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MARITIME LEARNING INNOVATION BASED ON THE 2013 CURRICULUM IN EARLY CHILDHOOD EDUCATION

Nuryati

Universitas Bina Bangsa; Indonesia Correspondence Email; nuryatimamah98@yahoo.com

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Abstract

This study aims to develop a maritime curriculum design for Early Childhood Education that is relevant to the needs of the maritime community in the Banten region. The research methodology used is R&D with the ADDIE model. The steps of this development research include Analysis, Design, Development, Implementation, and Evaluation. The population was conducted in 3 schools, with a sample of 5 teachers from the school: 2 teachers, one teacher from BKB Kemas Dahlia, and one teacher from TKIT Mathla'ul Anwar Sadatani. Data collection techniques used in this study were observation, interviews, documentation, and questionnaires. The results of the study, based on the analysis stage, found that students had low reading interest and difficulty understanding maritime material, so the researcher designed a maritime learning model by integrating the 2013 curriculum. After the design was carried out, it was then developed in the form of a table containing the arrangement of themes, subthemes, and indicators that correspond to the maritime material integrated with the 2013 curriculum. The implementation stage was trialed in 3 PAUD institutions in the Banten region. In the final stage, namely evaluation, validation is carried out by several experts according to their fields, as well as by PAUD teachers.

Keywords

Innovation Wave, Learning Model, Maritime Affairs.



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INTRODUCTION

Early childhood education (PAUD) is the primary foundation for shaping the character, values, and mindset of the nation's next generation (Nuryati, D., Hufad, A., & Rusdiyani, 2023). During this period, children experience rapid development in cognitive, affective, and psychomotor aspects, necessitating meaningful, contextual learning that is appropriate to the socio-cultural environment in which they grow (Fadhilah, H., & Hadi, 2023). One of the relevant strategic issues in the current Indonesian context is the need to integrate maritime values into the PAUD learning process, especially in coastal areas where communities depend on marine resources for their livelihoods (Iskandar & Hasbi, 2019).

The maritime curriculum is an effort to develop a planned learning program to create an inspiring, communicative, interactive, and enjoyable learning process atmosphere, so that students acquire knowledge and attitudes that refer to maritime culture (Sulistiyono, 2016). Maritime education is a learning program designed by integrating maritime-themed early childhood curricula to foster a spirit of nationalism through meaningful activities (*Sitanggang & Rambe*, 2023). Maritime education can also be understood as a pattern of thought, namely a way of viewing oneself and one's environment as a maritime nation and state that influences children's cognitive, affective, and conative aspects (Siswanto, 2018). Maritime education aims to build a mindset or perspective on ourselves and our environment as a maritime nation that can influence thoughts, character, and actions (Rahayu, L., & Anggraini, 2022). This is the reason why maritime education is good for early childhood, because it can introduce the potential of marine and fisheries on the Indonesian coast to the younger generation (Rusdiana, H., & Rahmah, 2020).

The task of education in introducing the environment to early childhood is to establish a bond between children and nature (NAAEE, 2017). Children's connection with nature from an early age has a significant impact on their attitudes and behavior towards the environment in the future (Mustapa, 2015). Research (Fjortoft, 2014). Found that children who play in natural environments show improvements in gross motor skills, balance, and social coordination with their peers. The first years of childhood are very important for forming an attitude of environmental concern and a commitment to the sustainability of the earth (R. Wilson, 2012). Thus, children need to be introduced to the marine environment through learning activities that involve sensory, exploratory, and reflective experiences (Lestari, S., & Mulyani, 2021).

The curriculum is essentially a series of activities that children must undertake to be able to develop their potential and life skills optimally (Sukamto, 1988). The curriculum always changes to follow developments in the times and demands of society (Kurtilasadinata, 2018). Curriculum changes are also influenced by social and political factors and the dynamic learning needs of children (*Satia Imelda Yuanita, Heksa Agnes Boki Helmi,* 2022). The curriculum is no longer understood as just a collection of subjects, but as a learning experience that shapes children's character (*Sanjana,* 2015).

Several previous studies have shown that efforts to instill maritime values in early childhood have been carried out, but most are still limited to conceptual approaches and have not yet produced operational guidelines (*Iskandar & Hasbi*, 2019). Research by (*Nuryati*, *D.*, *Hufad*, *A.*, & *Rusdiyani*, 2023). *Has* compiled maritime teaching materials to foster children's maritime spirit, but has not yet developed a comprehensive learning model. In addition, there is still a need for a learning model that is developed scientifically with a systematic development approach such as ADDIE (*Mufidah*, *R.*, & *Rahma*, 2022). To address this gap, this study developed a maritime learning model based on the 2013 Curriculum in early childhood education institutions in the coastal areas of Banten using the ADDIE approach (*Taufik*, *A.*, & *Laila*, 2022). This model is expected to produce valid, feasible, and applicable learning innovations in integrating maritime values through thematic learning activities. In addition, this approach can foster maritime literacy, national character, and a love of the sea in early childhood (*Sulistiyono*, 2016). Ultimately, the results of this study are expected to strengthen the role of PAUD as a strategic institution in building the character of the Indonesian maritime nation from an early age (*Rusdiana*, *H.*, & *Rahmah*, 2020).

These various studies have identified significant research gaps. First, no research has yet produced a maritime learning model that is systematically integrated with the 2013 Curriculum in early childhood education (PAUD) units. Second, most research is conceptual in nature, failing to address the practical dimensions of learning that can be directly applied by teachers. Third, there is no model development approach based on the real needs of coastal communities, despite the importance of local context in early childhood learning. Fourth, there is no scientifically designed learning model using a systematic development approach, such as ADDIE (Analysis, Design, Development, Implementation, Evaluation), to produce valid and applicable educational products.

To address this gap, this study offers a novelty in the form of developing a maritime learning model based on the 2013 Curriculum for PAUD institutions in coastal areas of Banten. This model was developed using the ADDIE approach, which allows the learning development process to be

carried out systematically, measurably, and validly through the involvement of maritime experts, linguists, and PAUD practitioners. This innovative learning model not only integrates maritime themes in learning plans (RPPM and RPPH) but also utilizes concrete media such as sand, shells, mini ships, sea videos, and educational play activities that strengthen the character of the Pancasila Student Profile.

Conceptually, this model combines maritime values, such as love of the sea, mutual cooperation, and independence, with a *playful learning approach*, a key characteristic of early childhood education (PAUD). Methodologically, this study applies an ADDIE-based research and development (R&D) approach to produce a learning model that is not only theoretically relevant but also applicable in the field. Contextually, this study focuses on the coastal communities of Banten, so the results are expected to reflect the real needs of early childhood education institutions in Indonesia's maritime regions. Through the development of this learning model, it is hoped that a younger generation will emerge with maritime awareness, a love for the sea, and a strong sense of nationalism, reflecting the true character of the Indonesian nation. In other words, maritime education in early childhood education (PAUD) not only introduces the sea as an object of knowledge, but also serves as a means of building national identity and values rooted in maritime culture.

This study aims to develop a maritime learning model based on the 2013 Curriculum for early childhood education in the coastal areas of Banten using the ADDIE (Analysis, Design, Development, Implementation, Evaluation) approach. This model is expected to be a learning innovation that can help teachers integrate maritime values into children's learning activities thematically and contextually. In addition, this study aims to produce a valid, feasible, and applicable learning model while simultaneously fostering maritime literacy, national character, and a love of the sea in early childhood. Ultimately, the results of this study are expected to strengthen the role of PAUD as a strategic tool in realizing *Indonesia's vision as the World Maritime Axis* through maritime-based character education from an early age.

METHOD

The research method used in this study is Research and Development (R&D), with the model used being ADDIE (Analysis, Design, Development, Implementation, and Evaluation). In the context of this research, the author formulated a product model for maritime education learning that is integrated with the 2013 curriculum learning model (KURTILAS). The research procedure used to formulate a maritime education learning model integrated with the 2013 curriculum learning model (KURTILAS) is the ADDIE instructional approach. This method, developed by Dick and Carey, has a unique characteristic that is able to solve complex problems systematically and comprehensively. In this method, there are elements that accompany it to solve a problem, namely: Analysis, Design, Development, Implementation, and Evaluation (Muruganantham, 2015). In a diagram, this method can be depicted as follows:

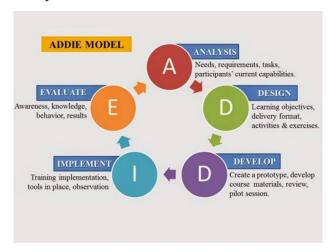


Figure 1. ADDIE Model

Source: https://grafispaten.wordpress.com/2016/01/02/model-pengembangan-media-pembelajaran-addie/

The Analysis-Design-Development-Implementation-Evaluation (ADDIE) model emerged in the 1990s and was developed by Reiser and Mollenda. One of ADDIE's functions is to serve as a guideline for developing effective, dynamic training program tools and infrastructure that support the training's performance.

Research Location

The research was conducted in the coastal area of Serang Regency, Banten Province, specifically at three early childhood education institutions in the Cinangka and Anyer sub-districts. These locations were chosen because they have maritime characteristics that align with the focus of developing a maritime-themed curriculum.

Data and Data Sources

The research data consists of:

- 1. Primary data, namely the results of interviews with PAUD teachers, observations of learning activities, and children's responses to media and learning models.
- 2. Secondary data, in the form of 2013 curriculum documents, PAUD guidebooks, and validation results from experts.

Population and Sample

The study population comprised all early childhood education (PAUD) institutions in the coastal areas of Serang Regency. The sample was determined using purposive sampling, selecting three PAUD institutions with characteristics that met the research needs. The sample consisted of 23 students, two PAUD teachers, and three experts (a maritime subject matter expert, a linguist, and a PAUD practitioner). Data collection technique

- 1. Classroom observation: directly observing the learning process in PAUD, especially the implementation of maritime themes, the use of media, and teacher-child interactions.
- 2. Semi-structured interviews with PAUD teachers and PAUD principals: exploring experiences, difficulties, and needs in implementing maritime education in K13.
- 3. Documentation: Collect RPPH/RPPM, syllabus, learning media used, and current teaching materials.
- 4. Pre-test and Post-test: before and after the implementation of the learning model to measure changes in maritime literacy, understanding of marine themes, attitudes, and national character.

Model Development Technique (ADDIE Stages)

- 1. Analysis: Analysis of teacher and child needs, and the condition of early childhood education centers in coastal areas. Collecting initial data through observation and interviews.
- 2. Design: designing maritime learning models (RPPM and RPPH) that are integrated with K13, selecting appropriate media and play learning methods.
- Development: creating prototype learning models, thematic learning media, instructional sheets, and teaching materials. Validation by maritime experts, early childhood education experts, and language experts.
- 4. Implementation: limited trial of the model in a sample PAUD, observation of learning implementation during several meetings.

5. Evaluation: measuring feasibility (expert validity), effectiveness (pre-post test, changes in attitude and character), as well as teacher and observer reflections on the practicality of the model.

Data Analysis Techniques

- 1. Qualitative data (interview results, observations, documentation): analyzed using *content* analysis and thematic analysis techniques. Data processing followed the Miles & Huberman model: data reduction, data presentation, verification/confirmation, and theme discovery.
- 2. Quantitative data (pre-test/post-test, maritime literacy scores, attitude, and character scores): analyzed using descriptive statistics (mean, percentage, standard deviation) and inferential statistics where possible (paired t-test or nonparametric test according to data distribution) to determine whether there are significant changes.

FINDINGS AND DISCUSSION

Findings

The results of the research are related to conditions in the field and provide solutions to problems that have occurred in the learning process. These problems include (1) Low interest in reading among children, (2) low literacy skills in numeracy among children in maritime material, and (3) unavailability of teaching materials in maritime material. This can affect children's abilities in facing more complex challenges, such as critical thinking in problem solving, creativity, communication, and collaboration. The research results obtained are as follows:

Analysis

Based on the results of research through interviews with PAUD teachers, the characteristics of students during learning were obtained, namely, students with low reading interest and who felt difficulty in understanding maritime material, because basically, early childhood learners learns through concrete objects, so they need media or teaching materials that are relevant and interesting for children. Furthermore, material analysis was carried out by identifying the contents of children's story books, collecting and sorting appropriate indicators for the development process.

Stage 2. Design

At this stage, a learning model design is carried out, which is formulated in accordance with the results of observations and studies in stage 1. The process of compiling the 2013 curriculum, as in the following table:

Table 1. Curriculum Documents

Subchapter	Integration Example	
A. Background	Contains information about the importance of Maritime education with the integration of the independent curriculum will be implemented in each PAUD unit.	
II A. Vision B. Mission C. Goals The Contains long-term ideals that are realized, containing ideas that each Punit wants to achieve. Mission		
	It is an effort that is intended to be realized or achieved by the PAUD unit based on the vision. ObjectivesContain the formulation of the output results or outputs that will be achieved at a certain time. In this case, the time period is short.	
Curriculum content	Religious and Moral Values The material content contains activities related to divine values and relating to oneself and one's environment as an expression of gratitude to God Almighty in order to optimize maritime affairs. Physical Motor Contains material on the development of motor activities, both gross motoric and fine motoric, health and safety behavior in the form of activities, in order to optimize maritime potential. Cognitive Contains material on learning and problem	
	A. Vision B. Mission C. Goals	

Source: (Iskandar & Hasbi, 2019).

Outlining maritime curriculum content in learning planning. This stage is an operational step in developing a maritime curriculum in PAUD units. In this case, PAUD managers and educators can integrate maritime education into learning materials. Several things that must be considered include the following: 1) Development of maritime themes. In theme development, there are several principles, such as proximity, simplicity, child interest, and incidentality. The development of maritime themes is then included in semester, weekly, and daily programs. 2) Adaptation of learning content and competencies. In this case, maritime content in the curriculum is a process of adjusting the content of basic competency indicators that include maritime content. This process can

be carried out by PAUD managers and educators in order to find and discover the level of achievement of child development in accordance with Permendikbud number 137 of 2014, and development indicators contained in Permendikbud number 146 of 2014 are integrated with maritime content. And the Decree of the Head of BSKAP No. 008/H/KR/2022 of 2022 concerning learning outcomes in early childhood education, elementary education levels, and secondary education, in the 2013 curriculum. Contains learning outcomes for all levels and subjects in the 2013 curriculum structure.

Stage 3. Develop

The development process includes validation results from several experts in their respective fields. This is done as a form of product improvement. The following are the validation results from maritime materials expert Dr. Irma Yuliantina, M.Pd., literacy expert Prof. H. Herli Salim, PH.d, and language expert Dr. Hj. Dewi Cahyaningrat, M.Pd.

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Figure 2. Expert Validation Results

Based on the validity of the results of the experts mentioned above, it can be concluded that the maritime material learning model for early childhood that has been developed by the researcher is declared good and suitable for use. This aims to find out the opinions of experts regarding the suitability of the product as a learning model and as a basis for improving and enhancing the quality of early childhood learning, especially in maritime materials.

Stage 4. Implementation

At this stage, the product will be tested in three schools in Cinangka and Anyer sub-districts, for PAUD teachers and children. After validation by material experts and media experts, it is declared valid or suitable for use, so the product is ready to be implemented in PAUD units in the Banten region. The main field trial is carried out after the product has been revised based on suggestions from teachers in the limited field trial. The implementation of the main field trial involved 23 children and two teachers, namely eight children and one teacher from BKB Kemas Dahlia 1 and 15 children and one teacher from TKIT Mathla'ul Anwar Sadatani. The information obtained from teacher response data and student responses is used as a consideration for revising the final product.

Stage 5. Evaluation

At this stage, the product will be piloted in three schools in the Cinangka and Anyer subdistricts, with teachers and early childhood education (PAUD) children. A summary of the teacher responses from the limited field trials is shown in the table below.

Kriteria Indikator Skor Kesesuaian dengan kompetensi inti (KI) dan 24 kompetensi dasar (KD) Respon Guru Kesesuaian dengan kurikulum (urutan Langkah 23 dari mudah ke sulit, dan menarik bagi anak) 25 Kesesuaian penilaian dengan materi Jumlah Skor Keseluruhan 72 4.2 Rata-Rata Skor Kategori Baik

Tabel 2 Angket Respon Guru

Based on the table above, the first indicator got a score of 24, the second indicator got a score of 23, and the third indicator got a score of 25. The total score of all indicators in the teacher response questionnaire was 72 out of a maximum score of 80. The average score obtained was 4.2. Based on these data, the overall teacher assessment was "good," which means that it is worthy of being tested in the next stage after improvements have been made.

Discussion

The research results show that the integration of maritime values into early childhood education (PAUD) learning in coastal areas of Banten is still very limited. Most PAUD institutions in coastal areas have not yet systematically implemented maritime-based learning, despite the region's strong cultural and social potential related to marine life. Field data shows that 78% of PAUD teachers have never developed learning themes related to the sea, beaches, or the lives of fishermen. This finding confirms that the learning process in coastal PAUD institutions is still general and does not reflect the character of maritime communities. This situation demonstrates a gap between national policy and learning practices on the ground. The Indonesian government, through the Global Maritime Axis National Movement (GNPMD) and Presidential Regulation No. 16 of 2017 concerning Indonesian Maritime Policy, has emphasized the importance of maritime education as part of national character development. However, this policy has not yet been translated into an operational curriculum design at the early childhood education (PAUD) level.

Research results indicate that the integration of maritime values into early childhood education (PAUD) learning in coastal areas of Banten is still suboptimal (Ningsih, R., & Amelia, 2023). Most PAUD institutions do not yet have thematic learning tools that explicitly include maritime elements, so the implementation of maritime education is still limited to simple introductory activities (Sumarti, S., & Rahayu, 2021). This condition shows that the development of a maritime-based curriculum still requires concrete strategies and regional policy support (Daryono, H., & Mustakim, 2022).

Observations and interviews show that most early childhood education teachers do not yet fully understand the concept of maritime education and how to integrate it into learning (Rahman, N., & Wibowo, 2020). However, teachers play a crucial role as facilitators who connect children's experiences with their socio-cultural environment (Agustina, L., & Rahmawati, 2021). Maritime education is expected to become part of the local content that not only introduces the sea as a source of life but also instills the values of mutual cooperation and environmental awareness (Setiawan, R., & Putra, 2021).

A local potential-based learning approach has been proven effective in increasing children's engagement in learning activities (Arini, D., & Lestari, 2022). In the context of coastal early childhood education (PAUD), activities such as playing in the sand, learning about marine life, and making miniature ships are fun ways to instill maritime values (Rosdiana, D., & Herawati, 2023). This

context-based learning helps children understand the relationship between humans and the sea as part of everyday life (R. Fitri., 2021).

The ADDIE model applied in this study has proven to be systematic and flexible in developing valid learning products (Yuliantina, I., & Salim, 2024). The analysis stage was used to identify the needs of teachers and children in coastal areas (Afandi, M., 2020). In the design stage, the maritime theme was developed into exploratory activities such as "The Sea is My Friend" and "I am a Fisherman's Child" (Marlina, E., & Rahman, 2019). The development stage produced concrete media in the form of posters, sea sand, and educational videos about marine ecosystems (Fatmawati, L., & Setiawan, 2020).

During the implementation phase, children demonstrated high enthusiasm for marine-themed learning activities (Nuraeni, T., & Yuliani, 2022). These results reinforce the finding that real-world learning fosters curiosity and social skills in children (Fadhilah, H., & Hadi, 2023). Furthermore, direct interaction with coastal nature promotes balanced cognitive and emotional development in children (Munawaroh, 2018). Data analysis results show a significant increase in environmental awareness, curiosity, and cooperation among children after participating in maritime-based learning (Mulyono, 2021). This proves that maritime education can contribute to character development in children from an early age (Sari, PM, & Wahyuni, 2023). These findings also align with the Pancasila Student Profile concept, which emphasizes the importance of mutual cooperation and love for the homeland (Prasetyo, A., & Wati, 2020).

The application of maritime values in early childhood education (PAUD) also helps strengthen the local cultural identity of coastal communities (Lestari, S., & Mulyani, 2021). Children learn to recognize their parents' professions, understand the importance of the sea, and appreciate the hard work of fishermen (Tulljanah, N., & Amini, 2021). Thus, this learning is not only academically oriented but also builds children's emotional attachment to their environment (Rohani, S., & Murniati, 2019). In addition to cognitive benefits, maritime-based learning also fosters responsibility and concern for marine ecosystems (Sutopo, A., & Ningsih, 2023). Through educational play activities, children are introduced to the dangers of plastic waste in the ocean and the importance of maintaining clean beaches (Wahab, MA, Ulya, R., & Susilawati, 2025). This process fosters early ecological awareness, which forms the basis for sustainable behavior in the future (Azizah, N., & Wulandari, 2020).

The maritime learning model developed in this study is an innovation in early childhood education that aligns with the characteristics of coastal communities (Rahayu, L., & Anggraini, 2022). This approach not only strengthens children's competencies but also fosters a spirit of nationalism and a love of the sea (Rusdiana, H., & Rahmah, 2020). Thus, maritime education in early childhood education (PAUD) is not merely an introduction to the sea as a learning object, but also a means of developing national character based on maritime culture (Siswanto, 2018). The maritime curriculum design developed in this study integrates maritime values with the 2013 Curriculum structure, which is oriented toward strengthening the character of the Pancasila Student Profile. The integration process is carried out through four main domains:

- 1. Cognitive domain, introducing the concept of the sea, marine animals, marine transportation, and professions of coastal communities.
- 2. The affective domain fosters a love for the sea, a sense of gratitude for natural resources, and concern for the marine environment.
- 3. Psychomotor domain, through maritime-based exploration and play activities such as making miniature ships, arranging sea sand, and simulating fishing.
- 4. The socio-emotional realm, instilling the values of cooperation and mutual assistance, which are synonymous with the lives of coastal communities.

The integration of these four domains ensures that maritime learning is not an optional theme but rather embedded naturally within the daily thematic activities of early childhood education (PAUD). This allows children to learn through concrete experiences that are close to their lives, in line with the principle of learning through play in early childhood education (Ministry of Education and Culture, 2020). From a curriculum perspective, the results of this study indicate that the maritime learning design in coastal PAUDs in Banten can be used as a model for a local adaptive curriculum that supports the 2013 Curriculum. This adaptive curriculum allows each region to integrate local potential into the early childhood learning process. With this approach, PAUD not only serves as a means of developing children's academic potential but also serves as a medium for the nation's maritime cultural heritage.

This research also contributes to strengthening the theory of local context-based curriculum development. The use of the ADDIE (Analysis, Design, Development, Implementation, Evaluation) approach has proven effective in producing a valid, practical, and relevant learning model that meets the needs of coastal communities. The analysis and design stages allow researchers to explore

the real needs of teachers and students, while implementation and evaluation provide empirical data on the model's effectiveness in the field. This aligns with findings (Nuryati, D., Hufad, A., & Rusdiyani, 2023). The ADDIE development model can produce flexible and contextual learning designs.

Overall, the results of this study strengthen the argument that maritime education in early childhood education (PAUD) is not simply an introduction to marine themes, but also a means of developing national character and the nation's maritime identity. Through contextual learning based on coastal culture, children are expected to grow into a generation that understands the sea, respects the environment, and is proud of Indonesia's maritime identity. The implication is that local governments and early childhood education units (PAUD) need to use the results of this research as a basis for developing local content for maritime education in coastal areas. The curriculum resulting from this research can serve as a reference model for the development of maritime-themed RPPM and RPPH, as well as teacher training programs in implementing maritime culture-based education at the PAUD level. Thus, early childhood education is not only an academic tool but also a strategic platform for realizing Indonesia's vision as a Global Maritime Axis through the development of the character of a maritime generation from an early age.

CONCLUSION

The development of the learning model in this study is a maritime-themed learning model, in its preparation, namely by integrating the 2013 curriculum in PAUD units in Banten. This maritime content in the curriculum is a process of adjusting the content of basic competency indicators that include maritime content. This process can be carried out by PAUD managers and educators in order to find and determine the level of child development achievement in accordance with the Ministry of Education and Culture Regulation No. 137 of 2014, and the development indicators contained in the Ministry of Education and Culture Regulation No. 146 of 2014 are integrated with maritime content. The goal of developing this learning model is to introduce the marine and fisheries potential of Indonesia's coast to the younger generation, thus fostering a love of the sea in the community. Early childhood marine education can be considered a solution for developing future human resources, particularly in managing Indonesia's marine resources.

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