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Learning Strategies for Maritime Education in Early Childhood

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Abstract – *Maritime education for early childhood plays a strategic role in fostering early awareness of Indonesia's potential, characteristics, and rich marine resources as a maritime nation. Introducing maritime values at an early age is expected to cultivate environmental awareness, a sense of national identity, and concern for marine ecosystems. This study aims to examine and describe effective, contextual, and enjoyable learning strategies for introducing maritime education to young children. A descriptive qualitative approach was employed, with data collected through observation, in-depth interviews, and documentation in early childhood education settings. The findings indicate that the implementation of play-based learning strategies, the use of interactive audio-visual media, maritime-themed songs and stories, as well as exploration activities related to the marine environment, can enhance children's learning interest, active participation, and understanding of basic maritime concepts. Furthermore, teachers' active involvement in designing learning activities and the integration of maritime themes into daily classroom practices were identified as key factors contributing to the successful implementation of maritime education in early childhood education institutions. This study recommends the development of an early childhood education curriculum that is systematically planned, sustainable, and holistically integrates maritime values.*

Keywords *– Maritime education, early years education, pedagogical strategies, marine awareness, curriculum integration*

INTRODUCTION

Indonesia is the world's largest archipelagic country, consisting of more than 17,000 islands and vast maritime areas. Indonesia's maritime potential is substantial, encompassing natural resources, economic opportunities, and cultural heritage. Therefore, it is essential to instill maritime values from an early age as part of efforts to shape the character of future generations who are able to appreciate, protect, and sustainably manage marine resources (Sulastri et al., 2022). Early Childhood Education (ECE) represents a crucial phase for establishing the foundations of children's character and knowledge. At the age of four to six years, children are in an optimal stage of development, making this period highly effective for instilling values through enjoyable and contextually appropriate learning activities (Hasanah, 2019). In the context of maritime education, learning approaches that align with the developmental characteristics of young children are essential to ensure that maritime values are meaningfully understood.

The process of maritime learning for young children aims to introduce core maritime values, such as cooperation, responsibility, and love for the sea, through the exploration of relevant learning media that are closely connected to children's immediate environment (Tauhidman & Ramadan, 2018). Maritime education for early childhood is regarded as an initial step in familiarizing children with marine potential, culture, and the marine environment from an early age, thereby fostering affection, awareness, and concern for the sustainable use and preservation of marine resources (Syahrowiyah, 2016). Furthermore,

maritime education in early childhood is a context-based learning process that introduces marine elements in an enjoyable manner that is consistent with children's developmental stages (Nuryati & Fauziati, 2021).

Marine-related education is a consciously planned and systematic effort to instill values, knowledge, and skills associated with marine potential through diverse learning methods (Baharuddin & Wahyuni, 2015). In early childhood education, maritime learning serves as a means of introducing marine knowledge through engaging and developmentally appropriate teaching strategies, thereby fostering a sense of love for the sea and a feeling of ownership of Indonesia's marine resources (Wibowo et al., 2025). Saimin et al., (2024) emphasizes that maritime education for young children constitutes an integral component of character education grounded in local culture and environmental contexts, aiming to stimulate curiosity and awareness of marine ecosystems and Indonesia's natural wealth from an early age.

According to the Ministry of Education and Culture of the Republic of Indonesia, maritime education forms an essential element of national character development and should be introduced from an early age to cultivate a generation that understands, values, and is capable of safeguarding Indonesia's maritime sovereignty and marine resources. Similarly, the Directorate of Early Childhood Education Development (Barker et al., 2020) states that maritime education for early childhood is rooted in local culture and environmental contexts, aiming to introduce children to the sea, marine wealth, and the values of coastal community life.

Maritime education also represents a way of thinking and a perspective on national identity as a maritime nation, which influences individuals' mindsets, attitudes, and behaviors (Fauzan et al., 2022). Istiningsih & Hasbullah, (2015) further argue that maritime education for young children involves community participation, particularly in coastal areas, creating an integrated educational model that connects schools with their surrounding environments. Maritime activities encompass various aspects related to the sea, including shipping, maritime trade, navigation, maritime safety, vessels, marine tourism, and port activities at both national and international levels (Effendi & Cahyani, 2021). Consequently, maritime-oriented learning approaches at the early childhood education level aim to enhance the quality of human resources in the education sector while optimizing the utilization of marine and coastal resources to support meaningful learning experiences (Anggraini et al., 2022).

The learning objectives of maritime education for early childhood include: 1) Enhancing children's awareness of the marine environment, including the importance of seas, oceans, and coastal ecosystems in everyday life. 2) Instilling a sense of national identity and patriotism by fostering an understanding of Indonesia as an archipelagic nation with rich maritime heritage. 3) Developing children's understanding and positive attitudes towards maritime concepts, values, and activities in a manner appropriate to their developmental stages.4) Facilitating positive attitude formation and environmental responsibility, particularly in relation to the protection and sustainable use of marine and coastal resources.5) Embedding fundamental maritime values and skills from an early age, such as cooperation, responsibility, and respect for nature, through meaningful learning experiences.6) Encouraging pro-environmental behaviors and a sense of responsibility towards the marine environment, enabling children to actively participate in simple conservation practices.

Therefore, this article aims to explore and describe pedagogical strategies that can effectively support the implementation of maritime education in early years education. By examining learning approaches that are contextual, child-centered, and

enjoyable, this study seeks to contribute to the development of pedagogical practices that enhance children's awareness, attitudes, and understanding of maritime issues from an early age. The findings are expected to provide insights for educators, curriculum developers, and policymakers in strengthening maritime education within early childhood education settings.

MATERIALS AND METHOD

This study adopts a descriptive qualitative approach while integrating exploratory quantitative elements. This approach was selected to enable an in-depth examination of maritime learning methods implemented at Al-Barokah Early Childhood Education (ECE) and to assess the effectiveness of the applied strategies through systematic observation and evaluation of changes in children's knowledge and attitudes. (Siti et al., 2024)

Research Participants

The participants in this study were ten children enrolled at Al-Barokah Early Childhood Education Centre, located in Pabuaran District, Pasanggrahan Village, Serang Regency, Banten Province, Indonesia. Of the participants, six were female and four were male. The selection of participants was based on accessibility and relevance to the research objectives.

Learning Intervention Design

The learning strategies were designed based on a review of relevant literature, with a focus on:

- Thematic learning, incorporating themes related to the sea and marine ecosystems.
- Play-based learning methods, such as simulations of fishermen's activities, guessing games related to maritime topics, and simple experiments involving water.
- Interactive learning media, including maritime-themed animated videos, marine animal puzzles, and instructional materials using natural resources such as shells and sand.

Each learning intervention was implemented over a four-week period, with three to four sessions conducted per week.

Data Collection Techniques

Data were collected using the following techniques:

- Participatory observation, conducted during learning sessions to observe children's engagement and responses to the learning activities.
- Semi-structured interviews, conducted with teachers and the school principal to explore the effectiveness of the strategies, challenges encountered, and their perspectives on the learning approach.
- Questionnaires on children's attitudes and interests, completed by teachers based on their observations of the children.
- Simple pre-test and post-test assessments, employing visual aids to measure children's understanding of maritime themes.

Research Instruments

The instruments used in this study included:

- Observation sheets based on early childhood education indicators and maritime character indicators.
- Interview guidelines.
- Questionnaires designed to assess children's interest and understanding.
- Visual-based tests, such as matching marine-related images and identifying marine animals.

Data Analysis Techniques

This study employed descriptive qualitative analysis to examine non-numerical data obtained from observations, interviews, and documentation of maritime education learning activities in early childhood education settings. The analysis was conducted systematically to describe and interpret the teaching strategies applied and young children's responses to the learning activities (Abdussamad, 2021).

RESULTS AND DISCUSSION

The findings of this study indicate that the implementation of maritime education learning strategies had a positive impact on the enhancement of early childhood knowledge. The pre-test and post-test results demonstrate a significant improvement in children's basic understanding of maritime concepts, particularly those related to marine biota and the function of the sea as a habitat for living organisms. The increase in the average score from 38% to 82% suggests that learning activities designed in a contextual manner and aligned with the developmental characteristics of young children are effective in improving conceptual understanding.

The most substantial improvement was observed in the indicator related to the recognition of marine biota, which increased from 40% to 90%. This finding indicates that the use of visual media, concrete teaching aids, and exploratory activities greatly supports children in understanding concepts that are otherwise abstract. These results are consistent with early childhood learning principles that emphasize hands-on experiences and sensory engagement as primary means of learning.

In addition to cognitive development, children's engagement and enthusiasm during the learning process also showed highly positive outcomes. Participatory observations revealed that the majority of children actively asked questions, offered spontaneous comments, and engaged in simple discussions throughout the learning activities. This high level of participation suggests that play-based learning approaches successfully create an enjoyable learning environment that motivates children to engage actively.

Role-play activities, particularly those simulating fishermen's work, emerged as one of the most engaging learning experiences for the children. Most participants spontaneously utilized learning props such as nets and miniature boats without additional guidance from teachers. This indicates that simulation-based learning not only enhances thematic understanding but also fosters children's initiative, imagination, and self-confidence in expressing ideas.

From the perspective of fine motor development and creativity, the evaluation of children's artistic work demonstrated a significant improvement. The increase in average scores from the "adequate" to the "very good" category reflects enhanced hand–finger coordination skills. Activities such as creating shell collages, applying coloured sand, and cutting marine-themed patterns were found to be effective in developing fine motor skills while simultaneously stimulating creativity.

Teachers also reported improvements in children's attention to detail and patience when completing creative tasks. Children appeared more focused and were able to complete activities independently, which had previously been a challenge in early childhood classrooms. These findings indicate that integrating maritime themes into learning activities can support the holistic development of young children.

Furthermore, children's attitudes and concern for the marine environment showed notable development. Teacher observation questionnaires indicated a substantial increase in scores related to environmentally responsible behaviors, such as

refraining from littering. During a simulated "mini beach" clean-up activity, all children participated voluntarily without direct instruction, suggesting that environmental care values had begun to be internalized in their behavior.

These findings reinforce the perspective that maritime education extends beyond the transmission of knowledge and plays a significant role in shaping children's attitudes and character. Instilling values of responsibility and environmental stewardship from an early age serves as an essential foundation for developing a generation that is aware of the importance of preserving marine resources (Yuniarti. et al., 2016).

Feedback from teachers and the school principal indicated that thematic maritime learning was highly relevant to the school's coastal context. The alignment between learning materials and children's surrounding environment facilitated understanding and enhanced the meaningfulness of learning experiences. Additionally, the use of natural materials and simple learning media was considered cost-effective and easily applicable in daily classroom activities

Nevertheless, teachers also highlighted the need for further professional development, particularly in designing simple STEM-based activities integrated with maritime themes. This suggests that the sustainable implementation of maritime education in early childhood education requires continuous teacher professional development to ensure that learning strategies remain innovative and adaptable.

Discussion

The significant increase in children's maritime knowledge scores (from 38% to 82%) confirms the effectiveness of a thematic–contextual learning approach in early years education. This finding supports the argument of Nuryati & Fauziati, (2021), who emphasize that integrating maritime themes across multiple developmental domains enhances the meaningfulness of learning experiences. When children are exposed to tangible examples from their immediate environment such as sand, shells, and water they are better able to associate abstract maritime concepts with concrete, lived experiences. Such contextualization is particularly important in early childhood education, where learning is most effective when it is grounded in real-world phenomena familiar to the learner.

Play-Based Learning as a Core Pedagogical Strategy

Consistent with the findings of Fuad & Musa, (2017), play-based learning strategies involving games, guided discussions, and demonstrations were found to be highly effective in stimulating children's curiosity while maintaining their attention span within an optimal duration of 20-30 minutes. Activities such as the "waves in a bottle" experiment not only provided enjoyment but also facilitated early scientific inquiry. Through these activities, children engaged in observing, questioning, and drawing simple conclusions, which are foundational skills for scientific thinking. This finding reinforces the view that play-based pedagogy serves as a powerful medium for integrating cognitive, emotional, and exploratory learning in early years education.

CONCLUSION AND RECOMMENDATION

Based on the implementation and analysis of the learning process, it can be concluded that a thematic–contextual approach integrating play, storytelling, demonstration, and simple project-based activities is an effective strategy for enhancing early childhood maritime literacy. This approach not only facilitates a significant increase in children's knowledge within a relatively short period but also promotes active engagement, creativity, and the development of fine motor skills through the use of concrete learning media derived from the coastal

environment. These findings are consistent with experiential learning theory, which emphasizes the importance of direct experience and authentic contexts in early childhood education (Kolb, 2015; Hedefalk et al., 2015).

Furthermore, the internalization of maritime character values such as affection for the sea, discipline, and responsibility was found to be stronger when children were actively involved in social activities and real-life environmental conservation practices. This supports the view that environmental education in early childhood is most effective when delivered through participatory and action-based learning rather than through knowledge transmission alone. Therefore, the thematic–contextual maritime-based approach may be regarded as a holistic learning model that simultaneously fosters cognitive, affective, and psychomotor development in young learners.

Recommendation

Based on the findings and conclusions of this study, several recommendations are proposed. First, early childhood education institutions particularly those located in coastal areas are encouraged to adopt a maritime-based thematic–contextual learning model as part of the curriculum aimed at strengthening character education and environmental literacy. The integration of maritime themes across multiple developmental domains should be designed flexibly to ensure alignment with local social, cultural, and ecological conditions, as advocated within the framework of place-based education.

Second, enhancing teachers' professional capacity is a critical factor in the successful implementation of this model. Therefore, continuous professional development programs are required, with a focus on pedagogical creativity, the utilization of locally available learning materials, and the development of age-appropriate maritime STEM-based learning activities for young children Adequate provision of facilities and learning resources should also be prioritized by educational policymakers.

Third, further research is recommended to conduct long-term monitoring to evaluate the sustainability of children's pro-environmental attitudes towards the marine environment and their influence on environmental behaviors at subsequent stages of education. Longitudinal studies would make a valuable contribution to strengthening the empirical evidence on the effectiveness of maritime education from an early age, as highlighted in the global literature on education for sustainable development.

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