Environmental Literacy Through Tales of the Archipelago for Early Childhood

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Abstract

\textbf{Purpose} – This study aims to determine the extent to which Indonesian fairy tales help early childhood in environmental literacy. The environmental literacy movement is increasingly being socialized to raise awareness of the importance of maintaining environmental sustainability and natural balance. Through the fairy tales of the archipelago, environmental literacy is introduced to early childhood in a fun way, helping their social-emotional development, skills, and attitudes to care for the environment as early as possible. The richness and diversity of the archipelago provide many benefits for present and future life. Archipelago fairy tales are part of ethnoparenting to perpetuate the richness of the archipelago’s culture and local wisdom.

\textbf{Design/methods/approach} – The method used was a qualitative method, the research describes a descriptive narrative and is strengthened by data in the field obtained through interviews, filling out questionnaires, and direct observation.

\textbf{Findings} – The study results show that students who listen to Indonesian fairy tales in class have broad environmental insight and are quickly reminded to behave in environmental care. The children received adequate knowledge, but their skills, attitudes, and understanding were lacking. So they tend to ignore the environment. The following finding is that a group of children who are not interested in the fairy tales of the archipelago does not know the environmental conditions, so it is not easy to behave in environmental care. Meanwhile, children who are enthusiastic about the archipelago’s fairy tales at school and repeat them at home produce children who really appreciate the environment and apply their insights more creatively in their environment.

\textbf{Research implications/limitations} – The study took place in an educational institution with 30 students, four educators, and 30 parents.

\textbf{Practical implications} – This study hoped that further research will increase environmental awareness with a different approach, involving students’ parents as role models.

\textbf{Originality/value} – The study fundamental to help teachers instill environmental literacy in students their students as early as possible through the fairy tales of the archipelago.

\textbf{Keywords} Ethnoparenting, Early childhood education, Environmental literacy, Archipelago fairy tales

\textbf{Paper type} Case study
1. Introduction

Indonesia has a unique, comprehensive, and diverse natural environment with peculiarities in each region. Availability of nature as a gift from God Almighty is also a trust that must be kept in balance (Ummah, 2022) so as not to backfire as a result of human negligence itself. Realizing the beauty of nature and the usefulness of the resources in it, humans exploit it in the name of technological development (Rusdina, 2015). Nature is starting to be damaged, and natural resources are running low, but with knowledge and understanding, we hope that there are still natural resources as a source of prosperity for the life they can be passed on to future generations (Rosana, 2018).

Environmental literacy began to be massively mobilized as an interpretation understanding of environmental education (Burke et al., 2017; Mayes & Center, 2022; Stevenson et al., 2019) in the form of integrated knowledge and skills in various subjects in school (Kusumaningrum, 2018). Environmental literacy is an effort to know how the natural environment and human behavior provide mutual benefit (Karatekin, 2012). Cognitive understanding of the importance of environmental sustainability is built in line with the awareness, sensitivity, knowledge and understanding, attitudes and skills, and the desire to participate in environmental care activities that still need improvement (Fleer, 2011; González-Rodríguez & Tussyadiah, 2022; Karatekin, 2012; Karol & Smith, 2021).

Early childhood is an asset that attracts the attention of many people. They are an agent of change in the future. Through cognitive and emotional activities, early childhood can absorb helpful information, including matters relating to environmental literacy as a form of actualizing environmental education. At the level of early childhood education, environmental education can be delivered through fairy tales. Fairy tales are one of the traditions of speech that can be used as a practical learning method, internalizing moral values in an exciting way. Listeners of fairy tales will be carried away in the storyline so that the message of wisdom can be conveyed quickly. Through fairy tales, listeners will imagine the atmosphere behind the fairy tale. The fairy tale of the archipelago, with the backdrop of the Indonesian natural environment as the setting for the storyline, helps listeners to visualize imagination (Agbenyega et al., 2017). Fairy tales as imagination tours inspire listeners to be emotionally involved and generate new thoughts (Nurdiarti & Prabowo, 2021).

According to Piaget’s theory, there are four stages of children’s intellectual development: sensorimotor, pre-operational, concrete operational, and formal operational. Children’s language development begins to appear extraordinary at the concrete operational stage. Children begin to actualize themselves through language. Through assimilation, children can receive information in schematic form through listening, seeing, and feeling. Children become interested in reading books and learn new knowledge by imitating, observing, and demonstrating it.

From reading books, children learn about environmental literacy as a provision in efforts to maintain the environment in the surrounding environment. Hopefully, their environment will be protected from damage detrimental to human life and other living things in the future (Widodo, 2004). The role of parents and other adults around them is needed as a facilitator who provides facilities and infrastructure. The Government of Indonesia, in this case, the Minister of Environment and the Minister of National Education, pays special attention to environmental education by issuing a decree with the number: Kep No. 07/MenLH/06/2005 No. 05/VI/KB/2005 related to integrated development and training in subjects given in schools.

Ethnoparenting is a parenting model that upholds local cultural values. Children raised in an area’s family environment will imitate the behavior of the adults around them and then become a habit within themselves, in line with the socio-cultural order and prevailing values (Puspawati & Ulya, 2021). The diversity he finds in his new environment at school age is a process of enriching the management of his social and emotional abilities, opening his horizons about other environments outside his environment. The ethnoparenting model is a parenting system that mainstreams the parenting value system (Suratman, 2021), divinity, the principal value of human identity, and concern for nature and the environment. Fairytale Nusantara is a learning media that
introduces a particular area's social and cultural environment, embodying one of the elements of the ethnoparenting model in Indonesia, namely concern for nature and the environment (Rachmawati, 2020). Enrichment of children’s insight can be facilitated through archipelago fairy tales that describe the situation of the fairy tale background environment through speech. How is the intelligent behavior of story characters towards the environment? What are the environmental conditions that occur in each fairy tale scene? Parallel to knowledge about the environment in general, children will easily find what skills and attitudes can be implemented in their local environment (Kusumaningrum, 2018).

Researchers have developed information about “Green Schools,” which introduce students to the environment early to foster their concern for and participation in preserving the natural world (Terusan & Sudirman, 2020). Thus a sense of concern for the environment can grow and become an agent of change in nature conservation in the surrounding environment.

2. Methods

The study used two approaches: quantitative and qualitative (mixed method). Using the research paradigm of experimental research design, the researcher obtains data in a qualitative narrative manner and then quantitatively proves it with numbers so that it is logically accurate and can be presented. In addition, researchers reveal the phenomena found in depth using the instrument development model. Researchers develop and implement quantitative instruments based on qualitative findings in the field. In the initial phase, the research topic was presented to several participants, producing narrative qualitative data that became the basis for developing quantitative questions and instrument scales. The second phase collects data by implementing and validating quantitative instruments.

Data were collected through observation followed by discussion. This discussion involved educators and students, as well as several parents. Documents assist the data analysis stage in the form of fairy tale books, photos of activities, and government policy documents on environmental education. To describe the research results in-depth, the researchers conducted interviews with educators at the institution, parents of students, and figures of fairy tale activists in the local area. The results of observations were collected and assessed on a multilevel scale.

The study was conducted on 30 students at an educational institution in Cimahi, with 30 parents of students and four educators. This institution is located in the border area of Cimahi city with population demographics with diverse backgrounds. The reason is that fables are very popular with young children. The researcher started the activity by inviting the children to listen to Indonesian fairy tales from Nusantara Bertutur: Fairy Tales. Kompas Book Publishers publish them in 2015. This book contains 11 fables with various themes and backgrounds in Indonesia’s natural environment in various regions. From the book, three fairy tales were taken from different Indonesian natural backgrounds.

The first stage, the researcher conducted storytelling activities in front of the class, a frequency of once a week on Fridays. After each storytelling, the researcher reviews and observes the students discover the extent to which environmental understanding and knowledge have been explored. The second stage, the researchers distributed questionnaires to parents and teachers at the institution. The questionnaires distributed were about fairy tales, environmental knowledge, and understanding of environmental conservation. The data obtained from the questionnaire were analyzed using a quantitative approach, while the interviews’ results were analyzed using a qualitative approach. For the sake of accuracy, the researcher conducted a literature study which was elaborated with the results of qualitative analysis. The third stage, the researcher designs infographics about the fairy tales of the archipelago that have been conveyed to the students and makes a picture of the influence that appears on the students. The results of this analysis help researchers to describe the achievement of environmental literacy skills in students through Indonesian fairy tales. The fourth stage, the researchers conducted discussions with students to validate the graphic info compiled in the previous stage. The results of this discussion provide input for researchers about environmental literacy obtained from the fairy tales of the archipelago.
Environmental Literacy Through Fairy Tales of the Archipelago at AUD

Figure 1. Research Design

Figure 2. Mixed Method
3. Result

Tales of the Archipelago Bertutur are mere fiction or fantasy. The prologue of the fairy tale depicts the atmosphere in an area as the background. Not too detailed, but enough to spark children’s curiosity even more. Based on the theory of psychological constructivism, students actively construct knowledge assisted by social interactions, shaping their learning experience. Psychological constructivism focuses on the resources, information, and assistance of others in building one’s knowledge. Students are allowed to express opinions in their language and share their experiences so that they become more creative and imaginative students and have the opportunity to create new ideas. Through Nusantara fairy tales, children have the opportunity to develop their environmental literacy knowledge.

3.1. Values in Archipelago Fables

3.1.1. Gru, True Friends, written by Nelfi S.

The background of the fairy tale is the waters of the Raja Ampat islands of Papua. The storyteller tells about the amazing marine life with swimming fish and colorful corals. Calm sea waves bring the atmosphere more beautiful and fun. Such concrete exposure takes children’s imagination and fantasy to wander as if they were there (Rizky Aryono, Sukatman, 2005). The children will fight for their opinion on environmental issues with their knowledge about the damage to nature in the sea and the consequences they experience in their area. It opens new insights for them and is then linked to the reality close to them, namely how to maintain the natural beauty of the sea to be free from damage and pollution (Aiman, 2017).

The fairy tale begins with Gru, the octopus who has no friends. He wants to be able to play with his friends at the bottom of the sea, but the fish friends do not want to play with Gru. Gru’s different body shape and face exclude Gru from cute little fish. However, Gru was kind. Even though he was criticized, he kept his little friends playing among the seaweed and coral reefs. Until a small fish-eating shark chases one-day Gru’s friend. Gru saves them his way. All the fish are safe to play together again.

The knowledge conveyed is strengthening literacy of the underwater environment, starting with children’s apperception of the underwater world from films or Youtube videos. The amplified character value is the character of students willing to accept differences in socializing.

3.1.2 The Disappearance of Aum Harimau, written by Yudi Suharso

The natural environment described in this fairy tale is a forest on the island of Sumatra. The forest is wild and overgrown with many large trees, protecting the animals’ lives, including the Sumatran tiger named Aum. Because of his heart’s kindness and body’s strength, Aum became the forest leader. From this fairy tale, children’s perceptions of the benefits of forests can be drawn, and what would happen if there were no forests (Kunarso et al., 2019)? Various animals are told in the tale, describing how thick the forest is. Until one day, Aum Harimau disappeared. All lost Aum and agreed to look for Aum to the limits of the human village. In this fairy tale, the character of solidarity and the figure of leadership (Rohmah, 2018) are raised. Although they are of different types, they work together to find Aum the Leader. It turns out that forest loggers caught Aum. Aum always scares them when they want to cut down trees in the Sumatran forest. Aum does not want the forest as a place to live for him and his friends to be destroyed by humans. When Aum is caught off guard, Aum is captured and imprisoned. Luckily, forest guards came to save Aum. The forest is safe from the loggers, and Aum is safe.

The knowledge that is built is related to this is forest environmental literacy. Children can be invited to explore the benefits of forests for all living things (Chaniago et al., 2019). At the same time, the highlighted character values are about leadership and working together.

3.1.3. Kuji the Kind, Written by Aira Kimberly

This fairy tale is unique, taking the background of the natural environment on the ground in the Alas Roban forest, Batang Regency, Central Java. The land surface inhabited by small insects and microorganisms should not be ignored (Notohadiprawiro, 2006). They are the decomposers of the food chain cycle in the universe’s life. It is said that a dung-eating beetle, Si Kuji, is teased by a
swarm of red ants. Kuji becomes sad at being shunned. However, Kuji did not become a grudge. When the ant received a threat from the grasshopper, Kuji defended the ant. Grasshoppers run wild. Not because of fear but because of Kuji's body odor. The red ant thanked Kuji. It turns out that his smelly body is also beneficial. This fairy tale teaches children to maintain the balance of nature. Children are introduced to insects that eat feces, decompose organic waste, help the absorption of nutrients for the soil to remain fertile, and help livestock to be free from toxic substances caused by accumulated dirt (Indarjani & Miko, 2020).

The value obtained from this fairy tale is that the character is always patient and forgiving. In addition, it teaches children always to respect each other without any differences. Environmental literacy is developed through how children understand soil’s function and keep it from polluting garbage and inorganic waste. Here, children can also be taught not to burn garbage indiscriminately because it can destroy bacteria and decomposing insects that live on the ground (Wulansari et al., 2019).

3.2 Processing of quantitative and qualitative observation data
The researcher observed the children's behavior in the first stage after listening to fairy tales. Indicators of achieving environmental literacy skills in the form of knowledge, understanding, skills, and attitudes towards the environment (Afrianda et al., 2019) adapted to the stage of the ability of early childhood. The stages are as follows: after listening to the fairy tale, the teacher gives open questions related to the environment behind the story. Then the extent to which the skills acquired by the children were observed through their ability to express their imagination through drawings on paper. This activity hones their cognitive abilities and creativity (Rosyidah, 2017). Through courage to express the wisdom gained from the fairy tale in his language, attitudes, and understandings that arise in children are observed. The following are the results of observations in each fairy tale session attended by 30 children aged 5-6 years.

Table 1. Environmental Literacy after listening to Gru’s fairy tale True Friend

<table>
<thead>
<tr>
<th>No.</th>
<th>Progress Indicator</th>
<th>Undeveloped</th>
<th>Starting to develop</th>
<th>Develop as expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Get to know the marine biota environment</td>
<td>0</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>2.</td>
<td>Understanding the preservation of marine life</td>
<td>2</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>3.</td>
<td>Applying environmental literacy in daily life</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>4.</td>
<td>Shows the character of respect and respect for friends</td>
<td>0</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

Understanding and awareness of caring for the environment have been carried out well. Researchers found 15 children who had not shown good character, exemplified by the story characters.

Table 2. Environmental Literacy after listening to the fairy tale The Loss of the Tiger Aum

<table>
<thead>
<tr>
<th>No.</th>
<th>Progress Indicator</th>
<th>Undeveloped</th>
<th>Starting to develop</th>
<th>Develop as expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Getting to know the forest environment</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>2.</td>
<td>Understanding forest sustainability</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>3.</td>
<td>Applying environmental literacy in daily life</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>4.</td>
<td>Demonstrate leadership character and work together</td>
<td>0</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

Children get to know the forest on the island of Sumatra, which is rich in large trees and protected animals. The forest environment is more accessible for students because it is close to their daily environment. Children are fascinated by wild animals (tigers) and have recognized them for real at the zoo. How the Tiger Aum defends the trees in the forest from the plunder of the inhabitants with its terrifying fangs. Researchers found the ease of developing environmental literacy through this fairy tale. Children look more enthusiastic and enthusiastic, with a clear image.
Table 3. Environmental Literacy after listening to the story of Kuji the Good Heart

<table>
<thead>
<tr>
<th>No.</th>
<th>Progress Indicator</th>
<th>Undeveloped</th>
<th>Starting to develop</th>
<th>Develop as expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Getting to know the environment on the ground</td>
<td>0</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>2.</td>
<td>Understand the preservation of the soil</td>
<td>5</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>3.</td>
<td>Applying environmental literacy in daily life</td>
<td>5</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>4.</td>
<td>Show affection and respect for friends</td>
<td>5</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

The last tale shows a different condition. Girls are not interested in the soil environment and the animals in it. During applying soil environmental literacy in their daily lives, the girls only grimaced, feeling amused and disgusted. Poor Kuji has worked hard to keep the soil fertile. Planting vegetables to keep the soil fertile, all children love it. Girls are not involved when picking up plastic waste, loosening the soil, and looking for worms to store in the planting area. In essence, the children get to know Kuji, the beetle that collects dung to be broken down into fertilizer for the soil. Then their behavior does not want to damage the land and keep the environment clean. Sending the family not to burn garbage at home did not work ultimately. On average, the children expressed disapproval from their parents, who are used to burning garbage at home.

3.3 Data processing questionnaire results

The next source of information data is the attitude statement questionnaire from student parents. The measurement uses a Likert scale, with consideration to limit the scope of the discussion from the proposed statement. In addition, precise and accurate data is needed in determining attitude statements.

Table 4. Summary of answers from the Parent Questionnaire

<table>
<thead>
<tr>
<th>No.</th>
<th>Attitude statement</th>
<th>Never</th>
<th>Sometimes</th>
<th>Routine</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reading fairy tales at home</td>
<td>8%</td>
<td>52%</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>Introducing children to socio-cultural values in the home environment</td>
<td>0</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>Managing waste at home (reuse, recycle, reduce and regrow)</td>
<td>40%</td>
<td>40%</td>
<td>20%</td>
</tr>
</tbody>
</table>

From the table above, 60% of the parents are routine and used to stimulating children through fairy tales. As a result, the child quickly understands fairy tales and masters environmental literacy. Moreover, other children often get fairy tales at school, so there are no significant difficulties when listening to them, but they have not shown maximum results.

4. Discussion

In previous research (Nugraha et al., 2021), explained that environmental literacy skills do not recognize disparities in class level and educational background. The most influential is how teachers and adults around them stimulate their students to care about the environment with routine and applicable programs. It shows that the early childhood level has good environmental literacy skills with routine and applicable environmental care programs.

Research from (Rakhman et al., 2021) shows that the fairy tales of the archipelago began to be in demand and received attention from generation z to be preserved as a spoken cultural heritage. It encourages educators to start presenting fairy tales as learning media that can improve early childhood environmental literacy skills. Research (Rachmawati, 2020) about the ethnoparenting model in Indonesia has four main elements (core values), namely the value of divinity, human identity, cooperation, and involvement in parenting by the community, including interaction with nature and cooperation. It is relevant to developing environmental literacy built through fairy tales involving the people nearby.

Karatekin (2012) also researched the components of environmental literacy, namely environmental knowledge (Environmental Knowledge), abilities (cognitive skills), behavior (behavior), and influence (affect). In line with this research, how to grow environmental literacy...
skills through archipelagic fairy tales whose contents introduce various natural conditions in the country. The content of the fairy tale is based on the fiction of life. These stories help children to understand life and are consciously enriched with exciting plots. The researcher looks at the ethnoparenting point of view of caring for nature and the environment in developing environmental literacy through the fairy tale tradition of the archipelago.

The storytelling method is effective in providing stimulus too early childhood. When combined with environmental literacy, even more so (Maureen et al., 2020). Fairy Tale Nusantara develops children's imagination and brings the environment closer to an area in the country by interpreting the surrounding environment. The structured fairy tale approach develops children to understand and interpret the surrounding environment skillfully. The fairy tales of the archipelago were specially selected to suit the needs of the students at that time. Children's interest in marine life is a particular preoccupation because the child lives in an area far from the sea. Of course, their imagination will be provoked and give unexpected reactions. Unlike children who live in coastal areas, fairy tales about marine life are very common. Fairytale Nusantara provides information about environmental knowledge and understanding in a fun way, and then it is implemented in solving environmental problems at home and at school in a simple way with family, teachers, and friends.

One of the essential elements of ethnoparenting is the habit of parents instilling social and cultural values in the home environment. The surrounding environment plays a role in providing assistance and guidance in order to gain independence. From the observations, all children are already developing well, even leading to the expected development stage. The results are hoped to bring up good character and behavior in their children.

What schools teach to care for the environment can be implemented well but not optimally. Actual practice as a form of understanding and concern for environmental literacy in children's daily lives has not yet been formed at home. Sometimes children forget or do not feel guilty when disposing of garbage not according to the rules even though they have been previously educated. Only 20% of parents gave examples of processing waste as a form of concern for the environment. Environmental literacy will be easy to master and become a habit in students’ daily life if they get concrete examples from parents and other adults in the home environment as role models.

5. Conclusion

Archipelago fairy tales, an exciting medium for early childhood, contain many values in contact with the environment. Although children have never seen or experienced it for real, children can feel its existence through fairy tales. It can even inspire them to be involved in environmental care activities around them. The researchers concluded that the role of parents is vast in supporting environmental literacy skills. Ethnoparenting is enhanced by coaching their parents because parents are the number one person who is always close to their children, who will build their body and soul to grow into people who are responsible for the world they step on.

Declarations

Author contribution statement

Ammy Ramdhania conceived the presented idea. Heny Djoehaeny developed the theory of environmental literacy. All authors discussed the results and contributed to the final manuscript.

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Data availability statement
The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declaration of interests statement
The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

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