**Connecting Indonesian Government Policy with Sustainable Nature Environment Education to Develop a Future Indonesian Nature-Based ECE Curriculum Design**

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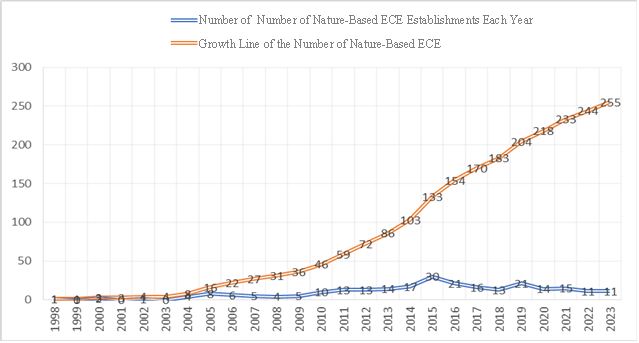
**ABSTRACT:** *Nature-based ECE is experiencing significant growth in Indonesia, contributing to the achievement of SDGs related to environmental sustainability. This growth is underpinned by Indonesian government policies that promote SNEE. The purpose of this study is twofold: (1) examine the alignment of Indonesian government policies with SNEE and (2) provide recommendations for the development of a future nature-based curriculum design for ECE. This research utilizes a research and development (R&D) methodology to develop Future Indonesian Nature-Based ECE Curriculum Design. Findings reveal that (1) existing policies, such as (a) the caring and environmentally aware movement in schools, (b) the dimensions, elements, and sub-elements of the Pancasila Student Profile embedded in the Merdeka Curriculum, and (c) curriculum policies across early childhood, basic, and secondary education, and (d) learning outcomes in early childhood education, primary education, and secondary education in the Merdeka Curriculum strongly support SNEE values. (2) Recommendations for the future Indonesian Nature-Based ECE Curriculum Design include: (a) establishing objectives focused on nature-based learning for young children, (b) incorporating content on topics such as humans, animals, plants, natural phenomena, space, conservation, and disaster mitigation, (c) employing play-based and outdoor activities, and (d) using assessments use SNEE evaluation indicators to support environmental sustainability*

**Keywords:** *Indonesian, Policy, Sustainable Nature Environment Education, Nature-Based ECE Curriculum*

1. **INTRODUCTION**

**Background**

Since 1998, the phenomenon of nature-based Early Childhood Education (ECE) in Indonesia has experienced significant growth. Over the past two decades, the number of nature-based ECE institutions has steadily increased, with projections estimating that there will be 255 such institutions by 2033. This growth is driven by a rising awareness of the importance of integrating environmental values and sustainability into education. Nature-based ECE not only focuses on the academic development of children but also supports learning that values and preserves the environment. This shift reflects a changing paradigm in education, where holistic approaches that combine outdoor learning experiences and direct interactions with nature are becoming more widely accepted. With the support of government policies and community participation, it is anticipated that the number of nature-based ECE institutions will continue to rise, contributing positively to child development and environmental awareness in Indonesia. According to Adi (2023), environmental issues such as deforestation, drought and desertification, soil erosion, flooding, biodiversity loss, and pollution require human awareness, which can be cultivated from an early age. Figure 1 is an illustration of the growth of nature-based Early Childhood Education in Indonesia.



***Figure 1.*** Growth of Nature-Based Early Childhood Education Institutions

in Indonesia Until 2023 (Kemendikbudristek, 2023)

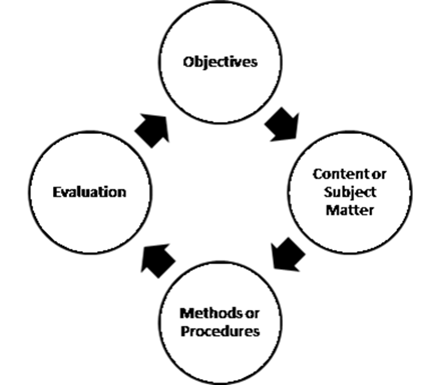
Nature-based schools in Indonesia play a crucial role in supporting the Sustainable Development Goals (SDGs) related to environmental sustainability. By integrating environmental education into their curriculum, these schools foster a deep understanding of ecological principles among young learners. Through hands-on experiences in natural settings, students develop awareness and appreciation for their surroundings, promoting a sense of responsibility toward the environment. Nature-based schools emphasize sustainable practices, encouraging students to engage in activities that protect and preserve their local ecosystems. Furthermore, these institutions align their educational objectives with the SDGs, particularly those focused on clean water and sanitation, affordable and clean energy, climate action, life below water, and life on land. By nurturing environmentally conscious citizens from an early age, nature-based schools contribute to a more sustainable future, equipping students with the knowledge and skills necessary to address pressing environmental challenges. Overall, the movement of nature-based education in Indonesia not only enhances children's learning experiences but also actively promotes the achievement of global sustainability goals.

Nature-based schools in Indonesia have significant potential to develop a distinctive curriculum that aligns with three government policies supporting environmental education. First, the Regulation of the Minister of Environment and Forestry regarding the Caring and Environmentally Aware Movement in Schools provides a framework for integrating environmental values into daily learning activities. Second, the Decree of the Head of the Agency for Education Standards, Curriculum, and Assessment on the Dimensions, Elements, and Sub-elements of the Pancasila Student Profile can be utilized to cultivate students' environmental consciousness, encouraging them to contribute positively to sustainability efforts. Third, the Regulation of the Minister of Education, Culture, Research, and Technology on the Curriculum for Early Childhood Education, Primary Education, and Secondary Education offers guidelines for developing relevant curriculum content tailored to the needs of young children. By incorporating these policies, nature-based schools can create a curriculum that not only educates but also empowers students to become change agents in preserving and protecting their environment.

The researchers conducted a study to investigate whether government policies genuinely support the Sustainable Development Goals (SDGs) related to environmental sustainability. The study aims to (1) examine the alignment of Indonesian government policies with Sustainable Nature Environment Education (SNEE) and (2) provide recommendations for the development of a future nature-based curriculum design for Early Childhood Education (ECE) in Indonesia. This research focused on examining the alignment of these policies with the principles of Sustainable Nature Environment Education (SNEE), which encompasses vital components such as environmental awareness, knowledge, attitudes, management skills, and active participation in fostering environmental sustainability. By analyzing the extent to which these policies promote SNEE values, identify gaps and opportunities for enhancing the effectiveness of educational initiatives that encourage children to engage with their environment meaningfully. Ultimately, the findings will contribute to a better understanding of how government actions can facilitate the achievement of the SDGs and nurture a generation of environmentally conscious citizens.

**Early Childhood Curriculum**

The curriculum is a series of plans and arrangements regarding the objectives, content, materials, and methods used to conduct learning activities, allowing for the achievement of established educational goals. The curriculum encompasses what is taught (content), how teaching is carried out (methods), when and in what order teaching occurs (structure), and how learning outcomes are evaluated (assessment). According to Kelly (2004), the curriculum consists of four components: objectives, content or subject matter, methods or procedures, and evaluation. **The objectives** in the curriculum are statements that describe the expected learning outcomes for students after they complete a particular program or course. These objectives encompass the desired skills, knowledge, and attitudes to be achieved by students. Curriculum objectives should not only cover cognitive aspects (knowledge) but also affective (attitudes) and psychomotor (skills) aspects. Objectives must be relevant to the needs of students and society and should be measurable and evaluable. **Content or Subject Matter**: The content or subject matter in the curriculum includes all the knowledge, concepts, and information taught to students. Kelly emphasizes that the curriculum content should be carefully selected and organized to ensure relevance, meaning, and good structure. The subject matter should be designed so that students can build new knowledge based on their previous experiences and understand it in a broader context. The curriculum content should align with the learning objectives and reflect the values intended to be instilled through education. **Methods or Procedures**: Methods or procedures refer to the strategies, approaches, and techniques used by teachers to deliver the curriculum content to students and facilitate the learning process. Teaching methods should be flexible and adaptive, allowing teachers to adjust their approaches to the needs and learning styles of students. The methods employed should support the achievement of curriculum objectives and promote active student participation. Student-centered approaches, such as project-based learning and cooperative learning, are often preferred in curricula designed to develop critical and reflective skills. **Evaluation:** Evaluation is the process of measuring the extent to which curriculum objectives have been achieved by students. This involves assessing students' understanding, skills, and attitudes through various forms of testing, assignments, and observations. Evaluation should be both formative and summative. Formative evaluation is used to monitor student progress during the learning process and provide feedback that can help them improve their performance. Summative evaluation is conducted at the end of a program or course to assess students' final achievements. Evaluation should also be used to inform the ongoing development and refinement of the curriculum. For details can be seen in figure 2. And then, this components is also applicable at the early childhood education level.



***Figure 2*.** Curriculum Component by Kelly (2004)

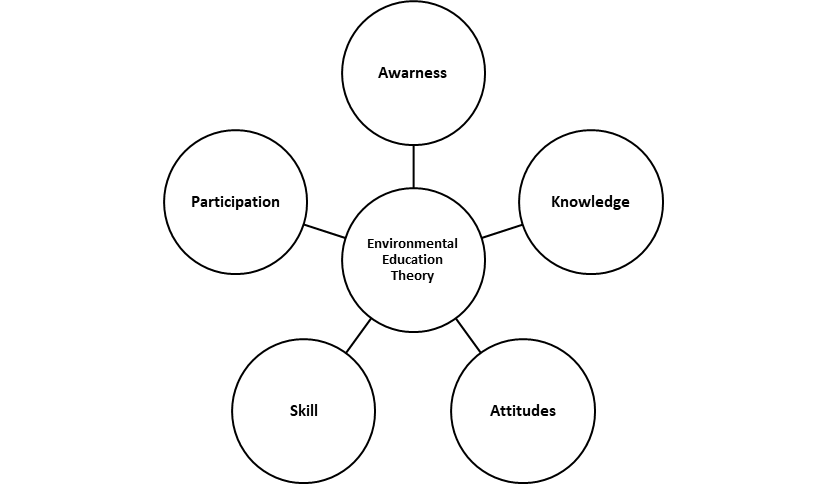
The Early Childhood Education (ECE) curriculum is a complex learning framework designed through management to achieve holistic and integrative educational goals for children aged 0-6 years, serving as a reference to stimulate all aspects of a child's development in accordance with Developmentally Appropriate Practices (DAP). The ECE curriculum must adhere to the following principles:

1. Curriculum is child-centered or child initiated (Husein, 2020; Jackman, 2001)
2. Curriculum provides for all of a child’s development (Husein, 2020; Jackman, 2001)
3. Curriculum encourages children to learn by doing (Jackman, 2001)
4. Curriculum promotes opportunities to support a child’s natural, cultural and lingusitic diversity (Dinnebeil Laurie A et al., 2013; Husein, 2020; Jackman, 2001)
5. Curriculum invites creativity (Jackman, 2001)
6. Curriculum facilitates children learn in more than one way (Dinnebeil Laurie A et al., 2013)
7. Curriculum facilitates think broadly about learning (Dinnebeil Laurie A et al., 2013)
8. Curriculum ds can be appproriate for all children (Dinnebeil Laurie A et al., 2013; Husein, 2020)
9. Curriculum using thematic learning (Husein, 2020)
10. Curriculum facilitates children learn through play
11. Five main characteristics of educational play: play must be meaningful, actively engaging, enjoyable, iterative, and socially interactive. (Hirsh-Pasek et al., 2020; Parker et al., 2022; Zosh et al., 2017)
12. The principles of learning through play according to the National Association for the Education of Young Children (NAEYC) emphasize the importance of choice, wonder, and delight in child development. (Danile & Pyle, 2018; Tikkanen et al., 2022; UNICEF, 2018; Zosh et al., 2022)
13. Play are such as creative play, dramatic play, exploratory play, manipulative play and sesnsory play (Arnold, 2022; Smedley & Hoskins, 2020; Teichert & Helbig, 2024)

Nature-based early childhood education (ECE) curriculum is an early childhood education curriculum that generally follows the standards and principles of ECE but places special emphasis on the values of Sustainable Nature Environment Education (SNEE). This curriculum is designed to instill awareness and concern for the environment from an early age through various activities that involve exploration of nature, understanding ecosystems, and sustainable practices. Through this curriculum, children are encouraged to recognize, appreciate, and care for the environment in ways that are appropriate for their developmental stages. SNEE serves as a crucial element in this curriculum, aiming to cultivate a generation of young individuals who are environmentally conscious and possess the skills and positive attitudes necessary for preserving nature. Further explanations will be provided in the next section.

**Sustainable Nature Environment Education (SNEE)**

Daniel Vidart’s approach to environmental education highlights its integration with general education and alignment with future needs, advocating a balanced approach between environmental preservation and technological progress. The ecological crisis, resulting from scientific and technological advancements, introduces unpredictable risks that could either lead to catastrophe or improve quality of life. Since environmental attitudes are established early and are difficult to change, education should begin in early childhood, leveraging both formal and informal methods to develop a globally conscious, compassionate, and proactive population. Educational programs should address the underlying causes of environmental issues—such as consumer behaviour, demographic trends, and policy shortcomings—instead of only addressing symptoms. A holistic approach is crucial, starting from early childhood and involving families, schools, and community groups to build awareness, knowledge, positive attitudes, problem-solving skills, and active involvement. The principles of environmental education endorse a comprehensive view of the environment, encourage lifelong, interdisciplinary learning, and emphasize active participation in tackling issues from local to global scales. The goals of environmental education include cognitive objectives (enhancing environmental understanding and problem-solving skills), normative objectives (fostering eco-social awareness and values), and practical objectives (developing sustainable practices). In essence, environmental education should enrich general education, deepen comprehension of ecological and social systems, and foster societal cohesion, aiming to achieve humanity’s highest ideals. Figure 2 illustrates the SNEE Concept.(Dias Amorim et al., 2017; George & Glasgow, 2002; Leff, 2012; Vidart, 1978)



*Figure 3*. Environmental Education Theory

Integrating environmental awareness, knowledge, positive attitudes, management skills, and active participation into early childhood education (ECE) is crucial for cultivating a generation that is mindful of the environment and dedicated to sustainable practices. Environmental awareness introduces children to important ecological topics, like pollution and climate change, helping them recognize their part in conserving nature. To achieve this, one way is to connect learning with the outdoors learning. (Davis, 2020; Davis & Elliott, 2024; Román et al., 2022)

Fabre et al. (2024), Gilbertson et al. (2023), and Janik (2023) explain that concept of outdoor learning integrates personal and social development, environmental education, and adventure education, fostering self-awareness, teamwork, and ecological responsibility. Through activities like hiking and conservation tasks, it promotes lifelong skills, physical well-being, and a deep connection with nature. Mann et al. (2022), Priest (1986), and Quay (2021) explain that Simon Priest highlights sensory learning as the foundation of outdoor education, engaging all senses—cognitive, emotional, and physical—to enhance learning and connection with nature. This immersive approach fosters awareness, skill development, and a deeper bond with the environment. Beames et al. (2023), Kiviranta et al. (2024), and Lindfors et al. (2021) Simon Beames emphasizes the benefits of outdoor learning, including opportunities for holistic child development, pedagogical preconditions like teacher preparedness and organization, and the natural environment as a resource for health, learning, and environmental stewardship.

The implementation of Sustainable Nature Environment Education (SNEE) in Indonesia is for supported by three key government policies. First, the Regulation of the Minister of Environment and Forestry emphasizes the importance of environmental awareness in educational settings. Second, the Decree from the Head of the Agency for Education Standards, Curriculum, and Assessment outlines the dimensions of the Pancasila Student Profile, which integrates environmental values into the curriculum. Third, the Regulation of the Minister of Education, Culture, Research, and Technology establishes a framework for early childhood education that encourages nature-based learning. Together, these policies create a strong foundation for SNEE, promoting environmental sustainability and awareness among young learners in Indonesia.

**Indonesian Government Policy about Sustainable Nature Environment Education**

Indonesia has established three key policies that serve as a foundation for developing a nature-based early childhood education (ECE) curriculum. These policies reflect the government's commitment to fostering environmental awareness and sustainability among young learners. The first policy emphasizes the importance of integrating environmental education into the school curriculum, promoting a culture of caring for and protecting the environment. The second policy focuses on cultivating the Pancasila Student Profile, which aims to develop character and competencies that align with Indonesia's cultural values and principles, including respect for nature. The third policy provides guidelines for creating a flexible and contextualized curriculum that supports holistic development in early childhood education. And the last policy focuses Learning Outcomes in Early Childhood Education, Primary Education, and Secondary Education in the Merdeka Curriculum. Together, these policies create a robust framework for implementing a nature-based curriculum that not only enhances children's learning experiences but also instills a lifelong commitment to environmental stewardship. And then, Indonesian Government Policy as Support Sustainable Nature Environment Education can be see in table 1.

**Table 1. Indonesian Government Policy as Support SNEE**

| **Indonesian Government Policy** | **Description** |
| --- | --- |
| Regulation of the Minister of Environment and Forestry of the Republic of Indonesia, Number P.52/MENLHK/SETJEN/KUM.1/9/2019 on the Caring and Environmentally Aware Movement in Schools | This regulation aims to promote environmental awareness and sustainable practices within schools across Indonesia. This regulation encourages schools to implement programs and activities that foster a culture of environmental responsibility among students, teachers, and school communities. The initiative includes educating students about environmental conservation, promoting sustainable resource use, and creating eco-friendly school environments. Through these efforts, the regulation seeks to build environmentally conscious attitudes and behavior from a young age, contributing to broader national sustainability goals. |
| Decree of the Head of the Agency for Education Standards, Curriculum, and Assessment, Ministry of Education, Culture, Research, and Technology No 009/H/KR/2022 on the Dimensions, Elements, and Sub-elements of the Pancasila Student Profile in the Merdeka Curriculum. | This decree aims to define the competencies and character traits that students are expected to develop to embody the values of Pancasila, which is Indonesia’s foundational philosophical principle. It emphasizes holistic education that fosters not only academic skills but also moral, social, and emotional development. The document specifies key dimensions such as faith and devotion, noble character, critical thinking, collaboration, and creativity, ensuring that the educational framework aligns with the goals of creating well-rounded citizens who are capable of contributing positively to society and the environment. |
| Regulation of the Minister of Education, Culture, Research, and Technology of the Republic of Indonesia Number 12 of 2024 on the Curriculum for Early Childhood Education, Primary Education, and Secondary Education and Decree of the Head of the Agency for Education Standards, Curriculum, and Assessment Ministry of Education, Culture, Research, and Technology Number 032/H/KR/2024 Regarding Learning Outcomes in Early Childhood Education, Primary Education, and Secondary Education in the Merdeka Curriculum | This regulation emphasizes a competency-based approach that integrates values, knowledge, and skills to prepare students for the challenges of the 21st century. It aims to create a more flexible and contextualized curriculum that can adapt to local needs and promote character development alongside academic achievement. Key aspects include the incorporation of thematic and interdisciplinary learning, the importance of fostering critical thinking and creativity, and the promotion of environmental awareness and sustainability. The regulation also outlines assessment methods that prioritize formative evaluation and encourages active participation from educators, students, and the community in the curriculum development process. Overall, it seeks to enhance the quality of education and ensure that students are equipped with the competencies necessary for personal and social development. |

1. **METHOD**

This research utilizes a research and development (R&D) methodology by Borg & Gall (2003). **The Research and Information Collection** phase is conducted through a literature review, connecting Indonesian government regulations and policies that support Sustainable Nature Environment Education (SNEE), covering areas such as environmental education programs, sustainability initiatives, and policies that promote ecological responsibility in schools. **The Planning** phase involves summarizing the literature review findings to reinforce the foundation for product development. In the **Develop Preliminary Form of Product** phase, a model design for a Nature-Based Curriculum for Early Childhood Education (PAUD) is created, establishing a preliminary framework to guide future curriculum development and implementation such as specific objectives, content or subject matter, methods or procedures, and evaluation. This model aims to integrate SNEE principles into early learning experiences, fostering environmental awareness and sustainable practices from a young age. The process can be seen from table 2.

**Table 2. Research and Development Procedure**

| **R&D Methodology** | **Source of Literature Review** | **Strong Statement** |
| --- | --- | --- |
| **Research and Information Collection:** | | |
| **Literature Review** | **Early Childhood Curriculum** | |
| Kelly (2004) | The curriculum consists of four components: objectives, content or subject matter, methods or procedures, and evaluation |
| Husein (2020) | Curriculum provides for all of a child’s development  Curriculum promotes opportunities to support a child’s natural, cultural and lingusitic diversity  Curriculum ds can be appproriate for all children  Curriculum using thematic learning |
|  | Jackman (2001) | Curriculum provides for all of a child’s development  Curriculum encourages children to learn by doing  Curriculum promotes opportunities to support a child’s natural, cultural and lingusitic diversity |
|  | Dinnebeil Laurie A et al. (2013) | Curriculum promotes opportunities to support a child’s natural, cultural and lingusitic diversity  Curriculum facilitates children learn in more than one way  Curriculum facilitates think broadly about learning  Curriculum ds can be appproriate for all children |
|  | Hirsh-Pasek et al. (2020) | Characteristic of Play-based Learning: Actively Engganging, Joyful, Iteractive, Meaningful, Socially interactive |
|  |
|  | Zosh et al. (2017) |
|  | Parker et al. (2022) |
|  | Danile & Pyle (2018) | Principle of Play: Choice, Wonder, Delight, Creative Play |
|  | Tikkanen et al. (2022) |
|  | Zosh et al. (2022) |
|  | Arnold (2022) | Play area: Creative Play, Dramatic Play, Exploatory Play, Manipulative play, Sensory play |
|  | Smedley & Hoskins (2020) |
|  | Teichert & Helbig (2024) |
|  | **Sustainable Nature Environment Education (SNEE)** | |
|  | Dias Amorim et al. (2017) | Environmental Education Theory: Awarness, Knowledge, Attitudes, Skill, Participation |
|  | George & Glasgow (2002) |
|  | Leff (2012) |
|  | Vidart (1978) |
|  | Fabre et al. (2024) | Gilbertson’s Outdoor Learning Concept integrates these elements to create a holistic learning approach that combines personal growth, environmental stewardship, and adventure exploration |
|  | Gilbertson et al. (2023) |
|  | Janik (2023) |
|  | Mann et al. (2022 | The foundation of outdoor learning is sensory learning |
|  | Priest (1986) |
|  | Quay (2021) |
|  | Beames et al. (2023) | Benefit of Outdoor Learning: holistic development of children, Multimodal hands-learning opportunities, health and wellbeing, experiences in and of nature |
|  | Kiviranta et al. (2024) |
|  | Lindfors et al. (2021) |
|  | **The Indonesian government's policies** | |
|  | Regulation of the Minister of Environment and Forestry of the Republic of Indonesia, Number P.52/MENLHK/SETJEN/KUM.1/9/2019 on the Caring and Environmentally Aware Movement in Schools, (2019) | PBLHS Movement  (*Peduli dan Berbudaya Lingkungan Hidup di Sekolah*/ Caring for and Cultivating Environmental Awareness in Schools) |
|  | Decree of the Head of the Agency for Education Standards, Curriculum, and Assessment, Ministry of Education, Culture, Research, and Technology No 009/H/KR/2022 on the Dimensions, Elements, and Sub-Elements of the Pancasila Student Profile in the Merdeka Curriculum., (2022) | The element of moral conduct toward nature in ECE emphasizes understanding Earth's ecosystems as God’s creations and fostering gratitude by maintaining cleanliness and caring for the environment. This approach nurtures respect and responsibility for nature from a young age. |
|  | (Regulation of the Minister of Education, Culture, Research, and Technology of the Republic of Indonesia Number 12 of 2024 on the Curriculum for Early Childhood Education, Primary Education, and Secondary Education and Decree of the Head of the Agency for Education Standards, Curriculum, (2024) | Early Childhood Education Learning Outcome Elements focus on Religious Values and Character Education, emphasizing the importance of maintaining social and environmental harmony as part of religious practice, and Identity, fostering pride in Indonesian cultural and natural diversity. The Foundations of Literacy, Mathematics, Science, Technology, Engineering, and Arts highlight curiosity, critical thinking, and skills development, integrating environmental conservation, basic literacy, and appreciation for arts using natural resources. |
|  |
|  |
|  |
|  |
|  |
| **Planning:** |  |  |
| **Summarizing the literature review findings to reinforce the foundation for product development** | | |
| **Develop Preliminary Form of Product:** | | |
| **Objectives Of Indonesian Nature-Based ECE Curriculum Design** | Stansfield J (2015) | Five SDGs related to sustainable natural environments are clean water and sanitation, clean and affordable energy, climate action, life below water, and life on land. |
| Rivera Andrea et al. (2018) |
| United Nations (2022) |
| **Content or subject matter of Indonesian Nature-Based ECE Curriculum Design** | Pollio & Heaps (2004) | introduces young children in Early Childhood Education (ECE) to an understanding of themselves and their bodies |
| Desstya & Wisandari (2022) | familiarizes young children with different types of animals, their habitats, and their essential roles in the ecosystem |
| Freeman & Sokoloff (1996) |
|  | Desstya & Wisandari (2022) | children explore the world of plants, learning about plant parts and the process of photosynthesis |
|  | Guanio-Uluru (2023) |
|  | Borisová & Pintes (2022) | introduces children to various natural phenomena like weather, seasons, and the water cycle |
|  | Utami et al. (2022) |
|  | Blanco-Chamborro et al. (2023) | encourages young children to explore outer space, familiarizing them with planets, stars, the moon, and the sun. They learn about the solar system, planetary movements, and how astronomy influences life on Earth |
|  | Borisová & Pintes (2022) |
|  | Zainon et al. (2023) |
|  | Adom (2022) | emphasizes the importance of environmental preservation and natural resource conservation |
|  | Harvey et al. (2023) |
|  | Kang & Moon (2014) |
|  | Masten (2021) | introduces children to different types of natural disasters, such as earthquakes, floods, volcanoes, and hurricanes. |
|  | Proulx & Aboud (2019) |
| **Methods or procedures of Indonesian Nature-Based ECE Curriculum Design** | Arnold (2022) | Play area: Creative Play, Dramatic Play, Exploatory Play, Manipulative play, Sensory play |
| Smedley & Hoskins (2020) |
| Teichert & Helbig (2024) |
| **Evaluation of Indonesian Nature-Based ECE Curriculum Design** | Dias Amorim et al. (2017) Dias Amorim et al. (2017) | Environmental Education Theory: Awarness, Knowledge, Attitudes, Skill, Participation |
| George & Glasgow (2002) |
| Leff (2012) |
| Vidart (1978) |

1. **RESULT AND DISCUSSION**

**Connecting Regulation of the Caring and Environmentally Aware Movement in Schools with SNEE**

The Environmental Care and Cultural Movement in Schools is an initiative aimed at fostering environmental awareness and responsibility among students, teachers, and the school community. This movement encourages the integration of environmental conservation values into daily school activities, promoting actions that contribute to sustainable practices, such as waste reduction, energy conservation, and the preservation of natural resources. It also includes instilling a culture of respecting nature and implementing environmentally friendly habits as part of the school’s educational process.

**Table 3. *Connecting Regulation of the Caring and Environmentally Aware Movement in Schools with* SNEE**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PBLHS Movement**  **(*Peduli dan Berbudaya Lingkungan Hidup di Sekolah*/ Caring for and Cultivating Environmental Awareness in Schools)** | **SNEE** | | | | |
| **Environmental Awareness** | **Environmental Knowledge** | **Attitudes Toward the Environment** | **Environmental Management Skills** | **Participation in Environmental Sustainability** |
| The Implementation of Environmentally Friendly Behaviour is the attitude and actions of school members in maintaining and preserving environmental functions. | v | v | v |  | v |
| Energy Conservation involves actions to reduce energy usage without compromising safety, comfort, or productivity | v | v | v | v | v |
| Water Conservation is a deliberate behaviour in managing clean water through technology or social practices | v | v | v | v | v |
| Disaster Resilience of School Members | v | v | v | v | v |

**Connecting Regulation of the Dimensions, Elements, and Sub-elements of the Pancasila Student Profile in the Merdeka Curriculum with SNEE**

In the Decree of the Head of the Agency for Education Standards, Curriculum, and Assessment, Ministry of Education, Culture, Research, and Technology No 009/H/KR/2022 on the Dimensions, Elements, and Sub-elements of the Pancasila Student Profile in the Merdeka Curriculum, one key element of the Pancasila Student Profile is to be faithful, pious to God Almighty, and noble in character. This element connects to the natural environment through the concept of moral conduct toward nature. As part of their environment, Pancasila students embody noble character through responsibility, compassion, and care for the natural surroundings. They recognize themselves as integral components of Earth’s ecosystem, acknowledging the interdependence between humans and nature. They also understand that as humans, they bear the responsibility to protect and preserve nature as God's creation. This awareness motivates them to care for their surroundings, ensuring that nature remains habitable for all living beings now and for future generations. They avoid damaging or misusing the environment and actively seek to stop behaviours that harm it. Pancasila students are reflective, considering and building awareness of the impact of their actions on the natural world. This consciousness forms the basis of an environmentally friendly lifestyle, enabling them to contribute actively to environmental conservation. The relationship between the element of moral conduct toward nature and Sustainable Nature Environment Education (SNEE) is as follows.

**Table 4. *Connecting Regulation of the Dimensions, Elements, and Sub-elements of the Pancasila Student Profile in the Merdeka Curriculum with SNEE***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **The element of moral conduct toward nature for ECE** | **SNEE** | | | | |
| **Environmental Awareness** | **Environmental Knowledge** | **Attitudes Toward the Environment** | **Environmental Management Skills** | **Participation in Environmental Sustainability** |
| Understanding Earth's Ecosystem Connections - Recognizing various creations of God |  | v |  |  |  |
| Protecting the Natural Environment - Cultivating gratitude for the gift of nature by maintaining cleanliness and caring for the surrounding environment | v | v | v | v | v |

**Connecting Regulation of the Curriculum for Early Childhood Education, Primary Education, and Secondary Education with SNEE and Learning Outcomes in Early Childhood Education, Primary Education, and Secondary Education in the Merdeka Curriculum**

Regulation of the Curriculum for Early Childhood Education, Primary Education, and Secondary Education, which integrates Sustainable Nature Environment Education (SNEE) and Learning Outcomes in the Merdeka Curriculum, plays a significant role in supporting environmental awareness and responsibility. The curriculum emphasizes key elements such as religious values and character education, which encourage students to foster harmonious relationships with others and nature, promoting environmental preservation as part of their moral and spiritual development. Additionally, the curriculum fosters a strong sense of identity, where students take pride in Indonesia’s cultural and natural diversity, which is grounded in the principles of Pancasila. The foundations of literacy and STEAM (Science, Technology, Engineering, Arts, and Mathematics) also play a critical role in supporting SNEE by nurturing students' curiosity about the environment and developing their critical thinking skills in addressing environmental challenges. Through these integrated elements, the Merdeka Curriculum nurtures students’ holistic growth, aligning their academic development with a strong commitment to sustainability and environmental care.

**Table 5. *Connecting Regulation of the Curriculum for Early Childhood Education, Primary Education, and Secondary Education with SNEE and Learning Outcomes in Early Childhood Education, Primary Education, and Secondary Education in the Merdeka Curriculum***

| **Early Childhood Education Learning Outcome Elements** | **SNEE** | | | | |
| --- | --- | --- | --- | --- | --- |
| **Environmental Awareness** | **Environmental Knowledge** | **Attitudes Toward the Environment** | **Environmental Management Skills** | **Participation in Environmental Sustainability** |
| **Religious Values and Character Education Element** |  |  |  |  |  |
| The importance of maintaining relationships with others and preserving nature as a form of practicing religious teachings. | v | v | v | v | v |
| **Identity Element** |  |  |  |  |  |
| Indonesian citizens, with all their diversity, need to have pride in their own identity, family, and cultural background, grounded in the principles of Pancasila — including pride in Indonesia's natural diversity. | v | v | v |  |  |
| **Foundations of Literacy, Mathematics, Science, Technology, Engineering, and Arts Element** |  |  |  |  |  |
| The early childhood period serves as the beginning or foundation for formal learning, making it important to foster curiosity about themselves, others, and the world — including curiosity about environmental preservation. |  | v | v |  |  |
| Knowledge is constructed through learning, practice, experience, and observation of various events, objects, and people — including constructing understanding of natural events and objects. |  | v | v | v |  |
| Oral language is the foundation of literacy and critical thinking — including literacy and critical thinking about environmental preservation. |  | v | v |  |  |
| Basic literacy and numeracy skills, as well as an introduction to how the world works, are essential to prepare for primary school — including basic literacy, numeracy, and an introduction to environmental conservation. |  | v | v |  |  |
| Cultivating children’s interest and appreciation for the arts can balance cognitive, emotional/affective, and psychomotor aspects, helping them develop healthy minds — including fostering an appreciation for arts using natural materials. |  | v | v |  |  |

After aligning government policies with sustainable environmental principles, these foundations can be further developed into a nature-based curriculum design for early childhood education (ECE). Integrating policy-driven sustainability goals into ECE curriculum supports a structured approach to instilling environmental awareness from an early age. This curriculum can incorporate activities that allow children to interact directly with nature, fostering respect for the environment and encouraging sustainable practices, such as waste reduction, water conservation, and appreciation for biodiversity. By embedding these elements into daily learning experiences, a nature-based curriculum not only meets educational standards but also cultivates a generation of young learners who are conscious of their role in protecting and preserving the natural world.

**Specific Objective as the Vision and Mission of Indonesian Nature-Based ECE Curriculum Design**

Nature-based schools must accommodate the vision and mission of the Sustainable Development Goals (SDGs) in their curriculum. According to Stansfield J, (2015), Rivera Andrea et al., (2018), and the United Nations, (2022), SDGs are a global agreement among UN member states to promote change towards sustainable development based on human rights, aiming for social, economic, and environmental progress. The SDGs consist of 17 global goals with 169 target achievements, and their principles are universal, integrative, and inclusive, making them accessible to all. Five SDGs related to sustainable natural environments are clean water and sanitation, clean and affordable energy, climate action, life below water, and life on land. The connection between SDGs and sustainable environmental education in ECE is reflected in the integration of SDG values in environmental preservation, which should be incorporated into the development of nature-based curriculum management for ECE through its vision and mission. These components must be included in the nature-based school curriculum management to ensure the curriculum supports sustainable environmental education. This includes developing programs that emphasize the importance of clean water, affordable and clean energy, climate action, as well as the conservation of life below water and on land. Through this integration, schools can equip children with the knowledge and skills necessary to address future environmental challenges and contribute to sustainable development. This is in line with **(1) PBLHS Movement (Peduli dan Berbudaya Lingkungan Hidup di Sekolah/ Caring for and Cultivating Environmental Awareness in Schools) in Regulation of the Caring and Environmentally Aware Movement in Schools with SNEE** such as The Implementation of Environmentally Friendly Behaviour, Energy Conservation, Water Conservation, and Disaster Resilience. **(2) The element of moral conduct toward nature for ECE in Regulation of the Dimensions, Elements, and Sub-elements of the Pancasila Student Profile in the Merdeka Curriculum with SNEE** that Understanding Earth's Ecosystem Connections and Protecting the Natural Environment. And **(3) Early Childhood Education Learning Outcome Elements in the Regulation of the Curriculum for Early Childhood Education, Primary Education, and Secondary Education with SNEE and Learning Outcomes in Early Childhood Education, Primary Education, and Secondary Education in the Merdeka Curriculum** such as Religious Values and Character Education Element and Identity Element

**Specific Content or Subject Matter of Indonesian Nature-Based ECE Curriculum Design**

Special themes in nature-based learning in ECE are adapted to SNEE. In Indonesia, this is supported by the Big Theme of the Pancasila Student Profile in the Merdeka Curriculum for ECE, namely I Love the Earth. The development of a more complex theme is described in the following. **(1) Humans Theme** according to Pollio & Heaps (2004), explain that This theme introduces young children in Early Childhood Education (ECE) to an understanding of themselves, their bodies, and their role in the ecosystem. Children learn about body parts, their functions, and ways to keep their bodies healthy. They are also taught the importance of social interaction, cooperation, and the role of humans in protecting the environment. Through these lessons, children gain self-awareness and a sense of responsibility toward both themselves and their surroundings. **(2) Animal Theme** mentioned by Desstya & Wisandari (2022), and Freeman & Sokoloff (1996) are familiarizes young children with different types of animals, their habitats, and their essential roles in the ecosystem. Children explore animal life cycles, dietary habits, and how animals adapt to their environments. Activities may include direct observation, role-playing, and creating simple animal habitats. These experiences help children develop empathy and respect for other living beings in their natural settings. **(3) Plant Theme** which is explained by Guanio-Uluru (2023) and Desstya & Wisandari (2022) contains about children explore the world of plants, learning about plant parts and the process of photosynthesis. They discover the life cycle of plants, the importance of plants for human and animal life, and how to plant and care for greenery. Practical activities, such as planting seeds and maintaining a small garden at school, allow children to grasp these concepts effectively, fostering a connection to nature and an appreciation for plant life. **(4) Natural Phenomena Theme** from Borisová & Pintes (2022) and Utami et al. (2022). This theme introduces children to various natural phenomena like weather, seasons, and the water cycle. They learn about rain, wind, clouds, lightning, and snow, as well as how these phenomena impact daily life. Activities may involve simple experiments, direct observations, and group discussions, which build children’s understanding of the natural world and its rhythms. **(5) Astronomy Theme** according to Blanco-Chamborro et al. (2023), Borisová & Pintes (2022), Kallery (2011), and Zainon et al. (2023) explain that this theme encourages young children to explore outer space, familiarizing them with planets, stars, the moon, and the sun. They learn about the solar system, planetary movements, and how astronomy influences life on Earth. Activities could include creating solar system models, stargazing, and storytelling about space exploration, nurturing children’s curiosity about the vast universe beyond our planet. **(6) Natural Conservation** explain from Adom (2022), Harvey et al. (2023), and Kang & Moon (2014) emphasizes the importance of environmental preservation and natural resource conservation. Children are taught simple ways to care for nature, such as recycling, saving energy, and planting trees. They also learn about endangered species and conservation efforts to protect plants and animals. Practical activities, like environmental campaigns and recycling projects, instill a sense of responsibility and stewardship for the natural world. **(7) Natural Disaster Theme** from Masten (2021), and Proulx & Aboud (2019) explain that introduces children to different types of natural disasters, such as earthquakes, floods, volcanoes, and hurricanes. They learn about the causes of these events, their impacts on humans and the environment, and how to prepare for them. Educational activities, such as evacuation drills and discussions on preventive measures, help children understand these important concepts and build resilience.

The themes developed above are designed to support SNEE. The connection between these themes and SNEE can be observed in Table 5, which outlines how each theme integrates key SNEE concept, such as Environmental Awareness, Environmental Knowledge, Attitudes Toward the Environment, Environmental Management Skills, and Participation in Environmental Sustainability.

**Table 6. *Main Themes in Nature-Based Curriculum Learning for Early Childhood Education in accordance with the SNEE***

| **Main Themes in Nature-Based Curriculum Learning for Early Childhood Education** | **SNEE** | | | | |
| --- | --- | --- | --- | --- | --- |
| **Environmental Awareness** | **Environmental Knowledge** | **Attitudes Toward the Environment** | **Environmental Management Skills** | **Participation in Environmental Sustainability** |
| Humans (Pollio & Heaps, 2004) | v | v | v | v | v |
| Animals (Desstya & Wisandari, 2022; Freeman & Sokoloff, 1996) | v | v | v | v | v |
| Plants (Desstya & Wisandari, 2022; Guanio-Uluru, 2023) | v | v | v | v | v |
| Natural Phenomena (Borisová & Pintes, 2022; Utami et al., 2022) | v | v | v |  | v |
| Astronomy (Blanco-Chamborro et al., 2023; Borisová & Pintes, 2022; Kallery, 2011; Zainon et al., 2023) | v | v | v |  | v |
| Natural Conservation (Adom, 2022; Harvey et al., 2023; Kang & Moon, 2014) | v | v | v | v | v |
| Natural Disasters (Masten, 2021; Proulx & Aboud, 2019) | v | v | v | v | v |

The selection of themes in table 5 is in line with (1) PBLHS Movement (Peduli dan Berbudaya Lingkungan Hidup di Sekolah/ Caring for and Cultivating Environmental Awareness in Schools) in Regulation of the Caring and Environmentally Aware Movement in Schools with SNEE such as The Implementation of Environmentally Friendly Behaviour, Energy Conservation, Water Conservation, and Disaster Resilience. And (2) Early Childhood Education Learning Outcome Elements in the Regulation of the Curriculum for Early Childhood Education, Primary Education, and Secondary Education with SNEE and Learning Outcomes in Early Childhood Education, Primary Education, and Secondary Education in the Merdeka Curriculum that is Foundations of Literacy, Mathematics, Science, Technology, Engineering, and Arts Element

**Specific Methods or Procedures of Indonesian Nature-Based ECE Curriculum Design**

Nature-based learning emphasizes outdoor activities, encouraging children to learn through play. This approach incorporates creative play, dramatic play, exploratory play, manipulative play, and sensory play, each fostering different aspects of development. Through these activities, children engage their imagination, build social skills, enhance motor abilities, and deepen their connection to the natural environment. For more details, it can be developed as in table 7 below.

**Table 7. *Specific Play and Outdoor Learning as Methods or Procedures of Nature-Based ECE connect with SNEE***

| ***Methods or Procedures of Nature-Based ECE Area***  (Arnold, 2022; Smedley & Hoskins, 2020; Teichert & Helbig, 2024) | **Location** | **Activity** | **SNEE** | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Environmental**  **Awareness** | **Environmental**  **Knowledge** | **Attitudes Toward the Environment** | **Environmental Management Skills** | **Participation in Environmental Sustainability** |
| Creative Play | Outdoor | Nature Material Craft | v | v | v | v |  |
|  |  | Painting with Natural Materials | v | v | v | v |  |
| Dramatic Play | Outdoor | Cooking With Natural Material | v | v | v | v |  |
|  |  | Everyday life role play in Outdoor | v | v | v | v |  |
| Exploratory Play | Outdoor | Nature Messy Play | v | v | v | v |  |
|  | Nature Walk | v | v | v | v | v |
|  |  | Natural Hunter | v | v | v | v |  |
|  |  | Camping | v | v | v | v | v |
|  |  | Gardening | v | v | v | v | v |
|  |  | Farming | v | v | v | v | v |
| Manipulative Play | Outdoor | Experiment With Natural Material | v | v | v | v |  |
|  | Natural STEAM | v | v | v | v |  |
|  |  | Shorting Natural Material | v | v | v | v |  |
|  |  | Counting Natural Material | v | v | v | v |  |
|  |  | Literation of Natural Material | v | v | v | v |  |
|  |  | Nature Diary | v | v | v | v |  |
|  |  | Nature Colours | v | v | v | v |  |
| Sensory Play | Outdoor | Natural Loosepart | v | v | v | v |  |
|  |  | Playing in the mud | v | v | v | v |  |

Specific Play and Outdoor Learning as Methods or Procedures of Nature-Based ECE connect with SNEE in tabel 6 is in line with (1) The element of moral conduct toward nature for ECE in Regulation of the Dimensions, Elements, and Sub-elements of the Pancasila Student Profile in the Merdeka Curriculum with SNEE that Understanding Earth's Ecosystem Connections and Protecting the Natural Environment. And (2) Early Childhood Education Learning Outcome Elements in the Regulation of the Curriculum for Early Childhood Education, Primary Education, and Secondary Education with SNEE and Learning Outcomes in Early Childhood Education, Primary Education, and Secondary Education in the Merdeka Curriculum as Foundations of Literacy, Mathematics, Science, Technology, Engineering, and Arts Element .

**Specific Indicators Evaluation Indonesian Nature-Based ECE Curriculum Design**

Nature-based learning plays a crucial role in shaping a generation that is aware of and committed to environmental sustainability. As global challenges such as climate change, pollution, and biodiversity loss continue to grow, education that emphasizes environmental responsibility is increasingly essential. In this context, nature-based early childhood education aims to incorporate values that support the Sustainable Development Goals (SDGs), particularly those related to preserving the natural environment. These values are encapsulated in the concept of Sustainable Nature Environment Education (SNEE), which includes key elements such as environmental awareness, knowledge, attitudes, management skills, and active participation in environmental sustainability. (Dias Amorim et al., 2017; George & Glasgow, 2002; Leff, 2012; Vidart, 1978)

**Table 8. *Specific Indicators Evaluation of Indonesian Nature-Based ECE Curriculum Design***

| **SNEE Value** | **Specific Indicators Evaluation of Indonesian Nature-Based ECE Curriculum Design** | **Description** |
| --- | --- | --- |
| **Environmental Awareness** | Understanding Environmental Concepts | Children are able to recognize and understand basic environmental concepts, including natural components such as soil, water, air, plants, and animals. |
|  | Recognizing Environmental Issues | Children are able to identify simple environmental issues such as waste, pollution, and deforestation, and their impact on daily life. |
|  | Demonstrating Care for the Environment | Children are able to demonstrate care for the environment through daily behaviors, such as not littering and maintaining cleanliness in their surroundings. |
|  | Understanding the Relationship Between Humans and Nature | Children are able to understand that humans are part of nature and that human well-being depends on the balance and health of the environment. |
|  | Demonstrating Curiosity About the Environment | Children show a high level of curiosity about various natural phenomena, such as seasonal changes, plant growth, and animal behavior. |
| **Environmental Knowledge** | Identifying Ecosystem Components | Children are able to recognize various ecosystem components such as plants, animals, water, and soil, and understand their roles within the ecosystem. |
|  | Understanding Natural Processes | Children are able to explain basic natural processes such as the water cycle, photosynthesis, and the life cycle of plants and animals in a simple way |
|  | Recognizing the Impact of Human Activities | Children are able to identify the negative impacts of human activities such as air and water pollution, and the use of plastics on the environment. |
|  | Understanding Sustainability Principles | Children understand the basic principles of sustainability, such as the importance of preserving natural resources for future generations |
|  | Recognizing Environmentally Friendly Practices | Children are able to recognize and explain various environmentally friendly practices, such as recycling, composting, and energy conservation. |
| **Attitudes Toward the Environment** | Demonstrating Love for Nature | Children demonstrate admiration and love for the beauty of nature through verbal and non-verbal expressions, such as drawing, storytelling, and caring for plants or animals with attention. |
|  | Taking Responsibility for Caring for the Environment | Children show responsibility by actively participating in environmental care activities, such as watering plants and picking up litter around them. |
|  | Behaving in an Energy and Natural Resource-Conserving Manner | Children practice habits of conserving energy and natural resources, such as turning off lights when not in use and using water wisely. |
|  | Respecting the Life of Other Living Beings | Children show respect for the life of plants and animals by not damaging plants and not harming animals. |
|  | Participating in Collective Environmental Activities | Children participate in environmental activities with friends and the community, such as clean-up projects and tree planting. |
| **Environmental Management Skills** | Planning and Implementing Environmental Projects | Children are able to plan and carry out simple environmental projects, such as creating a small garden or vegetable patch. |
|  | Managing Waste Effectively | Children are able to identify types of waste and practice proper waste management, such as separating organic and inorganic waste. |
|  | Conserving and Managing Natural Resources | Children apply techniques for conserving and managing natural resources like water and energy in their daily lives. |
|  | Monitoring and Evaluating Environmental Conditions | Children are able to conduct simple observations of their surrounding environment and make notes and simple reports about their findings. |
|  | Developing Environmentally Friendly Habits | Children are able to identify and develop environmentally friendly habits in their daily lives, such as bringing their own water bottles and using reusable shopping bags. |
| **Participation in Environmental Sustainability** | Participating in Environmental Clean-Up Activities | Children actively participate in environmental clean-up activities at school and its surroundings, such as cleaning play areas and collecting trash. |
|  | Participating in Planting and Plant Care Projects | Children are involved in planting and caring for plants at school, such as planting flowers or vegetables and watering and maintaining them regularly. |
|  | Taking Part in Environmental Campaigns | Children take part in environmental campaigns organized by the school or community, such as campaigns to reduce plastic use and campaigns for energy conservation. |

Specific Indicators Evaluation Indonesian Nature-Based ECE Curriculum in tabel 7 is in line with (1) PBLHS Movement (Peduli dan Berbudaya Lingkungan Hidup di Sekolah/ Caring for and Cultivating Environmental Awareness in Schools) in Regulation of the Caring and Environmentally Aware Movement in Schools with SNEE such as The Implementation of Environmentally Friendly Behaviour, Energy Conservation, Water Conservation, and Disaster Resilience. (2) The element of moral conduct toward nature for ECE in Regulation of the Dimensions, Elements, and Sub-elements of the Pancasila Student Profile in the Merdeka Curriculum with SNEE that Understanding Earth's Ecosystem Connections and Protecting the Natural Environment. And (3) Early Childhood Education Learning Outcome Elements in the Regulation of the Curriculum for Early Childhood Education, Primary Education, and Secondary Education with SNEE and Learning Outcomes in Early Childhood Education, Primary Education, and Secondary Education in the Merdeka Curriculum such as Religious Values and Character Education Element, Identity Element, and Foundations of Literacy, Mathematics, Science, Technology, Engineering, and Arts Element .

1. **CONCLUSION**

The study's findings highlight that existing Indonesian policies provide a strong foundation for fostering Sustainable Nature Environment Education (SNEE) values in early childhood education (ECE). Key policies include (1) the Caring and Environmentally Aware Movement in Schools, which promotes environmental awareness and stewardship among students; (2) the Pancasila Student Profile integrated within the Merdeka Curriculum, which emphasizes critical values aligned with environmental education; and (3) comprehensive curriculum policies spanning early childhood, primary, and secondary education, (4) Learning Outcomes in Early Childhood Education, Primary Education, and Secondary Education in the Merdeka Curriculum all of which support the development of environmental awareness, knowledge, attitudes, management skills, and participation in sustainability efforts. Building on this policy framework, recommendations for a future Indonesian Nature-Based ECE Curriculum include: setting objectives that center on nature-based learning for young children, enriching content with topics such as ecosystems, conservation, and disaster mitigation, utilizing hands-on play-based and outdoor activities, and incorporating innovative assessments using SNEE evaluation indicators to support environmental sustainability. These steps are intended to cultivate a generation of young learners who are both aware of and actively engaged in preserving the natural world.

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1. **REFERENCES**
2. Adi, O. S. (2023). Framework for Environmental Protection in Nigeria. *International Journal of Law and Society (IJLS)*, *2*(2), 77–98. https://doi.org/10.59683/ijls.v2i2.38
3. Adom, D. (2022). Catch them Young: Children as Messengers of Indigenous Ecological Knowledge for Biodiversity Conservation in Ghana. *Journal of Wildlife and Biodiversity*, *6*(3), 12–25. https://doi.org/10.5281/zenodo.6522108
4. Arnold, C. (2022). *Schemas in the Early Years*. Routledge. https://doi.org/10.4324/9781003224341
5. Beames, S., Higgins, P., Nicol, R., & Smith, H. (2023). *Outdoor Learning Across the Curriculum*. Routledge. https://doi.org/10.4324/9781003010890
6. Blanco-Chamborro, M. S., Varela-Losada, M., Lorenzo-Rial, M., & Pérez-Rodríguez, U. (2023). Revisión de Investigación Educativa en Astronomía en Educación Infantil y Primaria desde 2009 hasta 2019. *Acta Scientiae*, *25*(6), 118–156. https://doi.org/10.17648/acta.scientiae.6814
7. Borg, W. R., & Gall, M. (2003). *Educational Research* (7th ed.). PearsonEducation Inc.
8. Borisová, S., & Pintes, G. (2022). *Themes of Nature In Children’s Philododo*. 5541–5546. https://doi.org/10.21125/iceri.2022.1364
9. Danile, E., & Pyle, A. (2018). Defining Play-based Learning. In A. Pyle (Ed.), *Play-based Learning* (pp. 7–12). Encyclopedia on Early Childhood Development.
10. Davis, J. M. (2020). Creating Change for People and Planet: Education for Sustainability Approaches and Strategies. In *Encyclopedia of the World’s Biomes: Volumes 1-5* (Vols. 1–5, pp. V5-438-V5-446). Elsevier. https://doi.org/10.1016/B978-0-12-409548-9.12036-6
11. Davis, J. M., & Elliott, S. (2024). *Young Children & The Environment Early Education For Sustainability (3rd Edition)* (3rd ed.). Agency Limited-Cambridge University Press.
12. Decree of the Head of the Agency for Education Standards, Curriculum, and Assessment, Ministry of Education, Culture, Research, and Technology No 009/H/KR/2022 on the Dimensions, Elements, and Sub-Elements of the Pancasila Student Profile in the Merdeka Curriculum. (2022).
13. Desstya, A., & Wisandari, Y. (2022). *Analysis of natural intelligence in first grade student’s book theme 7: Objects, animals, and plants around me by Sonya Sinyanyuri and Lubna Assagaf*. 020002. https://doi.org/10.1063/5.0115764
14. Dias Amorim, C., Ferreira da Silva Júnior, M., & Artur dos Santos Cestari, L. (2017). Environmental Education in the Curriculum: A Space for the Formation of Environmental Educators. *American Journal of Educational Research*, *5*(7), 739–746. https://doi.org/10.12691/education-5-7-7
15. Dinnebeil Laurie A, Boat Mary, & Bae Youlmi. (2013). *Integrating Principles of Universal Design Into The Early Childhood Curriculum*. https://fpg.unc.edu/sites/fpg.unc.edu/files/resources/presentations-and-webinars/Dimensions\_Vol41\_1\_Dinnebeil-1.pdf
16. Fabre, N., Maté, C., & Vinyoles, D. (2024). Encouraging children’s learning and curiosity towards fish: the importance of outdoor science experiences and the inclusion of didactic activities. *Journal of Outdoor and Environmental Education*. https://doi.org/10.1007/s42322-024-00171-7
17. Freeman, C. C., & Sokoloff, H. J. (1996). Children Learning to Make a Better World: Exploring Themes. *Childhood Education*, *73*(1), 17–21. https://doi.org/10.1080/00094056.1996.10521893
18. George, J., & Glasgow, J. (2002). Culturing Environmental Education in the Caribbean. In *Canadian Journal of Environmental Education* (Vol. 7, Issue 1).
19. Gilbertson, K., Ewert, A., Siklander, P., & Bates, T. (2023). *Outdoor Education: Methods and Strategies* (2nd ed.). Human Kinetics.
20. Guanio-Uluru, L. (2023). Analysing Plant Representation in Children’s Literature: The Phyto-Analysis Map. *Children’s Literature in Education*, *54*(2), 149–167. https://doi.org/10.1007/s10583-021-09469-2
21. Harvey, C., Sheffield, D., Richardson, M., & Wells, R. (2023). The Impact of a “Three Good Things in Nature” Writing Task on Nature Connectedness, Pro-nature Conservation Behavior, Life Satisfaction, and Mindfulness in Children. *Ecopsychology*, *15*(1), 26–36. https://doi.org/10.1089/eco.2022.0014
22. Hirsh-Pasek, K., Hadani, H., Hadani, H. S., & Blinkoff, E. (2020). *A New Path to Education Reform: Playful Learning Promotes 21st-Century Skills in Schools and Beyond*.
23. Husein, S. (2020). The Curriculum of Early Childhood Education: Indonesia and United Kingdom. *Progresiva : Jurnal Pemikiran Dan Pendidikan Islam*, *9*(1), 62–76. https://doi.org/10.22219/progresiva.v9i1.12522
24. Jackman, H. (2001). *Early Childhood Educaton Curriculum: A Child’s Conection to The World*. https://www.scirp.org/reference/referencespapers?referenceid=2634082
25. Janik, A. (2023). Outdoor education in the post-pandemic era – experience and needs of animators-practitioners in working with children and young persons on the example of Polish NGOs. *Wychowanie w Rodzinie*, *30*(1), 147–171. https://doi.org/10.06.2023
26. Kallery, M. (2011). Astronomical Concepts and Events Awareness for Young Children. *International Journal of Science Education*, *33*(3), 341–369. https://doi.org/10.1080/09500690903469082
27. Kang, I. S., & Moon, H. J. (2014). The Effects of Educational Activity in Relation with Nuri Curriculum in Green Growth Education Programme for Young Children on Their Knowledge in Environmental Conservation, Sensitivity to the Natural Environment and Attitudes in Environmental Conservation. *Journal of Korean Child Care and Education*, *10*(5), 133–158. https://doi.org/10.14698/jkcce.2014.10.5.133
28. Kelly, A. V. (2004). *The Curriculum theory and practice* (5th ed.). SAGE Publications Limited.
29. Kemendikbudristek. (2023). *Data Pokok Pendidikan Direktorat Jenderal Pendidikan Anak Usia Dini, Pendidikan Dasar dan Pendidikan Menengah Kemendikbudristek.* . https://dapo.kemdikbud.go.id/
30. Kiviranta, L., Lindfors, E., Rönkkö, M.-L., & Luukka, E. (2024). Outdoor learning in early childhood education: exploring benefits and challenges. *Educational Research*, *66*(1), 102–119. https://doi.org/10.1080/00131881.2023.2285762
31. Leff, E. (2012). Latin American environmental thinking: A heritage of knowledge for sustainability. *Environmental Ethics*, *34*(4), 431–450. https://doi.org/10.5840/enviroethics201234442
32. Lindfors, E., Rönkkö, M.-L., Kiviranta, L., & Yliverronen, V. (2021). Outdoor Learning in Early Childhood Education A Narrative Review. In *Technology Education in Early Childhood* (1st ed., pp. 156–165). https://www.researchgate.net/publication/351333664
33. Mann, J., Gray, T., Truong, S., Brymer, E., Passy, R., Ho, S., Sahlberg, P., Ward, K., Bentsen, P., Curry, C., & Cowper, R. (2022). Getting Out of the Classroom and Into Nature: A Systematic Review of Nature-Specific Outdoor Learning on School Children’s Learning and Development. *Frontiers in Public Health*, *10*. https://doi.org/10.3389/fpubh.2022.877058
34. Masten, A. S. (2021). Resilience of children in disasters: A multisystem perspective. *International Journal of Psychology*, *56*(1), 1–11. https://doi.org/10.1002/ijop.12737
35. Parker, R., Thomsen, B. S., & Berry, A. (2022). Learning Through Play at School – A Framework for Policy and Practice. *Frontiers in Education*, *7*. https://doi.org/10.3389/feduc.2022.751801
36. Pollio, H. R., & Heaps, C. (2004). Themes in the Human Experience of Nature. *Psychological Reports*, *94*(1), 35–47. https://doi.org/10.2466/pr0.94.1.35-47
37. Priest, S. (1986). Redefining Outdoor Education: A Matter of Many Relationships. *The Journal of Environmental Education*, *17*(3), 13–15. https://doi.org/10.1080/00958964.1986.9941413
38. Proulx, K., & Aboud, F. (2019). Disaster risk reduction in early childhood education: Effects on preschool quality and child outcomes. *International Journal of Educational Development*, *66*, 1–7. https://doi.org/10.1016/j.ijedudev.2019.01.007
39. Quay, J. (2021). Philosophizing in Outdoor Environmental Education: How Might Experience Work? In G. Thomas, J. Dyment, & H. Prince (Eds.), *Outdoor Environmental Education in Higher Education* (pp. 15–25). Springer Cham. https://doi.org/10.1007/978-3-030-75980-3\_2
40. Regulation of the Minister of Education, Culture, Research, and Technology of the Republic of Indonesia Number 12 of 2024 on the Curriculum for Early Childhood Education, Primary Education, and Secondary Education and Decree of the Head of the Agency for Education Standards, Curriculum, (2024).
41. Regulation of the Minister of Environment and Forestry of the Republic of Indonesia, Number P.52/MENLHK/SETJEN/KUM.1/9/2019 on the Caring and Environmentally Aware Movement in Schools (2019).
42. Rivera Andrea, Gómez Edwin, Rivera Michelle, Córdova David, López Cristian, Pichardo Javier, López Jesús, Hernández Ramón, & Vega Yessica. (2018). *United Natios Sustainability Development Goals Teaacher Resource Book*. 1–366. https://www.rcenetwork.org/portal/sites/default/files/Libro%20Living%20Lab%20ONU%20Junio.pdf
43. Román, D., Arias, J. M., Sedlacek, Q. C., & Pérez, G. (2022). Exploring Conceptions of Creativity and Latinidad in Environmental Education Through the Lens of Culturally Sustaining Pedagogy. *Review of Research in Education*, *46*(1), 32–63. https://doi.org/10.3102/0091732X221084332
44. Smedley, S., & Hoskins, K. (2020). Finding a place for Froebel’s theories: early years practitioners’ understanding and enactment of learning through play. *Early Child Development and Care*, *190*(8), 1202–1214. https://doi.org/10.1080/03004430.2018.1525706
45. Stansfield J. (2015). *The United Nation Sustainability Development Goals (SDGs): A Framework for Intersectoral Collaboration*.
46. Teichert, L., & Helbig, S. (2024). Friedrich Froebel. In *The Palgrave Handbook of Educational Thinkers* (pp. 1–17). Springer International Publishing. https://doi.org/10.1007/978-3-030-81037-5\_42-2
47. Tikkanen, R., Iivari, N., & Paananen, P. (2022). Play—An essential part of children’s lives and their computational empowerment. *Frontiers in Education*, *7*. https://doi.org/10.3389/feduc.2022.1088716
48. UNICEF. (2018). *Learning Through Play Strengthening Learning Through Play in Early Childhood Education Programmes*. www.unicef.org/publications
49. United Nations. (2022). *The Sustainable Development Goals Report*.
50. Utami, F., Husain, A., & Muzakki, M. (2022). Implementation of Natural Phenomena Theme Collage Activities in Early Childhood Learning. *Southeast Asian Journal of Islamic Education*, *4*(2), 171–179. https://doi.org/10.21093/sajie.v4i2.3781
51. Vidart, D. (1978). Environmental Education—Theory and Practice. In Z. Moray (Ed.), *Prospects: Quarterly Review of Education -  Educating for a Better environment* (Vol. 8, pp. 466–480). UNESCO.
52. Zainon, O., Musa, A., Yatim, M. H. M., Karim, N. I. A., Ashari, Z. M., & Mohamad, N. S. (2023). Unlocking the Universe’s Secrets: Preschool Teachers’ Awareness of Astronomy and Its Influence on Early Childhood Education. *International Journal of Advanced Research in Education and Society*. https://doi.org/10.55057/ijares.2023.5.4.28
53. Zosh, J. M., Gaudreau, C., Golinkoff, R. M., & Hirsh-Pasek, K. (2022). The Power of Playful Learning in the Early Childhood Setting \_ NAEYC. *Young Children*, *77*(2), 1–17.
54. Zosh, J. M., Hopkins, E. J., Jensen, H., Liu, C., Neale, D., Hirsh-Pasek. Kathy, Solis, S. L., & Whitebread, D. (2017). *Learning Through Play : A Review of The Evidence*. LEGO Fonden.