Exploring Children Preferred Outdoor Landscape Elements for Education

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Abstract. The virtual world today rejects the needs for children to explore and be active with outdoor spaces. These lead to children‘s poor mental, physical and social growth development. To justify and understand the outdoor needs of early childhood development , it is essential to address and enhance the significance of outdoor landscape elements. Therefore, this study aims to explore children‘s preferred outdoor landscape elements in their early education stage. The study used pictorial techniques, interview and behaviour observation towards the children aged 5 to 6 years old from selected preschools at Seri Iskandar Perak. The results indicate that the play structure elements in outdoor spaces are the most preferred for childhood education.

Keywords: Children, element, preferred outdoor landscape

1 Introduction

The concept of outdoor spaces has received much attention in recent years due to its dynamic properties, which offers important physical and social children growth development benefits. The concept of outdoor spaceis a designated place of the land and its related features in a particular area consists of geographical features that mark, or are characteristics of, a particular area either natural or cultural landscape. It has a significant impact in the social field and has also been investigated to produce spatial functions, meanings, expressing values, beliefs, myths and utopies [1]. However, it has been found that many landscape elements that have been identified used for children outdoor spaces which align with the term "landscape" that has such a broad definition. These include a perspective or picture of the countryside on the earth's surface, or the shape of the land and related features in a specific place [2].

The elements proposed for children outdoor spaces should consider the children’s preferences and the environmental characteristics [3,4,5]. For example, Fjùrtoft and Sageie [6] have shown that the outdoor spaces could offer children the opportunity to explore and be connected to the nature. More recently, Li, Zeng, and Ye [6] have established the attractiveness and safety of such elements. However, although the effect of the landscape elements on the outdoor spaces of children development has been demonstrated and sought for over decads, little attention has been paid to the preferred outdoor landscape elements in their early education. The questions remains, what are the significant landscape elements for chidren outdoor spaces? How

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preferable of those elements towards early childhood education?

Hence, additional studies of the outdoor landscape in early childhood education are needed. The aim of the study is to explore the children preferred outdoor landscape elements in their early education. In this study, we present a model for understanding such a landscape elements. On the basis of these model it then describes the preparation prefereble of a landscape elements in chidren outdoor spaces. The remainder of this paper is further devided into five sections: section two which reviews the existing literature on the children preferences toward outdoor landscape and outdoor landscape characteristic. Section three elaborates on the materials and methods. Section four describes the results and in-depth analysis, and is followed by a discussion of the results. Finally, section five presents the conclusions and recommendations for the future.

2 Literature Review

2.1 Children Preferences toward Outdoor Landscape

Numerous studies have attempted to explain the importance of the concept of outdoor as a place or places for children to play compared to indoors [8,9]. The outdoors provide more spaces for children to observe their surroundings without resatrictions [3]. Studies on childrens' preferences on the outdoor landscape have shown that the outdoors spaces are able offer children the opportunity to explore, be physically active, socialise with their peers and get them to be connected to nature [9]. Children tend to feel more open and free outdoors. Children also spend more time outdoors due to the exciting activities and the beauty of nature in the outdoor landscapes [8]. There are various elements of the outdoor landscapes in supporting additional knowledge and experience to children. Several studies have been conducted which focused on specific contexts: hospital landscape design [10], outdoor play spaces [8,12,13,14] including water play [3], residential [6] and outdoor learning environment [15,10,9]. As playing is inherent in children‘s nature, the studies are mostly related to the children's choices for play activities.

Activities in the form of games no matter what the game is, is more likely to attract the interest of children especially when they are in schools. Therefore, this study intends to explore what are the appropriate elements in the outdoor space that children desire so that they are more engaged and enjoy the learning sessions. Research have been conducted in a different approach (e.g., pictorial selection, drawings, behaviour observation, including interview) with a significant relationship between findings. The outdoor landscape category is based on the percentage of natural and built elements in the setting (Table 1). Each outdoor landscape preference was classified as either "Mainly Natural", "Natural and Built", or "Mainly Built" adapted from Giraldo et al. [8] as follows:

- The outdoor landscape is classified as "Mainly Natural" if the percentage of natural elements is perceived to be more significant than the percentage of constructed elements.
- The outdoor landscape is classified as "Natural and Built" if the percentage of natural elements is perceived to be equal to the percentage of built elements.
- The outdoor landscape is classified as "Mainly Built" if the percentage of natural elements is perceived to be lower than the built elements.

Fjùrtoft and Sageie [15] have discovered a strong relation between landscape structures and play functions. Different landscape elements provide different and specific play opportunities. Findings of previous related studies indicate the characteristic of outdoor landscape that

influences children's preference is pertaining to water and vegetation. Water is one of the landscape elements that influences childrens' preference for outdoor landscapes. In most of the previous research findings, water was the element that was commonly mentioned by children as a desired element. The most important element found by previous studies (besides water) is vegetation. Vegetation element includes plants category such as fruit, vegetables, flowers, herbs, leaves, and other plants. According to Fjùrtoft and Sageie [15], the diversity of vegetation and topography corresponds to function-related structures that versatility plays.

Table 1. Research on Children Preferences toward Outdoor Landscape Assessed in this study

					Most preferred Elements				**Outdoor Characteristic**	**Landscape**
	Author	**Methods/ Study context**	**Child's Age**	**Outdoor Landscape Category**	**Water**	**Vegetation**	**Birds/ Animal/Insect**	**Rock/ Sand/ Landform**	**Reasons Why Most Preferred**	**Reason Why Least Preferred**
1	Allahyar and Kazemi [10]	Photograph (photo selection)/ Hospital landscape design	-	Natural area (Mainly natural)	/	/			• Warm colours and animal shapes.	
2	Abdullah et al., 2020 [3]	Photograph (photo selection)/ Water play setting	6	Colourful water feature (Mainly Built)	/				• Opportunities to touch and experience with plenty of games and activities • Diverse coloured structures • Constructed elements • Safer and less dangerous.	• Lack structures to play and less interaction • Minimal activities and less access to water elements. • Tricky and dangerous to touch and interact.
3	Giraldo et al. [14]	Drawing/ Window view in preschool	5-6	Natural views (Mainly natural)	Mixed				• Open curtains: visual comfort, outside information	
4	Abdullah, Noor, Wan, and Ghani [16]	Photograph (photo selection)/ Outdoor landscape	5-6	Very low level of naturalness (Mainly Built)	/					• Wildlife creatures in a natural setting • Discomfort with the natural facilities • Parents do not allow communicating with nature

5	Ernst [7]	Photograph (photo selection)/ Play setting	6	P/ground (Natural and Built)	/		• Opportunity for activity • The contained human element that facilitates desired activity	• An obstacle to/ Interferences with/ lacking opportunity for activity desired • Unsafe/Setting where they could get hurt • Appearance/ visual characteristic
6	Lucas and Dyment [12]	Behaviour/ Chosen play spaces on school ground	5-12	Natural/ Green area (Mainly natural)	/	/	• The most extensive area in total size within the school playground • opportunity for activity	
7	Muderrisoglu and Gultekin [17]	Photograph (photo selection)/ Nature-based outdoor landscape	5- 19	Woodland landscape (Mainly Natural)	/	/	• Aesthetically pleasing • Opportunity for a variety of activity • The presence of other human beings • The physical characteristic of children (height and weight) • Recreational experiences	• Safety perception
8	Sahimi and Said [8]	Photograph (take a picture)/ Preschool environmen t	4-5	Outdoor space (Natural and Built)	Mixed		• An exciting event that children experienced • The beauty of nature available	•
9	Li et al. [6]	Behaviour/ Residential landscape spaces	3-8	Comp. landscape (Natural and Built)	/		• Pleasant surroundings with plenty of open space • Excellent usability • A relaxing waterscape (a wide range of amenities)	• Low level of attractiveness • Excessively • Open space separated by a road • The quietest and most private place • Overly closed shady

2.2 Outdoor Landscape Characteristic

The outdoor preference choices of children are also influenced by the basis of five environmental characteristics: attractiveness, amenity, safety, sociability and accessibility. According to Zhang [18], attractiveness requires high variability, difficulty, and complexity.

Any attractive environment encourages children to play and as an outdoor element that supports why children are more preferred toward natural settings. For example, Abdullah et al. [3], Ernst [3] and Muderrisoglu and Gultekin [17] found that children subject in their study preferred spaces with opportunities for a variety of games and activities. In another study, Allahyar and Kazemi [10] explored that children preferred combinations of flowers and turf grasses in planting beds, combinations of water fountains with flower beds instead of water fountains alone. Children also preferred weeping-form trees and combined furniture forms with plants. The variety of activity choices available in an area would precede safety expectations.

Safety and security elements are essential concerns to children as well. Some studies have shown that safety perception to be the most crucial characteristic, influencing children's outdoor activities preferences. Among the reasons why children did not prefer some spaces is because the natural element seemed so tricky and dangerous to touch and interact with [3], the space seems to be perceived as unsafe where they could get hurt [3], and the place was perceived as being the quietest and most private [6]. Furthermore, although children are more attracted to areas with natural elements, the density and number of elements also influence their preference for the landscape. For example, overly closed shady vegetation [6] and the increasing vegetation density [17] have increased the children's safety perceptions. It has also been suggested that excessive openness space also influences the children's preferences toward outdoor landscapes [6]. Interestingly, children would find the natural areas to be aesthetically pleasing and fun, but they would prefer the area swith other individuals are present to conduct general activities. The involvement of other individuals in a particular setting may be perceived as either safe or dangerous for children [17] as well as aesthetic or inaesthetic. According to Francis [19], children do not question what the area looks like in their landscape preferences. In contrast to earlier findings, some studies demonstrated that look does matter for children. Children prefer outdoor landscapes with warm colour and animal shapes [10], diverse coloured structure [3] and unique character (aesthetic) of play space [13].

3 Methodology

3.1 Respondents and data collection

This study employed a quantitative and qualitative approach. The study explored on early growth development that focuses towards children in early education between the age of five and six in Seri Iskandar, Perak. Out of 5 preschools listed, three were permited from the school's' managements to conduct this study namely Tadika PASTI, Tadika Mutiara Montessori, and Tadika PINTAS. The data collection was carried out in 2019 with 2 phases. Phase one started in the early school session in January-February 2019, followed by the middle of the school session in May 2019.

3.2 Phase 1

The first phase involves the process of getting to know & approaching the children. The researchers conducted a familiarisation session in a small group with the childrenand teachers in not more than 10 individuals. Observations were conducted physically and socially such as actions, interactions among children while in class, abilities according to age and responses from children during school sessions were recorded. In addition, the information from children on

what to do during breaks in-school sessions, after returning from school sessions, activities during weekends or holidays was recorded. This phase is very important and it affects the mind of a child. It is the phase in which the process of remembering and recognising people and the environment around them takes place. Data was transcabed and imported into NVivo software. Qualitative descriptive analysis was excecuted to find the relevent themes and patterns.

Fig. 1. Familiarization process conducted in Phase 1.
(Source: Author)

3.3 Phase 2

The second phase was conducted with slots on a storytelling and sharing sessions on variety of experiences during their school breaks and holidays with family members‘ activities. Simmilar with phase one, this session was conducted in small groups exploring on the environment, interesting landscape areas around Malaysia and recreational places among participants. A photo elicitation technique comprising five pictures represented themes of the surrounding landscape elements was used to determined the 1st layer of outdoor landscape space that is preferred or desired by childrens. The themes released are the activities with playground, activities with plants, activities with water, activities with soil, and activities with animals. Data was transcabed and imported into NVivo and SPSS statistical software to be analysed in descriptive analysis.

Fig. 2. Landscape elements themes for patricipants responses (1. Play structure, 2. Plants, 3.Soil, 4. Animal, 5. Water).
(Source: Author)

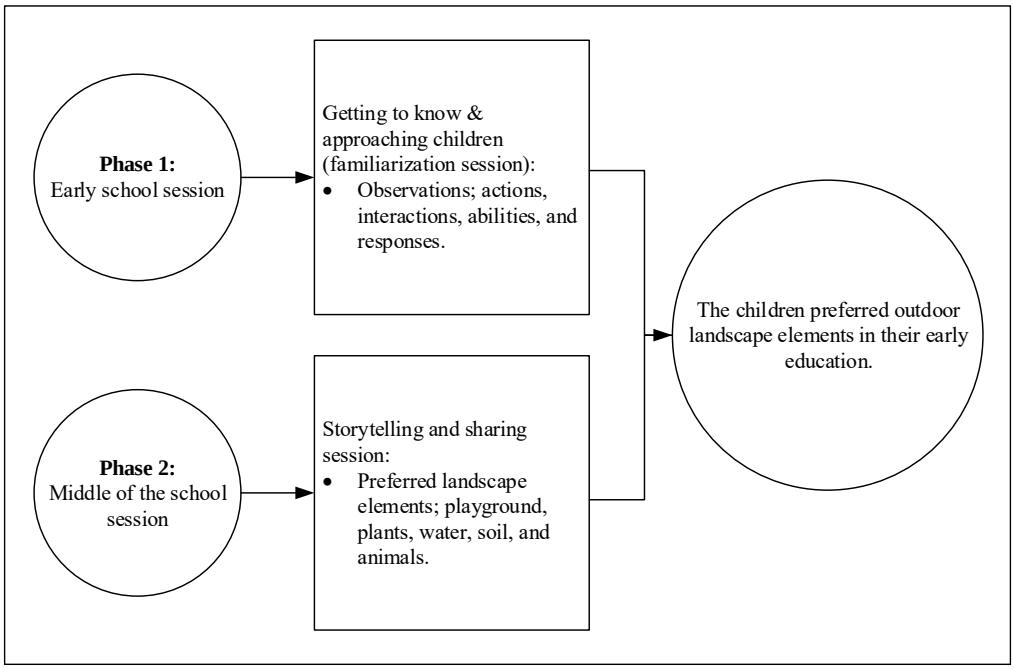

Fig. 3. The research framework.
(Source: Author's illustration)

4 Result and discussion

4.1 Respondent profiles

A total of 78 respondents in this study received their early education coming from the three selected preschools in Seri Iskandar, Perak. Figure 4 presents the profiles of the childrens who participated in the study. Out of 78 childrens, 50 childrens aged five years old (64.1%) and 28 aged six years old (35.9%). The percentages represent majority of the childrens receive their formal early education in the age of five compare to six years old. Most of the previous studies did not further explained into this aspect. However, these findings are aligned with Sahimi and Said [9] that found the age of below five for early children education.

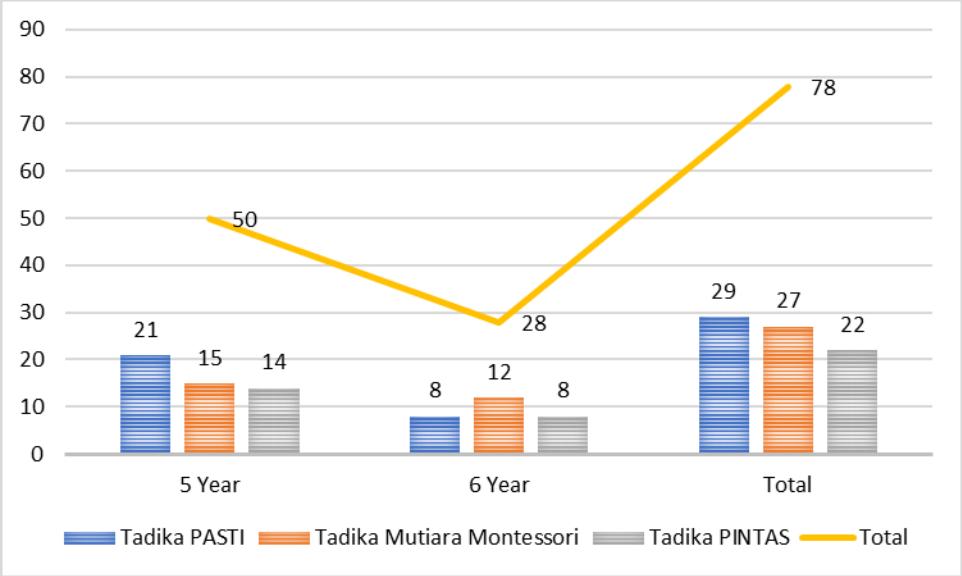

Fig. 4. Profile of the respondents.

4.2 Getting to know and approaching children

Based on the observations and interviews in phase 1, 14 coding aspects were noted by the children in the first cycle coding process. Furthermore, these 14 codes were sorted and synthesised by merging the repeated codes that represented the same meaning. This process summarised it into only 4 coding aspects, and they were synthesised into the respective four categories: actions, interactions abilities, and responses category. The coding process is presented in Table 2. The result revealthat the outdoor play space stimulates children to feeli happy and free. Therefore, the findings prove that the outdoor spaces benefit for children growth development [8,12,13,14].

Table 2. The coding process for getting to know and approaching children.

First Cycle Coding	No. of Sources	Sorting	Categorizing & Synthesizing
Actions			
1. Pointing	11		
2. Approaching	6	Intriguing	
3. Pondering	9		
Interactions			Feeling happy
4. Holding	4	Pleasing	
5. Focusing	6		
6. Walking	2		
Abilities			
7. Crawling	5	Exploring	
8. Dancing	2		
9. Jumping	6		
Responses			Feeling free

10. Smiling	7		
11. Asking	5	Satisfying	
12. Hearing	7		
13. Singing	5		
14. Laughing	2		

4.3 A storytelling and sharing session

The results of the prefered outdoor landscape elements are reported in Table 3. The results show that the playground element was the most prefered compared to the other elements, where 52.6 per cent (N=41) of chidren responded. Meanwhile, water element was preferred lowest, with 20.5% (N=16) respondents. The second in rank to be preferred (48.7 per cent) was the plants element with N=38 repondents, third is the soil element with 32.1 % (N=25) respondents, and foth was the animal element equal to 21.8 % (N=17).

In this session, 18 coding aspects were noted by the children and synthesised into five coding aspects of the respective outdoor landscape elements: playground, plants, soil, animal, and water. The coding process is presented in Table 4. The results reveals that the outdoor landscape elements significantly exposed children to feel free to act and socialise. The findings correspond with Abdullah et al. [3], Ernst [7] and Muderrisoglu and Gultekin [17] that explained that children preferred outdoor space more with opportunities for a physical and social activities. The findings are also aligned with Zamani [20] and Allahyar and Kazemi [10], that explained the combination of playground structures and natural plants that encouragechildren with the option to play that includes hands-on educational experiences, as well as the openly planned quality of the natural environment. Moreover, mainly composed manufactured sets such as playhouses and climbing structures which are predominantly one-dimensional help gross motor growth [1]. This will help in developing quality of a child as a whole.

The children respondents too were interested in the activities of planting plants, playing with sand and approaching animals such as fish, and playing water. However, in this study they frequently mentioned to feel the space as sometimes unsafe, hot and they needed the help of older people to do activities with these elements. Some were amused to think of the presence of pests like snails and caterpillars on the plants. No less, some children mentioned this element of soil to be dirty. Among the reasons why children did not prefer some spaces is because the natural elements seemed to be so tricky and dangerous to touch and interact with [3], the space seemed to be unsafe where they could get hurt [3], and the place was quietest and most private [6]. All the comments and opinions expressed by these children should be taken into account as they influence their future thought patterns.

These children are the results of the patterning of the family and the environment. Therefore, early education must serve to provide them the freedom to do activities outdoor and in nature as well as all the elements available to them are very important Besides guidance and monitoring performed by the guardians such as teachers, parents and the community members. Furthermore, it is important for the safety and protection purposes. In addition, the positive opinions and experiences elicited from the older people who take care of them are also very important so that the well-being of these children's development, especially in learning can be understood and given attention by all parties.

Table 3. The children outdoor landscape elements preferences.

	Playground	**Plants**	**Soil**	**Animal**	**Water**
Numbers of children (N)	41	38	25	17	16
%	52.6	48.7	32.1	21.8	20.5
Preferences (Priority)	**1**	**2**	**3**	**4**	**5**

Source: Author

Table 4. The coding process for the storytelling and sharing session.

First Cycle Coding	No. of Sources	Synthesizing
Playground		
1. Playing	7	
2. Climbing	5	
3. Coloring	8	
4. Runing	5	
5. Friend	11	
Plants		
6. Flower	3	
7. Caterpillars	9	Positive:
8. Cool	12	• Feel free to act
Soil		• Make friends
9. Hot	3	
10. Dirty	4	Negative:
Animal		• Unsafety
11. Biting	5	• Uncomfortable
12. Bad	5	
13. Cute	8	
14. Loving	6	
Water		
15. Need the help	4	
16. Swiming	7	
17. Depth	2	
18. Drowning	13	

5 Conclusion and recommendations

In conclusion, this study has succed to academically establish two key findings related to the research objectives underpinning this study. Firstly, by gathering and analysing the qualitative data from the preschool childrens age 5 to 6, the study has managed to explicate how the outdoor play space triggered children in feeling happy and free that engarage their healty growth development. Second, the study has identified five significant prefered outdoor landscape elements for early chidren education. Analysis from the photo elicitation data shows

the playground element to be the most prefered compared to the other elements such as plants, soil, animal, and water. The findings of the study provide necessary guidance to preschool administrations in understanding the needs for early children educational related to outdoor lanscape elements. Theoretically, this study contributes in depth to the body of knowledge in children growth development and early educational studies by identifying specific significant outdoor landscape elements related to the children prefereces.

The respondents in this study are limited to the childrens in the three preshcool in Seri Iskandar, Perak. This limits any generalisation that can be conducted to that particular local context. Future studies should investigate and include the participants that incoporate teachers and family members in other regions in different countries to enable generalisation within the global context. Even any generalisation to other regions in different countries in the world should take into account the possible differences in interpretations by the participants in question.

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