial and communication skills but also had strong relevance to science lessons, particularly in material properties and changes in states of matter. Additionally, through discussions and practice, students learned about the importance of food hygiene, which is part of contextual and applicable science concepts. The school principal added that reflective activities were also applied through character-based physical activities: "*They don't just participate in activities, but also evaluate the process. We train them to reflect on their experiences after archery and horseback riding activities, such as how they manage focus, maintain balance, and control emotions. This becomes an essential part of character education*" (I/T2/2025). This is supported by the documentation of the archery and horseback riding activities (Figure 4).

**Figure 4**. Archery and Horseback Riding Activities

### 4.3. Key Success Factors for Out-of-Class and Project-Based Learning Models

#### *4.3.1. Teacher and Curriculum Support*

Teachers play a central role in creating meaningful and effective learning experiences, particularly in the implementation of project-based learning methods and outdoor activities. Teachers' skills in designing, managing, and facilitating interactive learning activities significantly determine the extent to which students can understand the material deeply and contextually. Therefore, teacher preparedness must be strengthened through continuous training and professional development. In the context of learning beyond classroom, teachers are required to demonstrate greater flexibility compared to conventional methods. They must be able to create a conducive learning environment, provide clear instructions, and ensure that all students have equal opportunities to participate actively. Observations show that teachers do not merely serve as transmitters of information but also as facilitators and guides for exploration. One teacher remarked, "*At first, I found it difficult to determine the assessment indicators for projects because they had to cover both process and outcome. But after training and discussions with fellow teachers, I became more accustomed to it and even more enthusiastic as the students became more active*" (I/T4/2025). This highlights the importance of systematic support to enable teachers to manage project-based and learning beyond classroom effectively.

In addition to teacher competence, the curriculum must also be aligned to provide sufficient space for the implementation of thematic projects that match students' developmental needs. An adaptive curriculum allows teachers to explore various innovative and contextual approaches. In an interview, the principal emphasized, "*We encourage teachers not to be bound by textbooks. Children learn much more deeply when they can touch, smell, and experience the lesson material firsthand*" (I/T2/2025). Thus, curriculum flexibility is a crucial prerequisite to support learning based on real-life experiences. Furthermore, the synergy between teachers and the curriculum should be directed at strengthening 21st-century skills such as critical thinking, creativity, communication, and collaboration. In another interview, a teacher explained how digital projects during online learning also enhanced students' technological literacy and digital communication skills (I/T4/2025). Therefore, educational policies that support pedagogical freedom are essential so that teachers can design learning experiences that are relevant, flexible, and student-centered. Involving teachers in the development of a more responsive and transformative curriculum is key to the successful integration of project-based and learning beyond classroom in elementary schools.

### *4.3.2. Learning Facilities and Resources*

A key supporting factor in the success of project-based and learning beyond classroom is the availability of adequate facilities and learning resources. Well-designed learning environments—such as green open spaces, school gardens, simple laboratories, and experimental areas—serve as a vital foundation for creating exploratory and contextual learning experiences. Observations of a project activity involving the identification of local plants and seasonal changes revealed that students were more actively engaged when directly interacting with real-life learning objects in their environment. In this activity, students were asked to document the types of plants found around the school, record their morphological characteristics, and produce visual reports through posters and hand-drawn illustrations. One teacher stated: "*When we took the children to the school garden to identify plants, they became very enthusiastic, asking questions and taking notes. Some even came earlier than usual because they were curious about the plants they hadn't identified the day before*" (I/T1/2025).

Other projects, such as school cleanliness campaigns and simulated food bazaars, also utilized available facilities as interdisciplinary learning resources. In the bazaar project, students learned science concepts such as changes in the state of matter and the properties of food ingredients through cooking practices and preparing healthy meals. One student shared: "*When we made sweet drinks to sell at the bazaar, we also learned why sugar dissolves and why ice melts quickly. It felt like a real experiment during our science lesson*" (I/S8/2025). However, interviews with teachers also revealed disparities in access between schools. One teacher expressed concern: "*We are lucky at our school to have outdoor amenities like land. But when I shared stories with other instructors from other locations, they battled as they lacked open grounds. For wider use of such approaches, this becomes a significant obstacle*" (I/T3/2025). This suggests that systemic difficulties guaranteeing fair access to educational innovation still surround the availability of learning facilities. Thus, government positive policies are required to increase access to contextual learning facilities and assist the growth of cross-disciplinary projects pertinent to the surroundings of students. Through such efforts, it is hoped that all students, without exception, can gain active, applicable, and meaningful learning experiences.

### *4.3.3. Student Engagement in Learning*

The effectiveness of using PjBL and Learning Beyond Classroom (LBC) strategies depends fundamentally on active student involvement. Students who actively engage in learning projects show, on field observations, more enthusiasm, deeper conceptual knowledge, and better collaborative and reflective abilities than those who study passively via lecture-based approaches. *"In the environmental project where students were asked to identify types of plants and compile both visual and written reports, the activity not only trained cognitive abilities but also fostered a sense of responsibility and environmental awareness,"* a teacher said (I/T1/2025). *"I prefer studying in the school garden or completing group projects,"* a student said, *"since I can immediately see plants and animals and do experiments with peers. It aids in recall of scientific courses, including one on the food chain* (I/S9/2025). Similar results were observed in an entrepreneurial cooking project where students worked in groups to choose a menu, shop for ingredients, create products, and sell them in a simulated school bazaar. This activity integrated science lessons, particularly on the properties of materials and changes in states of matter. A teacher remarked: "*They understand the concepts better because they experience them directly, not just by reading or listening to my explanation in class*" (I/T3/2025).

Student involvement in authentic and challenging projects fosters the development of critical thinking skills and innovative problem-solving. Moreover, intensive group interaction provides a platform for strengthening socio-emotional skills such as tolerance, communication, and leadership. One female student shared: "*I also learned how to work well in a group and not to get upset when my idea isn't used*" (I/S10/2025). Through this approach, students have greater control over their own learning process, thereby increasing their sense of responsibility and ownership of learning outcomes. Documentation and interview results show that when

students see the tangible results of their efforts—such as food chain posters, environmental observation reports, or bazaar products—they feel proud and more motivated to learn. Therefore, meaningful student engagement not only makes learning more contextual and applicable, but also builds a foundation of character and essential 21st-century competencies for their future.

#### *4.3.4. Evaluation and Reflection*

Evaluation in project-based learning and learning beyond classroom activities does not solely focus on the final product but also on the entire learning process experienced by students. This approach aims to assess students' development holistically—covering cognitive, affective, and psychomotor aspects. Teachers use project portfolios as one of the main assessment tools, documenting all stages of the project, from planning and data collection to analysis and final presentation. Objective and helpful comments also come via rubric-based tests stressing characteristics like teamwork, inventiveness, and correctness of solutions. Observations and records reveal that students are improving in handling assignments and adjusting to project demands. For a cleaning campaign and simulated business bazaar, for example, students improved in critical thinking, teamwork, and decision-making abilities. "*When we first started the cleanliness project, I was afraid to speak during group discussions,*" *one student said reflecting on their educational experience. But after rehearsing and assigned presenting responsibilities, I became more confident and daring enough to speak in front of my friends*' (I/S11/2025). Another student related their learning from the process of changing their project ideas: "*My group was first perplexed when our environmental observation results didn't match our plan. However, we revised our approach of gathering data after more discussion and questioning the teacher. As it happened, the end product was much better than the initial concept*" (I/S12/2025).

These comments demonstrate how students grow to see flaws, assess plans, and find fresh ideas either alone or in groups by means of introspection. Through project presentations, class discussions, and learning journals—which not only reinforce conceptual knowledge but also help students' confidence and metacognitive skills—teachers guide this reflection. Therefore, assessment and introspection not only help to evaluate learning but also provide ways of developing character, responsibility, and sustainable self-directed learning. This approach strengthens the values of contextual and student-centered learning that are the core features of the Project-Based Learning model and outdoor education activities.

## 5. Discussion

The PjBL model has become one of the innovative strategies in addressing the challenges of 21st century education. The advantage of this model lies in its ability to combine students' cognitive, affective and psychomotor processes in a real context, so that learning becomes more meaningful and contextualized. However, the successful implementation of this model does not solely depend on the learning design, but also on a number of supporting factors that are interrelated and need to be optimized synergistically. One of the key factors in the successful implementation of out-of-class and project-based learning is teacher competence. Teachers no longer function only as information conveyors, but also as facilitators who direct students to build knowledge through direct experience and problem solving. Teachers who are able to design projects that are contextual, challenging, and encourage collaboration and exploration, will create a more active and participatory learning process. As stated by Nundy et al. (2020), the success of out-of-classroom learning is highly dependent on the teacher's ability to manage activities outside the classroom and adapt them to students' learning needs. Therefore, continuous teacher training and professional development are important requirements to ensure the quality of this model implementation.

In addition, the curriculum also plays an important role in supporting the success of this learning model. A flexible curriculum that allows for exploration and development of 21st century skills is very supportive of project-based learning and real contexts. A rigid curriculum will be an obstacle to the integration of out-of-class activities and the implementation of cross-curricular

projects. Irawahyuni et al. (2021) findings support this, that active learning models such as Snowball Throwing - which also encourages student collaboration and exploration - contribute positively to improved learning outcomes. Thus, curriculum design that is responsive to the needs of contextualized learning is one of the important foundations in the implementation of this model.

Equally important is the availability of adequate facilities and infrastructure. Learning facilities such as open spaces, teaching aids, digital media, and access to social environment as learning resources are the main supporting factors in out-of-class learning. In addition, in the context of online project-based learning, the readiness of digital infrastructure is very important. Zhong & Lyu (2022) shows that the PjBL approach remains effective in online learning as long as it is supported by an interactive digital platform and the ability of teachers and students to use the technology. This indicates that digital transformation in education is inevitable and becomes an opportunity to expand the reach and effectiveness of project-based learning.

Therefore, the success of out-of-class and project-based learning should be seen as the result of the integration of various components, namely: teacher readiness as a facilitator, progressive curriculum support, and the availability of contextual learning facilities and resources. These three elements must be facilitated and coordinated systemically by educational institutions and the government as policy makers. Without collaboration between educators, curriculum, and facility support, this learning model will be difficult to implement optimally. Out-of-class and project- based learning is not just about methods, but also about a vision of future education that emphasizes active student engagement, character development, and the cultivation of critical and collaborative thinking skills. In this context, these learning models are not just alternatives, but strategic necessities in preparing a generation that is adaptive, creative, and solutive in facing global challenges.

The unexpected result of this study was the persistent gap in the implementation of outdoor and project-based learning due to limitations in facilities, teacher readiness, and technical obstacles such as access to technology and internet connectivity during online learning. Although this method has proven effective in enhancing 21st-century skills, some teachers admitted difficulties in designing assessment indicators that encompass both process and outcome, while students complained about limited access to devices and connectivity, which affected their participation in digital projects. These findings contradict the perspective of Sari et al. (2025), who asserted that the success of Project-Based Learning is highly dependent on the school system's readiness to provide adequate infrastructure, teacher training, and equitable technological support. Similarly, Miller et al. (2021)emphasized that without an inclusive and adaptive support ecosystem, the implementation of contextual learning such as PjBL can actually widen the learning gap between schools. This indicates that although the approach has great potential, its effectiveness still heavily depends on the implementation context, where all supporting elements must function in harmony.

The limitations of this study lie in the narrow scope of participants and the study context, which focused solely on one nature-based elementary school. Therefore, the generalizability of the findings to other schools with different characteristics is limited. Additionally, although the qualitative approach provides an in-depth perspective, the lack of quantitative data limits the ability to objectively measure the effectiveness of the learning model on academic achievement. This study also did not explicitly explore the long-term impact of contextual learning on students' character development or environmental literacy. Potential areas for further research include comparative exploration between nature-based and conventional schools in implementing Project-Based Learning and Learning Beyond Classroom, longitudinal analysis of the impact of contextual learning on 21st-century skills, and quantitative studies using standardized assessment tools to statistically measure the effectiveness of this approach on a larger scale.

This study affirms that outdoor and PjBL has a significant impact on improving students' cognitive, socio-emotional, and metacognitive skills. Active engagement in real-life activities such as environmental observation, science experiments, and simulation projects enables

students to understand concepts more deeply, think critically, collaborate effectively, and take responsibility for their own learning process. An important implication of these findings is the need for comprehensive support for teachers through training and curriculum flexibility, provision of adequate learning facilities, and holistic assessment that covers both process and outcomes. With this approach, learning becomes more contextual, meaningful, and capable of equipping students with 21st-century competencies relevant to real life. This approach has also proven effective in fostering character traits such as independence, tolerance, and environmental awareness, making it a suitable strategy to be more widely adopted in the context of primary education in Indonesia.

## 6. Conclusion

The integration of learning beyond classroom, PjBL, and the Nature-Based Elementary School approach significantly enhances the quality of student learning by creating contextual, active, and meaningful learning experiences. This approach has been proven to significantly promote the development of students' cognitive, socio-emotional, and metacognitive skills through direct engagement in real-world activities such as environmental observation, science experiments, simulations, and group projects that are relevant to everyday life. Learning focuses not only on the final outcome but also on the process, reflection, and collaboration, which fosters greater student independence, critical thinking, tolerance, and a sense of responsibility toward their environment and community. However, the implementation of this model faces several challenges, including limited supporting facilities such as green open spaces and contextual learning media, teachers' readiness to design and assess interdisciplinary projects, and technical constraints in online learning such as access to devices and internet connectivity. To optimize its implementation, it is recommended that the government provide affirmative policy support to ensure equal access to learning facilities in all schools, offer continuous training for teachers to enhance their capacity as facilitators of active learning, develop a flexible curriculum that is responsive to local needs, and involve parents and the community in supporting learning projects both within formal and informal education settings. Thus, this learning model is not only a pedagogical strategy but also a transformative approach to shaping adaptive, collaborative, and character-driven learners.

## Limitation

This study has several limitations that should be acknowledged. First, the scope of the research is limited to a single Nature-Based Elementary School, making the findings contextual and not widely generalizable to schools with different characteristics. Second, the qualitative method used does not provide objective quantitative data to statistically measure the success level of the applied learning approaches. Third, this study does not include a longitudinal analysis to assess the long-term impact of contextual learning on the development of character and 21st-century skills. Additionally, participant involvement was limited to Grade IV and V teachers and students, leaving out perspectives from other grade levels or parents.

## Recommendation

This study recommends that future researchers and stakeholders consider expanding the research scope to include multiple schools with varying characteristics to enhance generalizability. It is also suggested to integrate mixed-methods or quantitative approaches to provide statistical validation of learning outcomes. Furthermore, conducting longitudinal studies would be beneficial in capturing the long-term impact of contextual and project-based learning on students' holistic development. Including perspectives from parents and students across different grade levels could also enrich the understanding of implementation effectiveness

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## Conflict of Interest

The author declares no conflict of interest in the implementation and reporting of this research.

## Declaration of Generative AI-assisted Technologies

This manuscript was prepared with the help of several generative AI-based technologies, including Grammarly, QuillBot, Gemini, Mendeley, and Turnitin. These tools were used to support various stages in the writing process, such as content development, language refinement, grammar checking, paraphrasing, reference management, and plagiarism checking. All intellectual contributions, including critical analysis, argument development, data interpretation, and final revision, were made independently by the authors. The use of AI is limited to technical and linguistic support only, and does not substitute for the academic judgment, scientific integrity, or originality of the authors. The author is fully responsible for the accuracy, originality, and integrity of all content presented in this work.

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