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Rural Children's Perceptions and Definitions of Nature

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Abstract

Children's perceptions towards nature during childhood is crucial as it affects a child behaviour towards the environment and nature in later life as an adult. However, the number of children playing in the outdoor environment where nature exists including rural areas is rapidly declining. The phenomenon of the disconnection with the natural world will develop gaps between children and nature and subsequently may also breed apathy towards the natural environment. Therefore, this study investigates rural children's definition and perceptions on nature. Finding suggests that it is important to reconnect children with nature. The directions for future research are also discussed.

Keywords: Children; nature; definition; perception

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1.0 Introduction

Children's perceptions towards nature during childhood are crucial as it affects a child's behaviour towards the environment and nature in later life as an adult. Studies also have found that positive perception and connection with nature that has developed since childhood have influenced the adults' frequency of visit to green areas, perceptions of the natural environment and natural recreation activities, environmental career choices and environmental concern, as well as attitude and behaviour toward activities with nature (Mustapa, Maliki, & Hamzah, 2018). Frequent experiences with and in nature have been found to be the significant factors that influence children's perception and connection with nature (Zhang et al., 2014).

However, rapid urbanisation and population growth, mostly in developing countries, have reduced children's experiences with nature, especially direct experiences, especially during COVID-19 (Chawla & Derr, 2012; Friedman et al., 2022). As a consequence of disconnection with nature, children have been found to have lower CTN (Cheng & Monroe, 2010; Ernst & Theimer, 2011), feel sad (Friedman et al., 2022), they lack any knowledge and are unaware of nature, express negative feelings toward nature known as biophobia (Aaron & Witt, 2011), show a lack of appreciation and enjoyment towards the natural environment and convey more expressions of fear and dislike, especially towards wild nature (Simmons, 2006). Also, children who lack exposure to nature will see themselves as separated from the natural world (Phenice & Griffore, 2003) and have less empathy toward nature (Louv, 2008).

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If today's children are disconnected from the natural world and show apathy towards the natural environment, how will they manage and protect nature in the future? They may treat nature as something to be controlled rather than protected or preserved. Hence, it is vital to understand children's definitions and perceptions of nature. Most studies on children's definition and perceptions of nature have been conducted in Western countries, and few have been conducted in Asian countries, especially in the Malaysian context. It is vital to fill this gap because studies have found that people with different cultures engage differently with nature (Milfont, 2012). Also, most studies on children's views towards nature have focused on urban children with an assumption that urban children are more disconnected from nature. Nevertheless, rural children also have been found to have disconnection with nature issues even though they are surrounded more by natural elements. Therefore, this study aims to explore rural children's definitions and perceptions of nature. Specifically, the objectives of this study are to delineate the meaning of nature from children's perspectives and to investigate children's perceptions of nature.

2.0 Literature Review

2.1 Biophilia Hypothesis

The term 'biophilia' was coined by evolutionary biologist Edward O. Wilson in 1984. He defined biophilia as "the innate tendency to focus on life and lifelike processes". He suggested that humans have an innate need to connect with all living things because humans evolve in nature; innate needs have become part of our genes (Wilson, 1984). In other words, biophilia is a love of nature, an attraction to nature, and a feeling of connection to nature (Kellert & Wilson, 1993). Kellert and Wilson (1993) suggested that biophilia, which links humans with nature, is vital for humans' emotional and psychological development. Instead of the need for material and food resources from nature, the biophilia hypothesis states that humans need nature for aesthetic, intellectual, cognitive, and even spiritual meaning. Kahn (1999) proposed that culture, social experience, and direct experience with nature influence people's biophilia tendencies. Kahn and Kellert (2002) also suggested the same concept, which is that humans need additional learning and experience to enhance biophilic tendencies.

Kahn and Kellert (2002) further explored humans' relationship with nature and described it as demonstrating dependencies and values. The nine values are utilitarian, naturalistic, ecologicistic-scientific, aesthetic, symbolic, humanistic, moralistic, dominionistic, and negativistic. However, Kellert (2005) suggested that utilitarian and negativistic values decrease during middle childhood. Utilitarian value refers to the ability of nature to provide materials and supply needs. Naturalistic value reflects the behaviour with nature that helps to develop a sense of curiosity, exploration, discovery, and imagination. Ecologicistic-scientific value emphasises the knowledge and assimilation of nature. Aesthetic value refers to the visualisation of nature in the context of physical attraction. The symbolic value indicates the capability of nature to stimulate humans' ideas and communication. Nature can assist with the difficult aspects of psychosocial development by creating stories and fantasies. Humanistic value emphasises the emotional bonding with and fondness for nature. Moralistic value reflects a spiritual and ethical bonding with nature; this value implements the sense of determination to protect and respect nature. Dominionistic value demonstrates the desire to dominate and control nature. Finally, negativistic value reflects the avoidance and resentment of nature; this value illustrates the act of prevention of harm and injury and minimising uncertainty when dealing with nature.

2.2 Children and Nature

The bonding between children and nature can be explained by ecopsychology perspectives that claim that children have an innate feeling of being connected with nature since birth (Phenice & Griffore, 2003). This is similar to the suggestion by Wilson (1984) in the biophilia hypothesis that this innate feeling of being connected to nature is a gene. The theory of constructivism developed by a psychologist, Jean Piaget, explains that children's learning and development occur when they interact with the environment and learn from their experiences. Previous studies suggest that middle childhood age is the most effective stage for developing a connection with nature because children explore the outdoor environment extensively at this age (Kellert, 2002; Mårtensson et al., 2014) as they can be independently mobile in their neighbourhood (Jansson et al., 2014; Kellert, 2005). Hence, they develop their identity by interacting with their natural surroundings (Kellert, 2005).

Meanwhile, Piaget's cognitive theory indicates that children in middle childhood are at a concrete operational stage where they are able to express their thoughts effectively and logically. Children can also classify objects and give logical implications based on given facts. Although children at this age can express their thoughts logically, they have difficulty understanding abstract ideas that require them to visualise to understand the meaning (McDevitt & Ormrod, 2002).

3.0 Methodology

3.1 Research Design

This study employed a qualitative approach to achieve the research aims. Data collection was conducted using drawing and focus group discussion that involved 25 children aged 10-12 years old residing in Kampung Baru Hujung Repek, Bachok, Kelantan. Focus groups discussion were used as the main method for data collection, aided with drawing to stimulate children to give responses and create excitement in between the discussions and prevent the children from feeling bored. Drawing as the main method was used as part of the focus group activities is that it helps to stimulate children to give responses and communicate, as some children might have difficulties expressing their feelings and perceptions through verbal interviews (Schirmacher, 2002). Middle-aged children were chosen as the participant because children at this age explore the outdoor environment extensively, and they learn from their environment. Specifically, children aged 10-12 were chosen as they are at the concrete operational stage where they can express their thoughts effectively and

logically (McDevitt & Ormrod, 2002). The sample of the study was selected through purposive and convenience sampling. Purposive sampling referring to children aged 10-12 years was chosen as the participants. Convenience sampling refers to children selected from the neighbourhood familiar to the researcher.

3.2 Procedure

A total of five focus groups were created, with five children per group during data collection. The children were asked to draw their home with the surrounding natural elements to understand their perception and definition of nature. The children were given about 30 minutes to draw. The children then need to explain what they have drawn in the followed-up discussion because the researchers might interpret the drawing differently. Children explained what they had drawn, and the researchers asked questions. Children first need to explain what they have understand about nature and what are the natural elements that are available surrounding their home. Children also were asked about the importance of nature and the functions of nature. Their answer also reflects their experiences with nature, knowledge of nature, familiarity with nature, and their preferences toward natural elements.

3.3 Data analysis

Content analysis was used to analyse the data from drawing and focus group discussions. This study employed directed content analysis. Data from drawing and focus group discussions were grouped into sub-themes and themes related to their definition and perceptions of nature.

4.0 Findings

4.1 Definitions of Nature

There are overall, 20 items were mentioned by the children when they were asked about the meaning of nature based on their drawings. The items have been categorised into six themes which are vegetation, landform, earth element, animal, and activities. An example of items for each theme is shown in Table 1.

Table 1: Examples of items in each meaning of nature theme

Themes	Examples of items
Vegetation	..trees, green, flower, fruit etc
Landform	..hill, beach, river etc
Earth elements	..water, stone, soil, sky, air etc
Animal	..cat, fish etc
Activities	..gardening



Figure 1: Examples of Children's Drawings

4.1.1 Vegetation

Vegetation was the most mentioned theme by the children when they were asked about the meaning of nature based on their drawings. Examples of the items mentioned by the children are trees, green, flowers, flora and fruit. An 11-year-old girl described, "Nature is trees and flowers". Another child, an 11-year-old boy, said, "Nature trees, flowers and fruit". An 11-year-old girl "Nature is something green, for example, trees and vegetation".

4.1.2 Landform

Children also described nature as landform. The children mentioned nature as the landforms by giving examples such as mountains, hills, beaches, forests and rivers. For instance, an 11-year-old boy explained, "Nature includes the hill, beach and river". Another boy aged 11 described, "Examples of nature are sea and river".

4.1.3 Earth elements

Meanwhile, for the earth element's theme, children described nature by giving natural elements examples such as water, sand, soil, air and wind. For example, a 10-year-old said, "Water is part of nature". Another 11-year-old girl described, "Nature is the sky, air and wind"..

4.1.4 Animal

Children also mention the animal theme. Examples of items mentioned by children are cats, fish and birds. A 10-year-old girl said, "Cat and bird are nature". Another 11-year-old boy described, "Nature includes fish. I like to go fishing".

4.1.5 Activities

Children also mentioned activities such as gardening and *gotong-royong* to describe the meaning of nature. For example, an 11-year-old boy said, "Nature is gardening. I like to help my mum gardening". Another 10-year-old girl described, "Nature is communal work". The finding indicates that children give meaning to nature in a direct manner as they were giving examples of natural elements when they were asked about the meaning of nature. Finding also shown that some of the children have limited vocabulary and knowledge of nature. These findings suggest that children describe nature based on the natural elements that they have had experience with.

4.2 Perceptions of Nature

Five themes have been identified from children's responses regarding their perceptions of nature. The themes are nature dependence, sense of responsibility, empathy towards nature, enjoyment in nature and negative affiliation. The themes also have been categorised into related biophilia values. There are sub-themes for each theme, and those themes, biophilia value, sub-themes and examples of responses for each theme are provided in Table 2.

Table 2: Examples of items in each meaning of nature theme

Biophilia Value	Themes/ Constructs	Sub-themes	Example of responses
Utilitarian Ecologistic-scientific	Nature Dependence	<ul style="list-style-type: none"> • Life necessities • Material • Medicine • Psychological needs 	<p>"Nature provides us with food and drink."</p> <p>"We can use trees to make paper and planks"</p> <p>"We can use plants to make herbs."</p> <p>"We need nature to relieve stress."</p>
Moralistic Ecologistic-scientific	Sense of Responsibility	<ul style="list-style-type: none"> • Humans need • Concern towards animals 	<p>"We need trees for oxygen."</p> <p>"We cannot destroy nature because animals will lose their habitats."</p>
Humanistic	Empathy towards Nature	<ul style="list-style-type: none"> • Anger • Sadness • Sympathy • Disregard* 	<p>"I feel angry and sad seeing people felling trees."</p> <p>"I feel sympathy when animals lose their habitat due to deforestation."</p> <p>"I do not have any feeling seeing people fell the trees."</p>
Naturalistic	Enjoyment in Nature	<ul style="list-style-type: none"> • Excitement • Refreshment 	<p>"I feel excited when I go to the beach."</p> <p>"The sound of river makes me feel calm."</p>
Negativistic	Negative Affiliation*	<ul style="list-style-type: none"> • Fear • Disgust 	<p>"I am afraid to be in the forest."</p> <p>"I do not like gardening...My hands will get dirty."</p>

*Negative themes and sub-themes

Nature dependence is the awareness of the importance of nature, and the theme can be categorised as utilitarian value. Several sub-themes emerged from children's responses on the importance of nature. The sub-themes are life necessities, material, medicine and psychological needs. For example, a girl aged 11 described, "Nature is important for us because nature provides us with food and drink". Another boy aged 11 years old said, "Nature is plants and trees. We can use trees to make paper and planks". Children also expressed the need for nature for psychological needs. A 10-year-old girl said, "I like a house with many trees, it relieves my stress". All children had basic knowledge of the importance of nature.

Sense of responsibility refers to the children's belief to take care, protect, respect and help nature and environment. Sense of responsibility theme can be categorised as moralistic value. There are three sub-themes that emerged for children's responses: human needs, concern towards animals and environmental issues. For instance, a 10-year-old girl said, "We cannot fell trees because we need trees for oxygen". Regarding concern for animals, majority of children expressed their concern for animals when seeing people destroying nature. For example, a boy aged 11 stated, "We cannot destroy the forest because animals will lose their habitats". The finding indicates that children knew the responsibility to take care of nature. The responsibility might have been nurtured in schools or by parents.

Empathy towards nature refers to the feelings when seeing people destroy nature. The children expressed different feelings when they were asked what they felt when seeing people destroy the nature. Empathy towards nature can be categorised as humanistic value. The sub-themes that emerged from children's responses are anger, sadness, sympathy and disregard. For example, a 10-year-old girl

mentioned, "I feel sad and angry seeing people felling trees". Another boy stated his sympathy "I feel sympathy when animals lose their habitat due to deforestation". However, there a few children who mentioned that they do not care (disregard) about the nature destruction. An 11-year-old boy stated, "I do not care when people cutting trees and when animals lost their habitat due to deforestation".

Enjoyment in nature refers to the feeling of enjoying being in nature. Enjoyment in nature theme can be categorised as naturalistic value. The sub-themes that emerged from children's responses were excitement and refreshment. For instance, a girl aged 10 said, "Being in nature makes me feel cheerful". Another 11-year-old boy said, "I feel excited to go near the beach". Children also expressed that being in nature makes them feel fresh and calm. An 11-year-old girl said, "I enjoy being in nature. Nature makes me feel refreshed and calm".

Negative affiliation is the negative feelings children express toward nature and can be categorised as negativistic value. The sub-themes that emerged from children's responses were fear and disgust. Children expressed negative feelings towards certain activities, indicating they had a negative affiliation with nature. For example, a 10-year-old girl mentioned, "I do not want to be in the forest, I am afraid I might find a snake". An 11-year-old girl described, "I do not like gardening. I am afraid of worms, and my hand will get dirty". However, only a few children expressed negative feelings toward nature.

4.2.1 Factors that Influence Children's Perceptions on Nature

Focus group discussion also revealed two factors that influence children's perception of nature which are their knowledge and experiences with nature. Children's knowledge and experiences with nature are influenced by the physical aspects, which include the nearby nature at home and surrounding areas that provide both direct and indirect experiences to children. Meanwhile, the second aspects that influence children's knowledge and experiences with nature are the social aspects. Children frequently mentioned nature in the context of their living areas and the most frequent activities that they were involved with. For example, a girl aged 10 years old said that "My house compound has banana trees, flowers such as bougainvillea and jasmine".

Findings indicated that children who live surrounded by various types of plants have more identification of plants and describe nature in detail and have more knowledge about nature. Findings also showed that children mentioned they did nature activities with their parents. For example, another girl aged 10 years old said, "I help my mum to plant flowers". This suggests that social factors play an essential role in shaping children's perception of nature.

5.0 Discussion

This study makes a significant contribution to the knowledge of how children from different cultures view nature. This present study suggests that children's view nature in direct manner, as children have difficulty understanding abstract ideas. This supports Piaget's cognitive theory that children at middle childhood age have difficulty understanding abstract ideas (McDevitt & Ormrod, 2002). Nonetheless, in this study, even though the children did not convey themselves as part of nature and most of them saw themselves as not being part of nature, the children still appreciate and feel connected to nature. This study also supports the biophilia typology in that the children described nature by referring to utilitarian, naturalistic, humanistic, ecologicistic-scientific, moralistic, and negativistic values (Kahn & Kellert, 2002). Even though Kellert (2005) suggested that utilitarian and negativistic values decrease during middle childhood, this present study found that children in middle childhood still describe nature by referring to utilitarian and negativistic values. This study confirms that children from different cultures respond differently towards nature (Milfont, 2012). Moreover, this study supports the biophilia hypothesis that culture, social experiences and experiences with nature affects children's perception or value towards nature.

This study also supports the Constructivist theory that children learn from their surroundings. It is quite common when children mentioned about vegetation, landform, earth elements and animals when they were asked about the meaning of nature since all of those are the common natural elements that exist surround them. Children who have limited vocabulary on nature because they are not familiar with the nature. However, it is quite scarce when they described nature as activities such as communal work. This indicated that children are influenced by environmental education or campaign to save the environment that promotes recycling.

Overall, the children can be categorized into three group which unaware, moderate awareness and high awareness group based on their definitions and perceptions on nature. Children in high awareness group have more knowledge about nature and are more attached with nature, as well as have more experiences especially direct experiences with nature. Meanwhile, children in moderate awareness have slightly moderate knowledge about nature but still attached with nature. They also have fewer experiences with nature as compared to children in high awareness group. In contrast, children in unaware group have little knowledge about nature, have little attachment with nature and have fewer experiences with nature especially direct experiences with nature.

6.0 Conclusion & Recommendations

In conclusion, children expressed nature in direct manner and children's definitions and perceptions towards nature are influenced by their knowledge and experiences with nature. The social and physical aspects play an important role in developing children's knowledge and experiences which subsequently affect their perceptions towards nature. Therefore, it is crucial to reconnect children with nature especially through direct as well as indirect experiences to ensure today's generation are aware and attach with nature. Future research needs to explore further other factors that influence children's definition and perceptions on nature. Also, further research needs to be conducted with children from urban areas as this study only focuses on children in rural areas.

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Paper Contribution to Related Field of Study

This paper contributes to the body of knowledge on children's definitions and perceptions of nature especially in Malaysian context. Most studies related to children and environment in Malaysia focuses on children's affordances.

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