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# Learning Approaches, Climate, Motivation, Soft Skills, and Achievement: A Comparative Study of Nature-Based and Conventional Educational Systems

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**ABSTRACT**

This study aims to compare the learning approaches, learning climate, character and soft-skill development, learning motivation, and academic achievement between Nature Schools and Regular Schools. Employing a comparative descriptive design, data were collected through observations, in-depth interviews, and document analysis to obtain a comprehensive understanding of learning practices in both school models. The research instruments were developed based on indicators of experiential learning, learning climate, student motivation, engagement, and academic performance aligned with national curriculum standards. Data were analyzed using thematic and comparative techniques to identify patterns of difference, strengths, and relative limitations of each model. The findings indicate that Nature Schools excel in experience-based learning, creativity, motivation, and soft-skill development, whereas Regular Schools demonstrate stronger academic structure, score stability, and alignment with the national curriculum. Data validity was strengthened through source and method triangulation. Overall, this study provides an in-depth understanding of how variations in learning approaches influence students' experiences, engagement, character formation, and academic outcomes across these two distinct educational contexts.



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**ABSTRAK**

*Penelitian ini bertujuan membandingkan pendekatan pembelajaran, iklim belajar, pengembangan karakter dan soft skills, motivasi belajar, serta hasil belajar akademik antara Sekolah Alam dan Sekolah Reguler. Dengan menggunakan desain komparatif-deskriptif, data dikumpulkan melalui observasi, wawancara mendalam, dan analisis dokumen untuk memperoleh gambaran menyeluruh mengenai praktik pembelajaran di kedua model sekolah. Instrumen penelitian disusun berdasarkan indikator experiential learning, iklim belajar, motivasi siswa, keterlibatan, serta capaian akademik sesuai standar kurikulum nasional. Analisis data dilakukan melalui teknik analisis tematik dan komparatif guna mengidentifikasi pola perbedaan, keunggulan, serta kelemahan relatif masing-masing sekolah. Temuan menunjukkan bahwa Sekolah Alam unggul dalam pembelajaran berbasis pengalaman, kreativitas, motivasi, dan pengembangan soft skills, sedangkan Sekolah Reguler lebih kuat dalam struktur akademik, stabilitas nilai, dan keselarasan dengan*

*kurikulum nasional. Validitas data diperkuat melalui triangulasi sumber dan metode. Secara keseluruhan, penelitian ini memberikan pemahaman mendalam mengenai bagaimana variasi pendekatan pembelajaran berpengaruh terhadap pengalaman, keterlibatan, karakter, dan pencapaian akademik siswa dalam dua konteks pendidikan yang berbeda.*



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## INTRODUCTION

Education is a strategic process in shaping the quality of human resources, encompassing cognitive, affective, and psychomotor aspects (Tarso et al., 2025). In the era of modern education, school models and instructional approaches have become increasingly diverse as educational institutions respond to the complex learning needs of students. Two educational models that are particularly interesting to compare are Nature-Based Schools and Conventional Schools, as both embody distinct philosophies, strategies, and learning structures. The instructional approach is a fundamental factor in determining the quality of the learning experience, as an appropriate strategy can enhance conceptual understanding, creativity, and student motivation (Iswara et al., 2023). Therefore, it is important to understand how differences in instructional approaches across these two school models influence student development.

Nature-Based Schools offer an experiential and environment-oriented learning model that positions nature as the primary learning space. This concept aligns with Hadiana et al. (2025) and Shigematsu et al. (2025) experiential learning theory, which posits that knowledge is constructed through cycles of direct experience, reflection, conceptualization, and active experimentation. Natural learning environments are believed to enhance curiosity, creativity, and emotional engagement. International studies have shown that nature-based learning can reduce stress, improve concentration, and strengthen problem-solving skills (Velempini, 2025). Thus, this approach provides significant opportunities to develop students' potential more holistically, particularly in relation to character and soft skills.

In contrast, Conventional Schools generally adopt more structured, formal, and curriculum-oriented instructional approaches. Teaching is dominated by lectures, assignments, and periodic formal assessments (Ardiansyah et al., 2024). Teachers function as primary information providers, while students act as recipients who must achieve competencies aligned with national educational standards. Research indicates that such formal and systematic instruction is effective in improving academic achievement and maintaining stable student performance (Izzah et al., 2024). However, this model is often criticized for providing limited opportunities for creativity, exploration, and context-based learning experiences relevant to real-life situations (Siswanto et al., 2025).

Beyond instructional approaches, the learning climate is also a crucial component in determining the quality of the student learning experience. The learning climate comprises physical, psychological, and social conditions that influence students' comfort and motivation during instruction. Nature-Based Schools, with their open and flexible learning spaces, create

a more relaxed and low-pressure environment that supports students' mental well-being. Setiawati et al. (2023) found that outdoor learning enhances emotional engagement and student focus. Conversely, Conventional Schools operating in enclosed, structured spaces tend to generate higher academic pressure and potential fatigue, especially when instructional methods lack variation (Kristiawan et al., 2025).

Furthermore, the development of soft skills and character has become essential in 21st-century education. Nature-Based Schools excel in this aspect because exploration, group activities, and real-world challenges enable students to develop leadership, collaboration, empathy, and independence (Maulana et al., 2013). Soft skills are not only taught theoretically but practiced directly through interactions with nature and the social environment. Meanwhile, Conventional Schools tend to foster soft skills through extracurricular activities that are not fully integrated into core instruction. Yang & Xin (2022) emphasize that strengthening soft skills requires consistent, contextual, and experience-based learning, meaning that highly academic educational models may lead to less optimal character development.

Differences between the two models are also reflected in learning motivation and academic outcomes. Students in Nature-Based Schools typically demonstrate strong intrinsic motivation due to engaging, contextual, and experience-based learning activities (Taliadorou & Pashiardis, 2015). However, in terms of formal academic performance, students in Conventional Schools tend to show more stable and measurable results due to standardized evaluation systems (Astiwi et al., 2024). This indicates that each school model has its own strengths. A comparative analysis is therefore necessary to provide a comprehensive understanding of how each approach supports academic, social, and emotional development. Accordingly, this comparative study serves as an important foundation for developing more adaptive, holistic, and student-centered educational policies.

## METHODS

This study employed a comparative-descriptive approach to analyze differences in instructional approaches, learning climate, character and soft-skills development, learning motivation, and academic achievement between Nature-Based Schools and Conventional Schools. Data were collected through direct observation, in-depth interviews, and document analysis in both school types to obtain a comprehensive picture of instructional practices and learning environment dynamics (Naufal et al., 2025). Research instruments included observation sheets based on indicators of experiential learning, learning climate, student motivation and engagement, as well as academic achievement aligned with national curriculum standards (Sugiyono, 2019). Data were analyzed using thematic analysis to identify patterns of differences across aspects, and comparative analysis to assess the relative strengths and weaknesses of each school model (Tarso et al., 2025; Saleh et al., 2025; Widodo, 2019). Data validity was ensured through source and method triangulation to maintain consistency of findings. This method was chosen because it provides in-depth insight into variations in instructional approaches and their impacts on students' experiences, engagement, character, and learning outcomes across two distinct educational contexts**.**

## RESULTS

### Differences in Learning Approaches

The learning approach refers to the fundamental strategy employed by educators in designing and implementing the learning process to align with students' characteristics and the intended educational goals. Selecting an appropriate approach is crucial, as it significantly shapes the quality of the learning experience by influencing the methods, media, and forms of

interaction used throughout the instructional activities. The following table presents the differences in learning approaches between Nature-Based Schools and Conventional Schools.

**Table 1.** Differences in Learning Approaches

| Aspects | Nature-Based Schools | Conventional Schools |
|---|---|---|
| Main Approach | Experiential learning, nature-based learning, student-centered | Teacher-centered, based on the national curriculum |
| Learning Environment | Open nature, flexible, exploration-based | Classroom, structured, strict schedule |
| Learning Methods | Projects, field observations, exploration, hands-on practice | Lectures, practice exercises, textbooks, formal evaluation |
| Teacher's Role | Facilitator, discovery process companion | Main material deliverer, learning controller |
| Student's Role | Active, concept inventor, problem solver | Tends to be passive, information recipient |
| Main Outputs | Creativity, motivation, critical thinking, independence | Academic mastery, regularity, curriculum completion |
| Evaluation | Portfolio, authentic observation | Written tests, standardized assessments |

The educational approaches used in Nature-Based Schools and Conventional Schools demonstrate fundamental differences in their philosophies, strategies, and learning objectives. Nature-Based Schools emphasize experiential learning and nature-based instruction, positioning students at the center of the learning process. Their open, flexible, and naturally stimulating environments provide opportunities for learners to nurture curiosity through direct exploration and real-world experiences. In contrast, Conventional Schools generally maintain a teacher-centered pattern aligned with the national curriculum. The learning environment is more structured, taking place within classrooms with rigid schedules, resulting in a standardized instructional framework directed primarily by the teacher. This system focuses on systematic knowledge transfer and the attainment of academic competencies set by national standards.

In terms of instructional methods, Nature-Based Schools prioritize project-based activities, field observations, and hands-on practice, enabling students to experience phenomena directly before constructing theoretical concepts. Through this approach, learners are given space to discover knowledge independently and act as active problem solvers. Teachers function as facilitators who guide the discovery process rather than serving as the sole source of information. Conversely, Conventional Schools rely heavily on lectures, workbook exercises, textbook use, and formal evaluations as their primary instructional strategies. Teachers play a dominant role as deliverers of content and regulators of the learning process, while students often remain passive recipients of information. This model results in a structured learning experience but provides fewer opportunities for students to explore concepts through direct experience.

These differing learning orientations lead to variations in student outcomes and evaluation systems. Nature-Based Schools tend to produce learners with stronger creativity, intrinsic motivation, critical-thinking skills, and independence, as students are accustomed to actively engaging in the learning process. Assessment is typically conducted through portfolios and authentic observations that evaluate students' progress holistically and contextually. Meanwhile, Conventional Schools place greater emphasis on curriculum mastery and academic achievement through written tests and standardized assessments. This evaluation system offers clear quantitative measures of learning outcomes but often fails to

capture non-academic aspects such as creativity, motivation, and character development. Thus, each model possesses its own strengths and limitations, both of which merit consideration in efforts to improve educational quality.

**Differences in Learning Climate and Atmosphere**

The learning climate and classroom atmosphere are essential elements that shape students' learning experiences, as both influence learners' motivation, comfort, and engagement throughout the instructional process. Differences in physical and psychological environments across school types often create varying learning dynamics, making it important to understand how these conditions affect student development. The following section outlines the differences in the learning climate and atmosphere between Nature-Based Schools and Conventional Schools.

**Table 2.** Learning Climate and Atmosphere

| Aspects | Nature-Based Schools | Conventional Schools |
|---|---|---|
| Open Space | Open, close to nature | Closed, classroom-based |
| Learning Atmosphere | Relaxed, stress-free, flexible | Formal, structured, controlled |
| Stimulating Creativity | High, encouraged by environmental exploration | Moderate, depending on the teacher's method variations |
| Psychological Pressure | Low | Higher, especially before evaluations |
| Types of Learning Activities | Exploration, projects, hands-on experience | Lectures, routine assignments, written evaluations |
| Student Emotional Engagement | High | Varied, tends to decrease if monotonous |

The differences in the physical environment and learning atmosphere between Nature-Based Schools and Conventional Schools have a significant impact on students' learning experiences. Nature-Based Schools utilize open spaces and natural environments as sources of learning, making students' interaction with nature an integral part of the instructional process. This setting creates a more relaxed, low-stress, and flexible learning atmosphere, where students feel psychologically safe to experiment, explore, and ask questions. In contrast, Conventional Schools operate within enclosed spaces that position the classroom as the central learning area. The learning atmosphere tends to be formal, structured, and controlled, enabling a more disciplined learning process but potentially generating psychological pressure, especially during academic evaluations.

In terms of learning activities, Nature-Based Schools emphasize exploratory tasks, projects, and hands-on experiences that allow students to learn through deep interaction with their surroundings. This model naturally fosters creativity, as students are given space to search, discover, and solve problems independently. Students also tend to exhibit higher levels of emotional engagement because learning feels enjoyable and relevant. Conversely, instruction in Conventional Schools more frequently employs lectures, routine assignments, and written assessments. Although such methods are effective for delivering content systematically, student creativity largely depends on the teacher's ability to vary instructional techniques. Limited variation may cause the learning process to feel monotonous, thereby reducing students' emotional engagement.

These differences illustrate that each school model carries distinct implications for students' psychological and academic development. Nature-Based Schools tend to be more conducive to fostering creativity, curiosity, and emotional well-being due to lower psychological pressure and greater student involvement in learning. Meanwhile, Conventional

Schools support order, academic structure, and instructional consistency, but may contribute to elevated stress levels when evaluation demands are high or instructional methods lack variety. Thus, understanding the characteristics of both models is essential for designing learning strategies that combine their strengths: a healthy emotional learning environment while maintaining depth and mastery of academic competencies.

**Differences in Character Development and Soft Skills**

Character and soft-skills development are critical aspects of modern education, as they determine students' abilities to adapt, collaborate, and handle real-life challenges. Differences in the learning environment and instructional approaches across school types often lead to variations in the quality of soft-skills development, making it important to understand how each educational model contributes to shaping students' character. The following section outlines the differences in character and soft-skills development between Nature-Based Schools and Conventional Schools.

**Table 3.** Character Development and Soft Skills

| Aspects | Nature-Based Schools | Conventional Schools |
|---|---|---|
| Learning Focus | Hands-on experience, exploration, character building | Academic achievement, curriculum attainment |
| Main Soft Skills Developed | Leadership, empathy, collaboration, independence, creativity | Academic discipline, cooperation (extracurricular activities), responsibility |
| Types of Supporting Activities | Outbound, survival skills, nature projects, group work | Extracurricular activities, student organizations, additional activities |
| Character Building | Integrated into daily learning activities | Separated from core learning |
| Opportunities for Soft Skills Application | High, through real-life situations in nature | Moderate, dependent on non-academic activities |

The differing learning priorities between Nature-Based Schools and Conventional Schools directly influence both the processes and educational goals each model seeks to achieve. Nature-Based Schools emphasize direct experience, exploration, and character formation as the core of instruction. Their learning environment, which is closely connected to nature, provides students with broad opportunities to engage in real-life situations that foster reflection, courage, and personal responsibility. In contrast, Conventional Schools place greater emphasis on academic achievement and curriculum attainment as primary outcomes. Learning is conducted systematically and in a standardized manner to ensure that academic competencies are achieved in accordance with national curriculum targets. These contrasting orientations result in two distinct educational focuses and outcomes.

In terms of soft skills, Nature-Based Schools offer an environment that naturally nurtures leadership, empathy, collaboration, independence, and creativity. Activities such as nature-based projects, group tasks, and even survival or outdoor adventure programs allow students to develop these skills spontaneously and authentically. Soft skills become an integral part of daily learning rather than an additional component outside classroom hours. Conversely, Conventional Schools develop soft skills through extracurricular activities, student organizations, or special programs that lie outside the core instructional process. The soft skills developed typically relate to academic discipline and responsibility, although aspects such as creativity and independence depend heavily on school initiatives or teacher-led variations in learning activities.

These different approaches also affect the extent to which students can apply their soft skills in real-life contexts. Nature-Based Schools offer students abundant opportunities to apply soft skills through hands-on situations in natural environments that require adaptation, cooperation, and direct decision-making. Character and soft-skills development occurs through daily practice, allowing deeper internalization. Meanwhile, in Conventional Schools, opportunities to apply soft skills are considered moderate, as they mainly depend on non-academic activities such as extracurricular programs or specific projects. Character development tends to be separated from core learning activities, resulting in inconsistent internalization of values. Thus, both school models possess their own unique strengths, and understanding their characteristics can serve as a foundation for designing a more holistic and integrated curriculum.

**Differences in Learning Motivation and Student Engagement**

Learning motivation and student engagement are two essential factors that determine the effectiveness of the learning process in various types of schools. The following section highlights the differences in learning motivation and student engagement between Nature-Based Schools and Conventional Schools.

**Table 4.** Student Learning Motivation and Engagement

| Aspects | Nature-Based Schools | Conventional Schools |
|---|---|---|
| Learning Motivation | High due to varied and contextual activities | Moderate to low, influenced by lecture methods and routines |
| Student Engagement | Active, through exploration, practice, and projects | Tends to be passive, especially in one-way learning |
| Learning Methods | Experiential learning, outdoor learning, and projects | Lectures, assignments, and textbook-based learning |
| Student Responses | Enthusiastic, curious, and participatory | Easily bored, with decreased focus, especially for kinesthetic/visual students |
| Activity Variation | High, flexible and adaptive | Low, more structured and repetitive |

Students' learning motivation in Nature-Based Schools tends to be high because instruction is designed to be varied, contextual, and closely connected to real-life experiences. Activities involving nature and direct exploration make learning feel more meaningful, fostering intrinsic interest naturally. Student engagement is also strong, as learners actively participate through hands-on practice, observation, and project-based tasks. In contrast, learning motivation in Conventional Schools is generally moderate to low, particularly when teaching methods rely heavily on lectures and routine assignments. One-way, teacher-centered instruction often positions students as passive recipients, reducing curiosity and interest in the material.

From a methodological perspective, Nature-Based Schools employ experiential learning, outdoor learning, and project-based approaches that encourage students to learn through direct experience. These methods effectively stimulate student activity and creativity, as learners act as discoverers and problem-solvers. Student responses tend to be more enthusiastic, inquisitive, and participatory because the learning is enjoyable and relevant. Meanwhile, Conventional Schools continue to rely on lectures, written assignments, and textbook-based instruction. Although these methods efficiently deliver content in a structured and timely manner, students often show signs of boredom, particularly those with kinesthetic or visual learning preferences who require more varied activities.

Activity variation is another key factor affecting the quality of learning in the two school types. Nature-Based Schools offer a high degree of variability because instruction is flexible, adaptive, and responsive to environmental conditions. This creates dynamic, non-repetitive learning experiences, maintaining both emotional and cognitive engagement. In contrast, Conventional Schools provide less variation due to rigid instructional structures and strict curriculum requirements. Repetitive and inflexible activities can diminish students' focus and long-term interest. This analysis indicates that differences in instructional approach and activity variation significantly influence students' motivation, engagement, and learning responses in both school types.

**Differences in Academic Achievement**

Academic achievement is an important indicator for evaluating the effectiveness of learning processes across different school models. Differences in instructional approaches, curriculum, and evaluation methods between Nature-Based and Conventional Schools often lead to variations in academic outcomes, making it a topic worthy of detailed investigation. The following section outlines the differences in academic achievement between Nature-Based Schools and Conventional Schools.

**Table 5.** Academic Learning Outcomes

| Aspects | Nature-Based Schools | Conventional Schools |
|---|---|---|
| Academic Grade Stability | Diverse, not always stable; heavily influenced by interests and learning context | Stable and consistent due to structured evaluation |
| Academic Strengths | Strong in applied, contextual concepts and field practice | Strong emphasis on theoretical material, memorization, and basic competencies |
| Academic Challenges | Weak in standardized tests and abstract material | Risk of boredom due to formal and less contextual learning |
| Evaluation Model | Minimal formal testing, more project and observation assessments | Regular written tests, quizzes, midterm/final exams |
| Alignment with the National Curriculum | Flexible, does not fully adhere to national standards | Fully adheres to the national curriculum |

The differences in academic stability and performance between Nature-Based Schools and Conventional Schools reflect their distinct educational orientations. In Nature-Based Schools, students' academic scores tend to vary and are not always stable because learning is heavily influenced by interest, context, and direct experiences. Students often excel in applied, contextual, and field-based competencies, enabling them to connect theory with real-world situations. Conversely, Conventional Schools exhibit more consistent academic stability due to structured evaluations, periodic tests, and clear assessment standards. Their academic strength lies in mastery of theoretical material, memorization, and core competencies aligned with the national curriculum.

In terms of academic challenges, each school model faces different obstacles. Nature-Based Schools often struggle with standardized tests or abstract content because their instruction emphasizes practice over theory. Students may find it difficult to reason about concepts that are not directly related to real-life experiences. Conventional Schools, on the other hand, face risks of student disengagement due to formal, structured, and less contextualized learning. Repetitive lectures, assignments, and written tests can reduce

motivation, particularly for students who benefit from visual, kinesthetic, or experiential learning. This presents a challenge for teachers to maintain engaging instruction while meeting curriculum requirements.

Differences in evaluation models and alignment with the national curriculum also highlight the distinct characteristics of each school type. Nature-Based Schools utilize project-based assessments, observation, and authentic evaluations, providing a holistic view of student development, though they rely less on formal tests. This approach fosters creativity and applied skills but does not always align with national measurement standards. Conversely, Conventional Schools follow evaluation systems strictly based on the national curriculum through written tests, midterm, and final exams. This ensures mastery of core competencies but may overlook non-academic aspects such as creativity, character, and contextual thinking. Thus, both models have strengths and limitations that can complement each other in designing a more holistic education system.

## DISCUSSION

The findings of this study indicate that learning approaches in Nature-Based and Conventional Schools differ fundamentally in both philosophy and implementation. Nature-Based Schools prioritize experiential learning, nature-based instruction, and a student-centered approach, enabling students to construct knowledge through direct experience. These findings align with Downer et al. (2018), Georgiou & Ioannou (2021) and Oleksiuk et al. (2023)[i], who asserts that experience-based learning enhances concept retention and promotes active student engagement. In contrast, Conventional Schools tend to employ a teacher-centered approach oriented toward the national curriculum. Learning occurs in classrooms within a structured and uniform system. These results support Schoenfeld (2022), Soubra et al. (2022) and Weingarden (2025), who notes that teacher-centered instruction remains dominant in formal schools due to curriculum coverage requirements and standardized evaluation demands.

In terms of instructional methods, Nature-Based Schools provide ample opportunities for learning through projects, field observation, exploration, and hands-on practice. These methods have been shown to enhance problem-solving skills and independence, consistent with Kintoko et al. (2025), Siswantoa et al. (2025) and Wantoro et al. (2025), who found that project-based and experiential learning improves student creativity and analytical ability. Conventional Schools, however, are still dominated by lectures, routine assignments, and written assessments. Fitriana et al. (2025) and Harahap et al. (2025) highlighted that while lectures efficiently deliver content, they are less effective in promoting critical thinking and active engagement, a trend confirmed in this study where students in Conventional Schools appeared more passive and had fewer opportunities for exploration.

These differences in approach directly impact learning outcomes and assessment systems. Nature-Based Schools produce students with higher creativity, intrinsic motivation, and critical thinking due to approaches that allow exploration and discovery. Evaluations are more authentic, conducted through portfolios and observations, aligning with Hussein & Csíkos (2023) and Mueller et al. (2020), who found that authentic assessment provides a more comprehensive picture of student development compared to standardized tests. Conventional Schools, by contrast, emphasize curriculum mastery and academic achievement through written assessments, consistent with Corbitt et al. (2024) and Naeemya & Yoneda (2024), who noted that test-based evaluations focus on cognitive aspects but capture non-academic skills less effectively.

Learning climate and atmosphere also differ significantly between the two school types. Nature-Based Schools, with open spaces and direct interaction with nature, create a relaxed, low-stress, and flexible learning environment. This aligns with Gomez (2024) and Inuaeyen et

al. (2024), who found that open learning environments improve psychological well-being and emotional engagement. Conventional Schools, with more formal and structured settings, tend to generate psychological pressure, especially near evaluations. Lasaiba (2024) and Rochmat et al. (2025) also found that monotonous routines can decrease motivation and cause disengagement, particularly for visual and kinesthetic learners.

Differences in character and soft-skills development are also evident. Nature-Based Schools emphasize character formation through daily nature-based activities that foster leadership, empathy, collaboration, creativity, and independence. This is consistent with Remmen et al. (2023), Salsabila et al. (2024) and Yusuf (2025), who reported that outdoor activities and group projects significantly enhance students' socio-emotional skills. In Conventional Schools, soft-skills development generally occurs outside core instruction, through extracurricular activities or student organizations, consistent with Ikhwan et al. (2025), Indriani & Saleh (2024) and Wibowo et al. (2025), who found that character development in conventional schools is often separated from classroom learning, resulting in suboptimal internalization.

The study also highlights differences in academic achievement. Nature-Based Schools excel in applied and contextual concept mastery but show less stability in academic scores and weaker performance in abstract material and standardized tests, corroborating, who reported that experiential learning is effective for applied competencies but less supportive of abstract theoretical mastery. Conversely, Conventional Schools demonstrate consistent academic scores due to structured evaluation aligned with the national curriculum. Formal instructional structures help achieve core competencies but may cause disengagement due to limited real-life context . Thus, both school models possess strengths and weaknesses that can potentially complement each other in an integrated, holistic educational model.

## CONCLUSION

Nature-Based and Conventional Schools exhibit distinct instructional characteristics, each with inherent strengths and limitations. Nature-Based Schools excel in experiential learning, creativity, motivation, and soft-skills development but have less consistent academic stability. Conventional Schools are strong in curriculum structure, academic mastery, and standardized assessment but offer limited opportunities for exploration and real-world experiences. Based on these findings, it is recommended that Conventional Schools integrate experience-based learning and varied activities to enhance student engagement, while Nature-Based Schools strengthen theoretical instruction and familiarize students with formal evaluations to balance applied and academic competencies. Teachers in both models should enhance pedagogical skills through training in innovative methods and authentic assessment, and schools can share best practices to address each model's limitations. The implications of this study emphasize the importance of developing a more holistic curriculum, enhancing teacher capacity, and implementing educational policies that are responsive to both academic and non-academic student needs, combining the strengths of Nature-Based and Conventional Schools to create a balanced, relevant, and student-centered educational model.

## REFERENCES

Ardiansyah, A. I., Putra, A. K., & Nikitina, N. (2024). Investigating Problem-Based Learning Model's Impact on High School Student's Critical Thinking Skills in Environmental Conservation Context. *Jambura Geo Education Journal*, *5*(2), 87–103.

Astiwi, W., Siswanto, D. H., & Suryatama, H. (2024). Description regarding the influence of teacher qualifications and competence on early childhood learning achievement. *Asian Journal of Applied Education (AJAE)*, *3*(3), 347–358. https://doi.org/10.55927/ajae.v3i3.10360

Corbitt, K., Hiltbrand, K., Coursen, M., Rodning, S., Smith, W. B., & Mulvaney, D. (2024). Credibility Judgments in Higher Education: A Mixed-Methods Approach to Detecting Misinformation from University Instructors. *Education Sciences*, *14*(8). https://doi.org/10.3390/educsci14080852

Downer, A., Shapoval, A., Vysotska, O., Yuryeva, I., & Bairachna, T. (2018). US e-learning course adaptation to the Ukrainian context: lessons learned and way forward. *BMC Medical Education*, *18*(1), 1–10. https://doi.org/10.1186/s12909-018-1349-1

Fitriana, E., Siswanto, D. H., & Hanama, A. (2025). The impact of thematic worksheet-assisted meaningful learning implementation on students' mathematical concept understanding and metacognitive skills. *Jurnal Praktik Baik Pembelajaran Sekolah Dan Pesantren*, *4*(02), 54–67. https://doi.org/10.56741/pbpsp.v4i02.788

Georgiou, Y., & Ioannou, A. (2021). Developing, enacting and evaluating a learning experience design for technology-enhanced embodied learning in math classrooms. *TechTrends*, *65*(1), 38–50. https://doi.org/10.1007/s11528-020-00543-y

Gomez, E. C. (2024). Impact of Values Education in daily lives of students: A qualitative study. *Southeast Asian Journal of Multidisciplinary Studies*, *4*(1), 1–23.

Hadiana, D., Salman, I., Sylvia, N., Alia, N., Permatasari, A. D., & Saliem, H. P. (2025). Culinary Festival : Research-Based Learning Approach in Nature School to Improve Food Security Awareness. *Educational Process: International Journal*, *16*(e2025214), 1–19.

Harahap, A. S., Rambe, M. Y., Sadiyah, K., Pulungan, T. N., & Siswanto, D. H. (2025). Developing Financial Literacy and Investment Awareness to Promote Healthy Financial Behavior among High School Students. *Jurnal Pengabdian Masyarakat Bestari (JPMB)*, *4*(6), 459–468. https://doi.org/10.55927/jpmb.v4i6.180

Hussein, Y. F., & Csíkos, C. (2023). The effect of teaching conceptual knowledge on students' achievement, anxiety about, and attitude toward mathematics. *Eurasia Journal of Mathematics, Science and Technology Education*, *19*(2), 1–25.

Ikhwan, A., Anjelita, R., Kartiko, A., Zukhrufin, F. K., & Ikhwan, A. N. (2025). Strengthening Student Character Through Tapak Suci Extracurricular Activities. *Kharisma: Jurnal Administrasi Dan Manajemen Pendidikan*, *4*(1), 73–85. https://doi.org/10.59373/kharisma.v4i1.70

Indriani, D., & Saleh, S. (2024). *Instilling Pancasila Student Profile Values in The Formation of Student ' s Character in Civic Education Subjects*. *9*(2), 1248–1263.

Inuaeyen, I. N., Umana, A. C., & Unyime, A. I. (2024). Emotional Intelligence and Adjustment To Boarding Environment of Secondary School Students in Akwa Ibom State North West Senatorial District, Nigeria. *International Journal of Contemporary Africa Research*, *1*(1), 109–122. https://doi.org/10.5281/zenodo.10594401

Iswara, P. D., Julia, J., Supriyadi, T., & Enjang Yusuf Ali. (2023). Developing Android-Based Learning Media to Enhance Early Reading Competence of Elementary School Students. *Pegem Journal of Education and Instruction*, *13*(4), 43–55. https://doi.org/10.47750/pegegog.13.04.06

Izzah, I., Mulyadi, Walid, M., Padil, M., & Wahyudin, A. (2024). Strategic management of schools for excellence : Integrating quality culture and character development in leading

educational institutions. *Al-Ishlah: Jurnal Pendidikan*, *16*(4), 4654–4668.

Kintoko, K., Waluya, S. B., & Siswanto, D. H. (2025). Effectiveness of the Deep Learning Approach in Enhancing Students' Critical Thinking Skills on Matrix Material. *Jurnal Karya Pendidikan Matematika*, *12*(1), 79. https://doi.org/10.26714/jkpm.12.1.2025.79-85

Kristiawan, Y., Sisanto, D. H., & Setiawan, A. (2025). Pelaksanaan Pengurusan Kewangan Sekolah dalam Memenuhi Keperluan Sarana dan Prasarana Pendidikan. *JuPiDi: Jurnal Kepimpinan Pendidikan*, *12*(1), 1–10.

Lasaiba, D. (2024). Classroom management strategies in the transformation of education in the digital era: Integration of technology and teaching methodologies. *Jendela Pengetahuan*, *17*(1), 77–95.

Maulana, R., Opdenakker, M. C., Stroet, K., & Bosker, R. (2013). Changes in Teachers' Involvement Versus Rejection and Links with Academic Motivation During the First Year of Secondary Education: A Multilevel Growth Curve Analysis. *Journal of Youth and Adolescence*, *42*(9), 1348–1371. https://doi.org/10.1007/s10964-013-9921-9

Mueller, J. F., Taylor, H. K., Brakke, K., Drysdale, M., Kelly, K., Levine, G. M., & Ronquillo-Adachi, J. (2020). Assessment of Scientific Inquiry and Critical Thinking: Measuring APA Goal 2 Student Learning Outcomes. *Teaching of Psychology*, *47*(4), 274–284. https://doi.org/10.1177/0098628320945114

Naeemya, M. I., & Yoneda, H. (2024). Students with Intensive Needs in an Inclusive Education System: A Literature Review. *Journal of ICSAR*, *8*(2), 204–229. https://doi.org/10.17977/um005v8i2p204

Naufal, N., Apriani, F., Fajriana, Nurdin, Nurdin, K., & Siswanto, D. H. (2025). *Analisis Multivariat*. Padang: Literasi Langsung Terbit.

Oleksiuk, V. P., Overko, J. A., Spirin, O. M., & Vakaliuk, T. A. (2023). A secondary school's experience of a cloud-based learning environment deployment. *CEUR Workshop Proceedings*, *3553*, 93–109.

Remmen, K. B., Iversen, E., & Remmen, K. B. (2023). A scoping review of research on school-based outdoor education in the Nordic countries. *Journal of Adventure Education and Outdoor Learning*, *23*(4), 433–451. https://doi.org/10.1080/14729679.2022.2027796

Rochmat, S., Andriyani, & Siswanto, D. H. (2025). Developing an RME-based 3D storybook with AR technology to enhance spatial ability. *Bulletin of Applied Mathematics and Mathematics Education*, *5*(1), 9–22. https://doi.org/10.12928/bamme.v5i1.10880

Saleh, F., Manalu, E. O., Amrizal, Nugroho, D. H., Pujowati, M., Siswanto, D. H., Rosnelli, Septikasari, D., Radhiyani, F., Rizku, A. I., Sabandar, V. F., & Tarso. (2025). *Kurikulum dan Pengembangan Kurikulum*. Padang: Literasi Langsung Terbit.

Salsabila, D., Kholis, N., Kartikawati, R. L., & Maesaroh, I. (2024). Strategies for Enhancing Outdoor Learning Activities in Elementary Schools. *Manageria: Jurnal Manajemen Pendidikan Islam*, *9*(2), 135–154. https://doi.org/10.14421/manageria.2024.92-09

Schoenfeld, A. H. (2022). Why are learning and teaching mathematics so difficult? In *Handbook of Cognitive Mathematics* (Issue March). https://doi.org/10.1007/978-3-031-03945-4

Setiawati, E., Wijayanti, P. S., Rianto, R., & Sukasih, S. (2023). Efektivitas Pembelajaran Outdoor Learning Process Terhadap Peningkatan Kerja Sama, Motivasi Belajar, dan Hasil Belajar IPS Siswa Sekolah Dasar. *Jurnal Paedagogy*, *10*(1), 115. https://doi.org/10.33394/jp.v10i1.6477

Shigematsu, T., Siswanto, D. H., Hidayati, E., & Kintoko. (2025). Strategic Evaluation of Computer-Based National Assessment Implementation Using SWOT Analysis: A Case Study. *JPIM: Jurnal Penelitian Ilmiah Multidisipliner*, *02*(03), 1962–1969.

Siswanto, D. H., Astiwi, W., Kintoko, & Susetyawati, M. M. E. (2025). Mapping Research Trends on Mathematics Learning Motivation: A Bibliometric Analysis Using VOSViewer. *JPIM: Jurnal Penelitian Ilmiah Multidisipliner*, *02*(03), 671–682.

Siswantoa, D. H., Andriyani, & Rambe, M. Y. (2025). Improving mathematics interest and achievement through contextual teaching and learning. *Journal of Professional Teacher Education*, *03*(01), 01–11. https://doi.org/10.12928/jprotect.v3i1.799

Soubra, L., Al-Ghouti, M. A., Abu-Dieyeh, M., Crovella, S., & Abou-Saleh, H. (2022). Impacts on Student Learning and Skills and Implementation Challenges of Two Student-Centered Learning Methods Applied in Online Education. *Sustainability (Switzerland)*, *14*(15).

Sugiyono. (2019). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.

Taliadorou, N., & Pashiardis, P. (2015). Examining the role of emotional intelligence and political skill to educational leadership and their effects to teachers' job satisfaction. *Journal of Educational Administration*, *53*(5), 642–666. https://doi.org/10.1108/JEA-02-2014-0025

Tarso, Kasanah, H. U., Purwanto, E., Siswanto, D. H., & Khasanah, N. R. (2025). An empirical study on teacher performance: The effects of commitment, professionalism, and school principal Supervision in Sleman Regency. *JUPERAN: Jurnal Penedidikan Dan Pembelajaran*, *04*(02), 750–759.

Tarso, Siswanto, D. H., & Setiawan, A. (2025). Teacher qualifications in the implementation of the Kurikulum Merdeka and ISMUBA. *Curricula: Journal of Curriculum Development*, *4*(1), 13–28. https://doi.org/10.17509/curricula.v5i1.76836

Velempini, K. (2025). Assessing the Role of Environmental Education Practices Towards the Attainment of the 2030 Sustainable Development Goals. *Sustainability*, *17*(2043), 1–20. https://doi.org/10.3390/su17052043

Wantoro, H., Afandi, M. M., & Siswanto, D. H. (2025). Development of a Guided Discovery-Based scientific approach Mmdule for enhancing Problem-Solving Skills. *Contemporary Education and Community Engagement*, *1*(2), 51–63.

Weingarden, M. (2025). Exploring pre-service mathematics teachers' perspectives on balancing student struggle and concept attention. *Teaching and Teacher Education*, *165*(October 2024), 105143. https://doi.org/10.1016/j.tate.2025.105143

Wibowo, W. A., Suryatama, H., & Siswanto, D. H. (2025). Exploring the impact of the Merdeka Curriculum on mathematics education in Elementary Schools. *International Journal of Learning Reformation in Elementary Education*, *4*(01), 27–38. https://doi.org/10.56741/ijlree.v4i01.793

Widodo, H. (2019). The Role of School Culture in Holistic Education Development in

Muhammadiyah Elementary School Sleman Yogyakarta. *Dinamika Ilmu*, *19*(2), 265–285. https://doi.org/10.21093/di.v19i2.1742

Yang, L. P., & Xin, T. (2022). Changing Educational Assessments in the Post-COVID-19 Era: From Assessment of Learning (AoL) to Assessment as Learning (AaL). *Educational Measurement: Issues and Practice*, *41*(1), 54–60. https://doi.org/10.1111/emip.12492

Yusuf, F. A. (2025). Character Quality Development in Future- Oriented Education : A Case Study of Indonesian Nature-Based Schools. *Educational Process: International Journal*, *14*(e2025029), 1–23. https://doi.org/10.22521/edupij.2025.14.29