



Role of Landscape Elements in Enhancing Child-Responsive Outdoor Educational spaces

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ABSTRACT

Humans are drawn to natural environments and features by nature itself. To understand the effects of this human-natural connection at different periods of human existence, particularly in childhood, numerous studies have been carried out. Early exposure to natural environments has been found to support children's physical, mental, and cognitive development. The growing incidence of physical and mental diseases in young children serves as a reminder of the need of nature interactive outdoor areas in the current scenario. The aim of this research is to study the natural spaces associated with physical, emotional and educational development of children and the role of landscape elements in achieving the same. The study primarily focuses on the different influencing factors of landscape in improving the learning atmosphere for children. The research also explains how outdoor learning benefits the physical, emotional, educational and cognitive development of children up to the age of ten years. The study also demonstrates how various landscape features might improve efficient outdoor learning areas. Analysis of data shows that various landscape features have an impact on children's development at an early age. In order to create outdoor places for kids that are of higher quality and can support kids' learning, this study suggests design ideas and principles that designers should adhere to.

1.INTRODUCTION

As humans, we are always surrounded by nature. Humans' propensity to seek out relationships with nature and other life forms has genetic roots, which is relevant to how humans interact with the natural world. The evolution of human settlements such as those of the ancient Egyptians, Persians, and mediaeval Chinese villages, which were all characterised by expansive and ornate natural spaces that allowed people to keep contact with nature, provide evidence of the human tendency to do so (Gullone, 2000). According to research published in 2020 by Deng et al. (Deng et al., 2020), diverse natural components and their combinations can help restore both physical and mental health in humans. The physical and mental wellbeing of humans are significantly influenced by nature. Also, studies reveal that human affinities with nature and the relationship between man and nature are obvious at all stages of life, from infancy to old age. It has also been demonstrated that children's early development has been negatively impacted by a lack of engagement with nature, as children's growth is greatly influenced by their environment. Richard Louv proposed the idea of "nature deficit disorder" in 2005 after describing the negative effects of being cut off from nature. The lack of a connection to nature, which Louv refers to as "nature deficit disorder," is the cause of some of the most concerning trends in today's youth, including the rise in obesity, attention deficit disorders, and depression, as well as children's attention problems and a higher incidence of physical and emotional diseases (Louv, 2005). As per the National Early Childhood Care and Education policy (ECCE), early childhood refers to the formative stage of the first six years of life, during which the most rapid growth and development occurs. Thus, children go through important stages of brain development which can affect their physical, mental and behavioural development during this period of time (Ministry of women & child development). By 2030, all girls and boys must have access to high-quality early childhood development, care, and pre-primary education in order to be prepared for primary school, according to target 4.2. of fourth Sustainable development goal (en.unesco.org, n.d.). The studies of increasing rate of mental as well as physical disorders among the young children shows the relevance for interactive outdoor environments in today's situation. Hence, outdoor spaces can be integrated with children's day to day activities like learning and playing. Natural space offers different opportunities to children for different environmental experiences. The bond created between children and the environment during such experiences

will make them more sensitive towards the environment. This will make a major contribution to children to be environmentally conscious individuals in the future. According to the studies of psychology, during the early childhood phases, intelligence development of children is influenced by the environment and experience. Studies on children's environments claim that "children are more deeply affected by the environment than any other age group". (Acar, 2014)

This study aims to comprehend the significance of the interaction between nature and children during the early stages of children's development. Also, research demonstrates how diverse softscape and hardscape components are enhancing children's learning environments. Finally, the research suggests design principles and landscape strategies for developing great outdoor learning environments for children that can help them grow into physically and cognitively healthy adults.

2. METHODS & METHODOLOGY

The research combines a review of 29 publications (including books, case studies, research articles, review papers, and other documents). The selection of methods and case examples were done based on certain parameters of study such as: Natural settings, Landscape elements, Affordances created for play and learning. Six cases were identified from different sources (Three from research journals and three from desktop sources), studied in detail and analysed. The findings from the literature case studies led to develop the suitable set of recommendations and guidelines for further development in the field of designing child friendly outdoor learning spaces.

3. LITERATURE STUDY

CASE I:

1.1 context of study

In 2015, Fatemeh Aminpour conducted a qualitative study among the students of three Australian school grounds,; behaviour mapping and walking tours were adopted as methods for study (Aminpour, 2021).

1.2 Method of study

Children spend considerable amount of their time in schools and related spaces for learning. There are several studies conducted in the open spaces associated with educational institutions using different qualitative methods such as walking tours, behaviour mapping, drawing sessions, model making workshops etc.

In each school, the open areas where students are allowed to access during recess and lunch breaks, were mapped in detail.

1.3 Observations

Through behavior mapping, walking tours and interaction with the focus group children the attractive features in each open area were figured out and highlighted. Study figured out various physical characteristics of the natural settings chosen by children such as type of plant species, location of plants, type of edge defining the natural settings and the condition of maintenance.

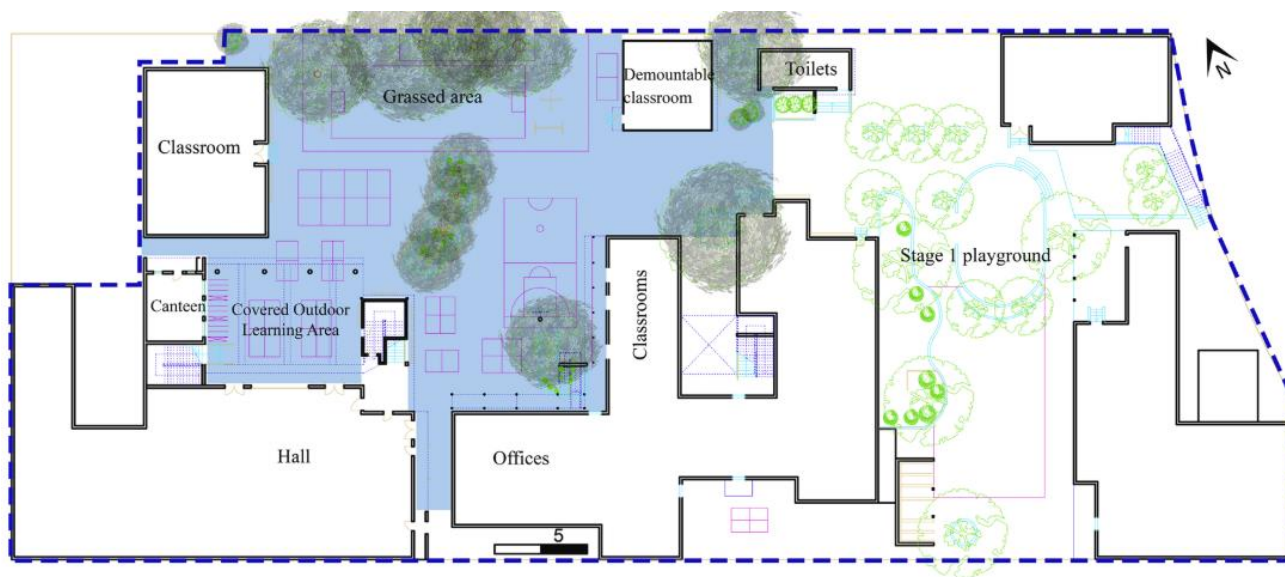


Figure 1. Open area in school 1

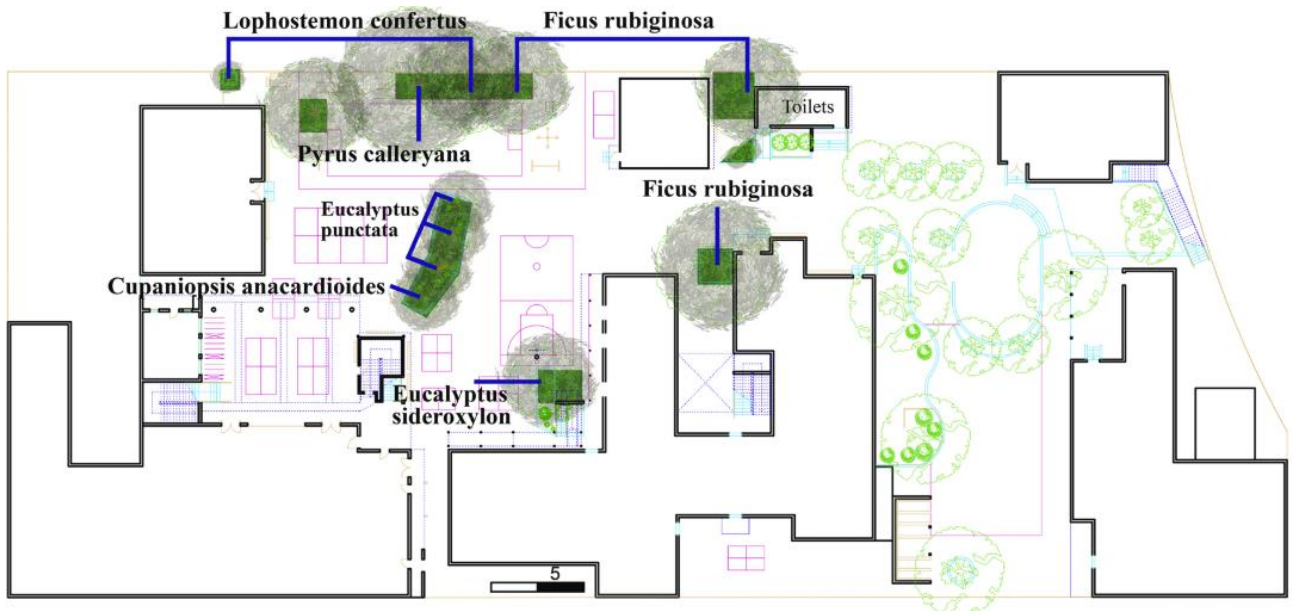


Figure 2. Preferred natural settings in school 1

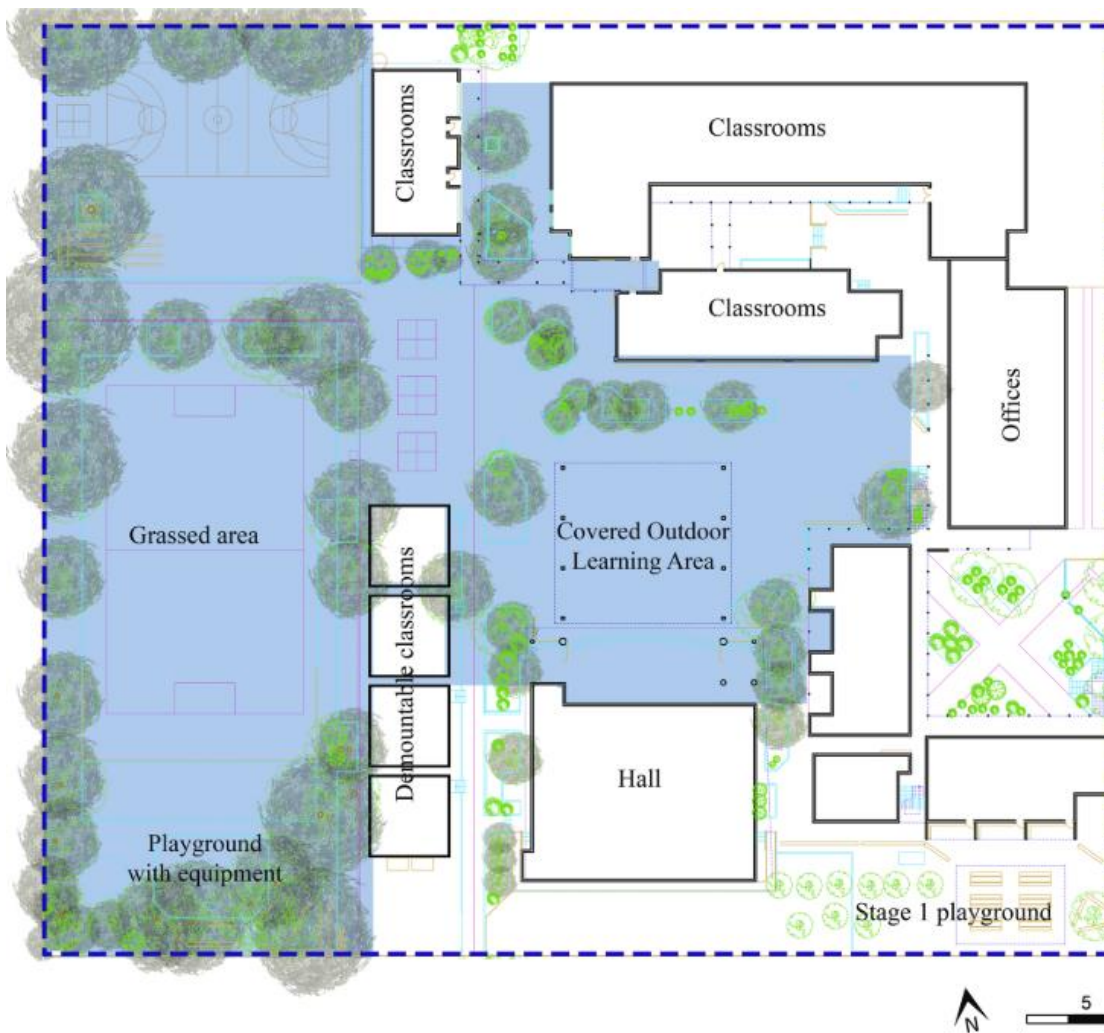


Figure 3. Open area in school 2

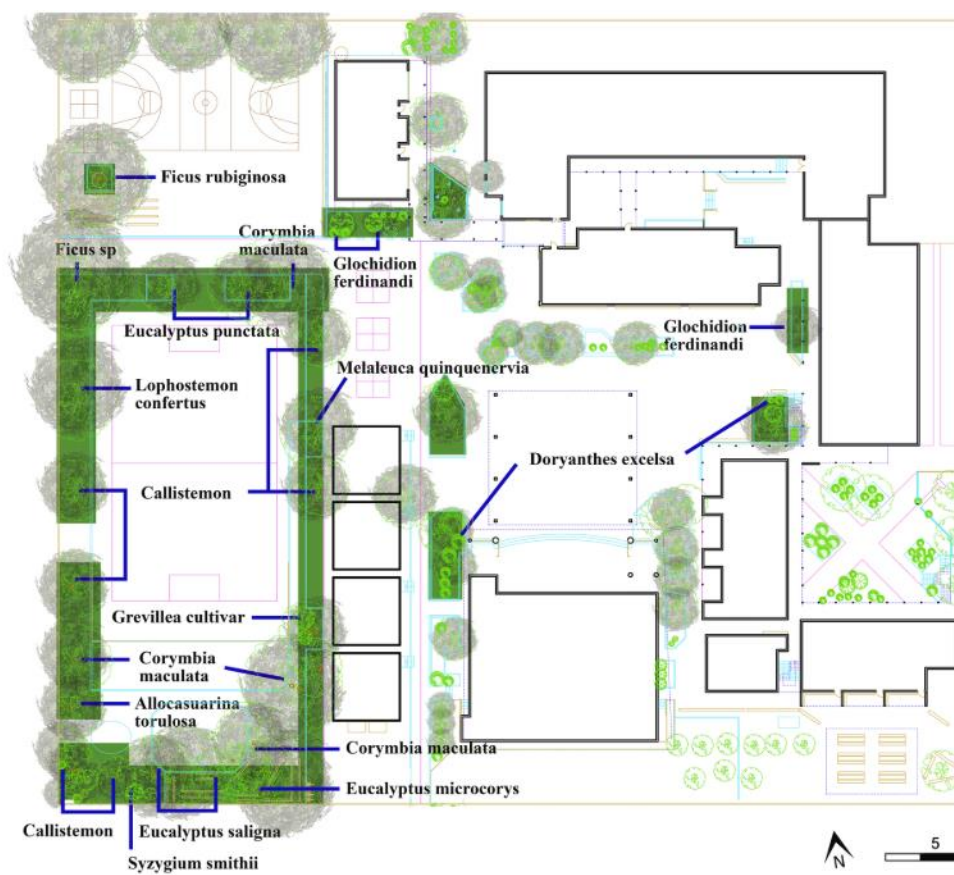


Figure 4. Preferred natural settings in school 2

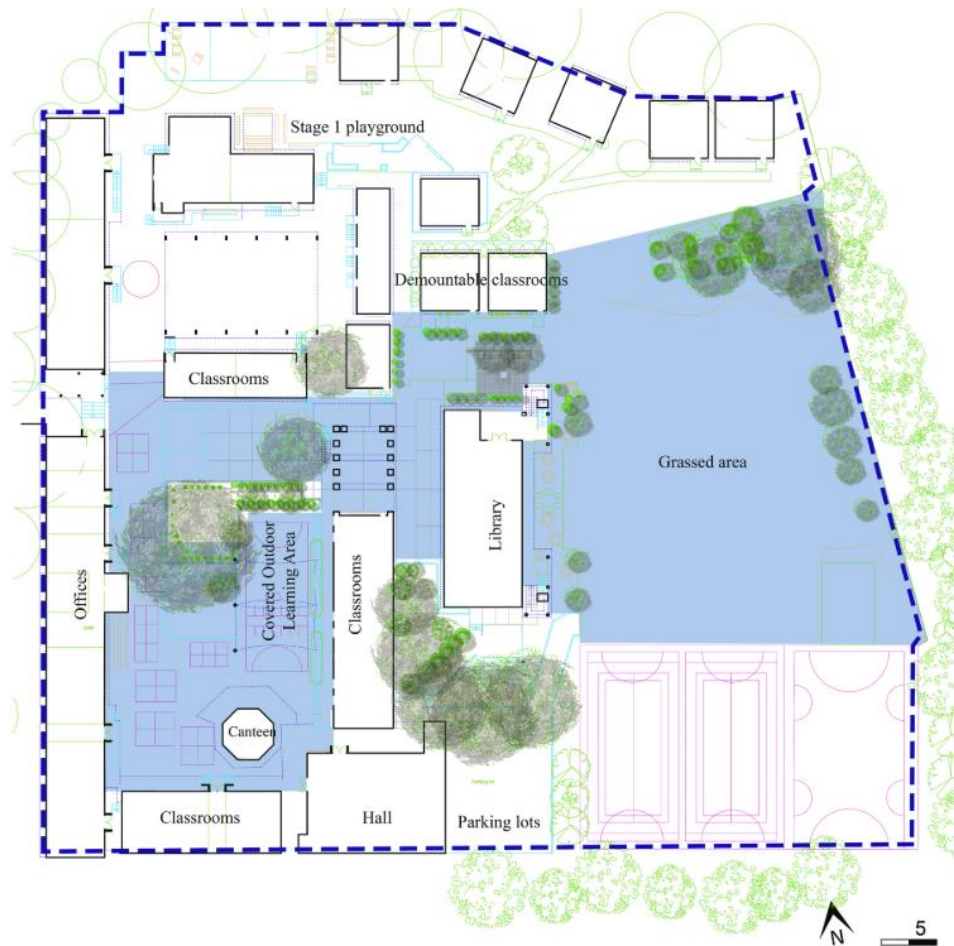


Figure 5. Open area in school 3

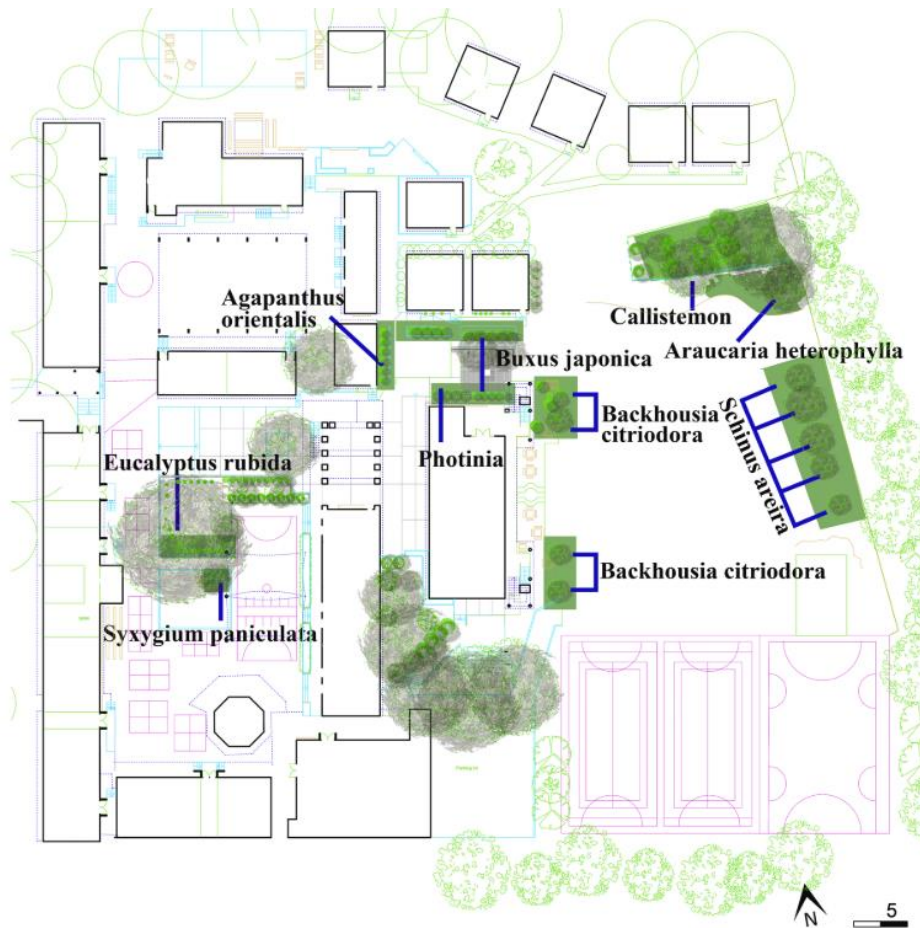


Figure 6. Preferred natural settings in school 3

1.4 Findings

1.4.1 Vegetation

Children preferred certain plant types that offered the following physical affordances for play:

- i. Plants with malleable resources that offer resources for constructive play.
- ii. Massive roots and reachable limbs offering socio dramatic play and can be climbed on easily.
- iii. Massive and soft trunks without massive roots for nice tactile feeling and a base for games.
- iv. Low tree canopies where socio dramatic play can happen.
- v. Soft and dense evergreen bushes which are good hiding spaces.
- vi. Large tree canopies with shaded spaces to relax.
- vii. Flowering plants which offer honey to taste, visually appealing and attract birds.

Children preferred the location of natural settings which are not too busy and not too isolated for their play. Mostly the natural settings along the edges of play areas were found to be used by the children. Study finds

that physical characters of vegetation such as the form, height, density of foliage and texture enhance the curiosity and offers affordances for explorative Play and learning. Trees and vegetation can also create interesting forms for socio-dramatic plays such as hiding, feel of enclosure etc. Loose materials like fallen leaves, dried barks, fruits etc can be create opportunity for enhancing the constructive Learning and play.



Figure 7. Plants with malleable resources for constructive play



Figure 8. Green bushes for hiding and Species with reachable limbs to climb



Figure 9. With physical features for dramatic play

1.4.2 Edges defining the play areas

Edges or boundaries of natural settings also create different affordances to play. Children preferred raised and levelled boundaries, but avoided imposed boundaries with fences. Soft edges demarcate the different spaces for

learning as well as children's preference for learning. Amount of preference changes with the state of maintenance of the natural setting, as children prefer well maintained spaces to spend time.



Figure 10. Types of boundaries or edges creating different affordances to play

CASE II:

2.1 context and methodology

Study done by (Khan et al., 2020) in Bangladesh works within the theory of behaviour settings to design school grounds. Several methods were applied such as studying focus groups with children, teachers and parents, a drawing session with children and a child-led/teacher supported model-making workshop. Study was done based on the core idea that children need to participate at various levels in the planning and design of places for their needs.

2.2 Findings

The degree of participation from the children helps to design spaces which effectively fulfil the purpose of child intended spaces creating various affordances for play. Analysing the research activities six main themes based on certain desirable elements functional for play as well as learning were emerged. And then all these elements were grouped under eight types such as:

2.2.1 Natural elements

- i. Natural learning area with Trees, shrubs and ground covers, which creates affordances for exploratory play and learning opportunity through counting, understanding the interdependence of plants and animals.

- ii. Gardens showing seasonal changes to create chance for dramatic play, enjoying nature and opportunity to understand the development of plants from seed, how it depends on other plants and living organisms etc.

2.2.2 Water Elements

- i. Water area with water ponds, fish and water plants to create affordances for dramatic and explorative play as well as opportunity to learn water cycle, life cycle of aquatic plants etc.

2.2.3 Educational elements

- ii. Outdoor learning facility with seats and stage providing chances for peer interaction and affordances to learn through interaction with different people.
- iii. Area with loose materials providing a chance to play with creating different forms, patterns and compositions as well as to learn numeracy.
- iv. Open yard with smooth surface to create affordances for games, running, walking and cycling. And also, to learn numeracy from playground markings.

2.2.4 Climate adaptation elements

Huts with shaded spaces and seating to shelter from adverse climate and also as a space to learn curriculum contents.

2.2.5 Way finding elements

Paths with stepping stones creating affordances to explore movement patterns as well as to learn numeracy from inscriptions on the stones.

CASE III:

3.1 context and methodology

Studies have also conducted on the role of Landscape Environments in children's brain development and cognitive capacity in order to promote the children's physical and psychological health fundamentally. In the

study (Yichuan Zhang, Chaoping Chen, Jian Zhou, n.d.), the research method used was a combination of behaviour analysis, landscape psychology and creation of environment. Firstly, the study analyses the children's brain plasticity and the behaviour features of cognition. Then these are integrated with the Landscape Environments on the basis of the children's mental activity by behaviour mapping. And finally in terms of landscape planning and design, Landscape Environments are created suitable for the children's brain plasticity and cognition.

3.2 Findings

Study figures put that the Landscape creation can improve the cognitive capacity and brain plasticity in children. Landscape environment creation based on brain plasticity can be implemented based on certain features such as Naturality, Diversity, Interestingness, Informatization, Artistry, Movability and Comfort. Each of these features (Table 1) can be achieved through the careful process of Landscape planning and design.

Table 1. Landscape environment creation for brain plasticity

No.	Features	Landscape Planning	Landscape Design
1	Naturality	Vegetation coverage	Plant diversity, topology and water system.
2	Diversity	Space types	Combination of elements
3	Interestingness	Diverse activities	Diverse sensory experiences
4	Informatization	Landscape lighting, smart landscape	Sound and light experience
5	Artistry	Overall spatial quality	Form, texture, material and colour
6	Movability	Kinetic and static spaces	Combination of diverse motion
7	Comfort	Floral coverage	Microclimate control elements

Cognitive development of children occurs in different phases, and this differentiation should be also considered in designing Landscapes for children of different ages (Table 2).

Table 2 Cognition phases and Landscape environment creation

No.	Age group	Cognitive features	Landscape environment creation
1	0-2	Undeveloped language and thought; Surroundings explored by senses and motion	Diverse colour, shapes and textures
2	2-7	Language development and thinking starts	More activity-oriented elements, games
3	7-11	Able to think logically and operate	Stimulating and inspiring features
4	11-14	Able to do logical operations for abstract material	Explorative, cultural and adventure

By means of five sensory experiences Landscape environments can improve the physical as well as cognitive development in children. Prosocial behaviour is also improved in children playing and interacting with natural environments(Yichuan Zhang, Chaoping Chen, Jian Zhou, n.d.).

CASE IV:

4.1 context

This case example of Bhavishya school, in Trivandrum, Kerala is an example for the role of water as an element in enhancing outdoor learning spaces for children(Mariam & Raman, 2021). Apart from situated on the banks of River Karamana, school has used water as a design element in the central courtyard. This importance and prominence given to the location of the water body in the central courtyard are due to the fact that water play is an essential component of Steiner schools.

4.2 Importance of water elements



Figure 8 Central waterbody and surrounding classrooms



Figure 9 central water body and wide openings enabling uninterrupted visual connection

Students prefer to spend their break time more in the courtyard waterbody, by engaging in experiencing it visually, touching and even creating affordances for creative play opportunities.

CASE V:

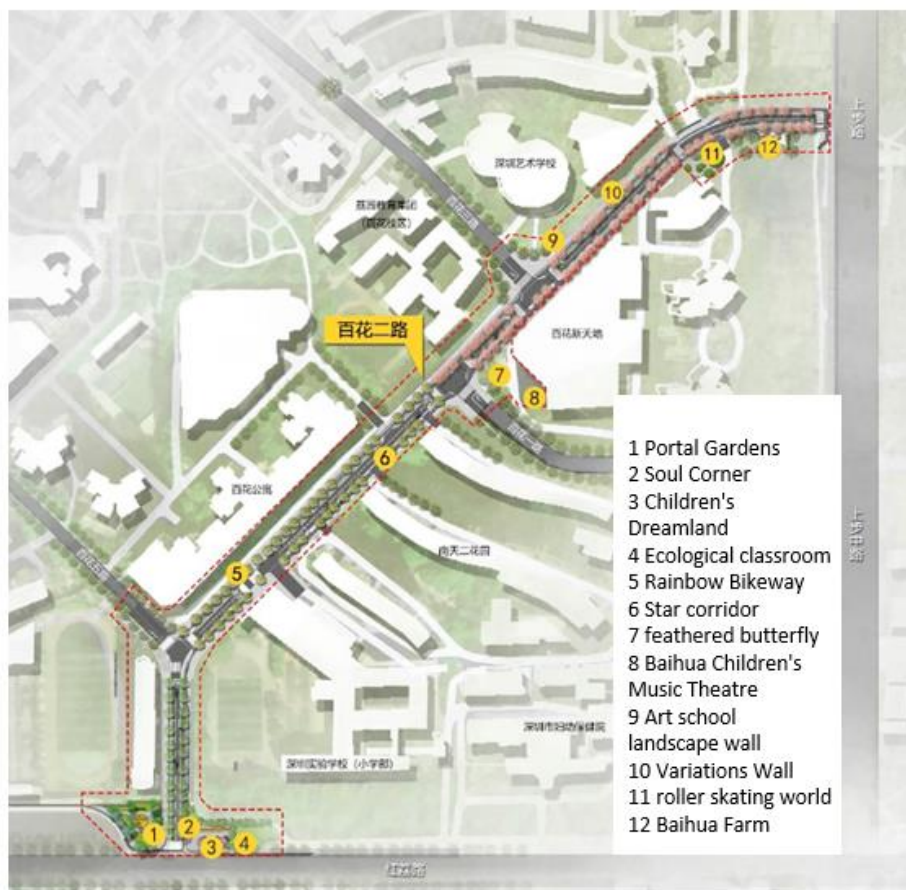
5.1 Context of neighbourhood designed for children

There are case examples of neighbourhoods which are designed for children to make sure that the young generation are well aware and get connected to the culture and traditions of the community. The Baihua neighbourhood situated in Futian, Shenzhen's Baishaling district is an example for the same. In this neighbourhood, above 13.000 children of school-age reside and attend school. By this project, the ancient Baihua neighbourhood will be transformed into Shenzhen's first child-friendly neighbourhood. Children may

The room seems light and airy because there are no windows also fresh and cool due to the waterbody. The classroom has good access to the outside and is situated between two open areas. This class's students are perceived as being more active outdoors. The fish tanks have been positioned adjacent to the classrooms and along the circulation routes as the attraction. The uninterrupted visual connection with the outdoor nature strengthens the teaching and learning and enables the learners to live in harmony with nature by establishing a link between the built mass and the spill out spaces.

come into direct contact with natural components because the neighbourhood has been improved and many natural materials have been used to create the spaces.

5.2 Findings









The public area is segregated from the educational area. Additionally, the use of coloured zebra crossings serves as a warning to motorists to reduce their pace, and the painted walkway along the side also offers complete protection for the ensuring child safety.

The facade serves as a corner for wisdom and knowledge, from children can learn about the tradition and culture of the setting.

Sensory, constructed, learning, psychological, transitional and security elements are considered.

Figure 10 Child friendly neighbourhood of Baihua

Landscape Element	Description
	<p>Child oriented elements</p> <p>Facilities considering children’s anthropometry and interesting colours.</p>
	<p>Multisensory elements</p> <p>Initiating the explorative nature in children, provides opportunities for interaction with the living environments.</p>

	<p>Agricultural elements</p>	<p>Helps to enhance an interest among children towards farming.</p>
	<p>Educational elements</p>	<p>Walls and facades as educational surfaces with interesting displays.</p>
	<p>Elements for way finding</p>	<p>Zebra cross in children's theme for way finding as well as safe access.</p>
	<p>Emotional elements</p>	<p>Art works and paintings hidden on the local trees creating an emotional attachment and sense of place.</p>

CASE VI:

6.1 Context

The case of Ratchut School, Thailand which is a clear reference to the "Montessori" school of thought, which believed that a learning environment should resemble a family rather than a conventional classroom. From the phase of planning and design inclusion of elements as well as principles has resulted in creating effective child friendly landscape areas. So that every student can feel more at home while at school, the learning environment has been divided into a variety of little "rooms." The design of these "rooms" has been suited to each of the kids' activities. The building's plan was carefully researched to promote self-learning and include both indoor and outdoor areas, architecture, and landscape to give a variety of learning activities since nature is the best learning environment for children of this age.



Figure 11 outdoor spaces



Figure 12 Linking paths

6.2 Planning of Layout:

Each "nature" component in this design is appropriate for a particular stage of childhood development. For this project, caves, mounds, sand, and trees have been used in combination with other carefully chosen natural components to provide an ideal environment for learning. The whole design is based on the concept of getting inspired from nature and exploring it.

SITE AND CLASSROOM

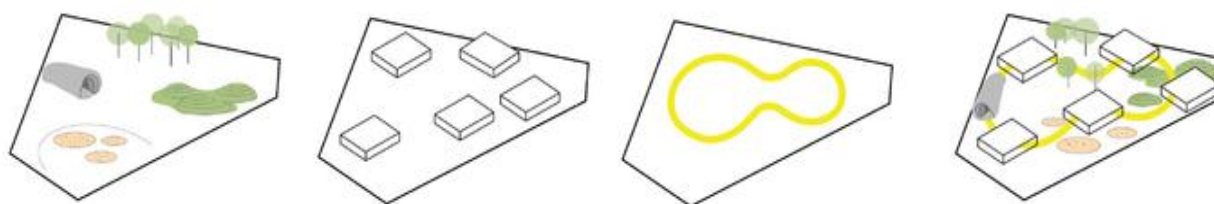


Figure 13 Conceptual development of campus layout



6.3 Natural elements used:

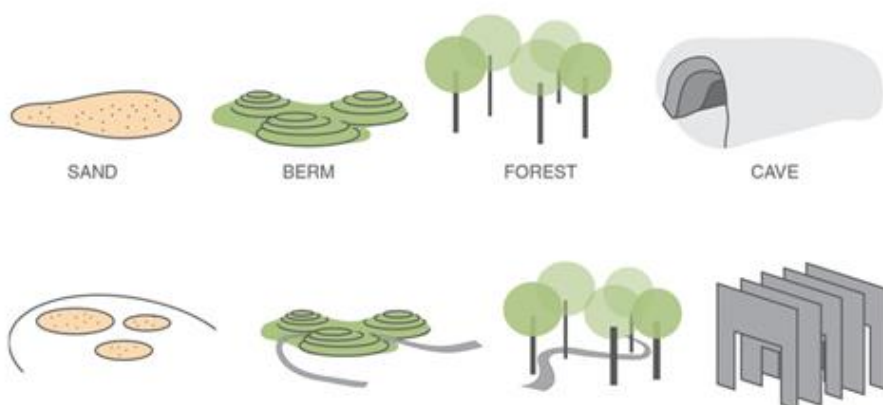


Figure 14 Natural elements used

- i. Sand lawn: To aid in the development of a toddler's sense of touch, "sand lawn" is used in the playground area around the Toddler Building.
- ii. Free flowing mounds: Children could run about and use the area for an outdoor learning experience since free flowing "mound" form is used in the environment of the court and the adjacent areas. Additionally, all of the buildings and classroom areas are connected by this area.
- iii. Trees for shade: To offer shade for outdoor learning spaces, "trees" are planted.

5. ANALYSIS AND DISCUSSION

Case examples from literature study are tabulated based on the study approach, parameters/observations and key inferences obtained.

5.1 LITERATURE STUDY

LITERATURE STUDY	METHODOLOGY	PARAMETERS STUDIED	INFERENCE
CASE I (Aminpour, 2021)	This qualitative study used to identify the types of natural settings that pre-primary school children preferred. Documented children's age and gender-based responses towards the nature.	Types of Vegetation, Edges/boundaries and the affordances offered by their characteristics.	Learning landscapes need to have floral varieties that can promote the explorative nature in children, based on their sensory factors and affordances to initiate play. Different zones of activity can have suitable edges.
CASE II (Khan et al., 2020)	A drawing session with children and a child-led/teacher supported model making workshop was conducted to find the children's affordances towards different spaces.	Affordances offered by Vegetation, water, soil, hardscape elements, enclosures and linkages for play and learning	Multiple natural settings of interest based on the types of affordances to play and learn has different elements of landscape. Behaviour of kids depends on the types of elements used and their affordances. While designing outdoor learning spaces for children, their participation can be taken into consideration.
CASE III (Yichuan Zhang, Chaoping Chen, Jian Zhou, n.d.)	Analyzing the children's brain plasticity and behavioral characteristics of cognition. -Integrating these with LE (on the basis of mental activity by behavior mapping) -Creates LE suitable for children's brain plasticity and cognition.	Elements of Learning environments and their influence in cognitive development.	Children have five stages of cognition development. So, the nature of each phase needs to be considered while developing LE. Elements to enhance emotional as well as sensory cognition need to be incorporated.

5.2 DESKTOP CASE STUDY

CASE STUDY	DESIGN APPROACH	OBSERVATIONS	INFERENCE
CASE IV Ratchut School, Thailand	Natural elements used in this design are appropriate for a particular stage of childhood development. For this project, caves, mounds, sand, and trees have been used in combination with other carefully chosen natural components to provide an ideal environment for learning.	Design promotes self-learning and include both indoor and outdoor areas, architecture, and landscape to give a variety of learning activities. Various indoor spaces are connected by natural elements like free-flowing mounds and paths.	Outdoor and indoor learning spaces can be integrated with the natural elements. Age of the learners need to be considered while choosing the approach. Natural environment creates a feeling of home, which adds more comfort among the users.
CASE V Baihua child-friendly neighbourhood Shenzhen	Children may come into direct contact with natural components because the neighborhood has been improved and many natural materials have been used to create the spaces. The public area is segregated from the educational area for safe environment for children. Sensory, constructed, learning, psychological, transitional and security elements are used.	Children could learn as well as understand the local culture and tradition of the setting by interfering with designed elements. Safety and accessibility to have important role in enhancing effective learning landscapes.	To encourage the sense of place and attachment to the community as well as environment can be achieved through utilizing suitable elements and approaches. Safety and accessibility need to be considered based on the context of the learning environments.
CASE VI Bhavishya School Trivandrum	Planning of the indoor learning spaces around the central waterbody. Indoor spaces opening up visually as well as physically to the water element. Location of the school in a potential context of river view.	Children are more attracted to the water feature than that of other areas during the breaks. Indoor spaces feel airier and cooler due to the presence of water.	The uninterrupted visual connection with the natural element strengthens the teaching and learning and enables the learners to live in harmony with nature by establishing a link between the built mass and the spill out spaces. Natural elements improve the comfort of the indoor spaces adjacent to them and thus enhances effective learning activities.

5.3 LANDSCAPE ELEMENTS AND THE AFFORDANCES CREATED IN CHILDREN

Various landscape elements and features from the studies are listed down along with their affordances created to play and learning in the table.

Sl no.	Landscape Element/ feature	Character towards which children attracted	Affordances for play	Affordances for learning
1	Trees	Peculiarities of the bark, foliage colour, reachable limbs, massive roots etc.	Exploratory play	Inter dependency of plants and animals
2	Shrubs	Height, habitat for birds, Foliage character and colour.	Exploratory play	Inter dependency of plants and animals
3	Ground covers	Even and soft surfaces (Lawn), Reachable plants, foliage character and blossoms.	Exploratory and social play	Inter dependency of plants and animals
4	Water	Movement, coolness and transparency	Exploratory play	Water cycle and different forms
5	Loose materials	Form, tactile character, colour etc.	Constructive play	Numeracy and patterns
6	Pathway	Shape of pathway (Curvilinear/zig zag), movement pattern created	Exploratory play	Numeracy and movement patterns
7	Stepping stones	Movement pattern, surroundings where stones arranged.	Manipulative play	Order and patterns
8	Sound and light	Shadow n light play Varieties of sounds from birds, water etc.	Exploratory play	Light-shadow and recognizing different sounds
9	Colours	Colours changing with seasons, rain bow colours etc.	Exploratory play	Colour wheel, combinations
10	Textures	Experiencing different visual and tactile textures	Exploratory play	Differentiating multiple textures
11	Forms	Depth of forms, size and arrangement (Tree forms, Rocks, Mounts)	Pretended play/dramatic play	Imagination
12	Mounts	Topography of the mount with differing slopes, curves, ups and downs.	Exploratory/social play	Learn about heights
13	Enclosures by vegetation	Shade and shelter, Umbrella like canopies etc	Pretend play/dramatic play	Types of vegetation and seasonal changes

14	Outdoor furnishings for learning	Child friendly materials, colours, textures and forms.	Interactive play	Curriculum learning through interaction
15	Green roofs and facades	Morphology of vegetation used, associated elements like birds, butterflies, water etc.	Exploratory play	Vegetation and climate regulation
16	Edible fruits	Sweet and sour fruits, Attractive fragrances and changing colour of fruits.	Exploratory play	Tastes, fruit types and food web
17	Mini-Garden tools	Imitating tendency of kids towards elders, Chance to understand the daily change in plants.	Manipulative play	Importance of farming
18	Graffiti wall	Free to paint anything, Chance to do team work.	Creative play	Compositions, cultural values
19	Edges or boundaries	Recessed or Elevated boundaries create interest.	Pretend play/dramatic play	Territories for different activities
20	Open field or yard	Free space to run, jump and play.	Social play	Numeracy from different objects.

Each and every element creates chances for play as well as learning in some or the other way. Affordances created for play also differs such as exploratory, social, constructive, manipulative, dramatic, interactive and creative play.

5.4 TYPES OF LANDSCAPE ELEMENTS IN EDUCATIONAL LANDSCAPES

In 2009, Taylor has already categorized the elements of landscape for enhancing Educational Landscapes as follows:


























1. Natural elements
2. Multisensory elements
3. Agricultural elements
4. Built elements
5. Educational elements
6. Cultural elements
7. Transitional elements

(Keren Zhang, August 2021. Study with Nature; Research of child-responsive educational landscapes aims to reconnect Chinese urban schoolchildren with nature in a highly urbanized Chinese context (Unpublished master's thesis). Wageningen University, Netherlands.)

Additional to these categories following elements are incorporated in the following table

- i) *Elements for safety*
- ii) *Elements creating sense of attachment and emotional connection*
- iii) *Child oriented elements*
- iv) *Climate adaptation elements*

Sl no.	Element	Examples				
1	Natural elements	 Diverse Vegetation	 Pebbles, fallen leaves and barks	 Diverse landforms	 Habitat for birds	 Insect habitats
2	Multisensory elements	 Edible vegetation	 Visual treats in seasons	 Olfactory plants	 Auditory elements	 Tactile elements
3	Agricultural elements	 Vegetable garden	 Small wells	 Glass house	 Mini tools	 Livestock interaction
4	Emotional elements	 Unique marks	 Erasable graffiti walls	 Wish tree	 Tree paintings	 Installations
5	Cultural elements	 Local cultural patterns	 Local Artwork walls	 Parent child interaction space	 Local cultural symbols	 Local plant species
6	Educational elements	 Outdoor teaching space	 Outdoor creative pattern wall	 Interactive signages	 Music sculptures	 Floor patterns for playful learning

7	Transitional elements	 Clear access way	 Wayfinding signages	 Clear entrance	 Crossing for children	 Stepping stone path
8	Child oriented elements	 Child sized facilities	 Colours and patterns	 Playful facades	 Elements considering Child anthropometry	 Climbing wall
9	Safety elements	 Pathway without barriers	 See through walls	 Soft surfaces	 Safe slopes	 Safe Vegetation
10	Climate adaptation elements	 Sheltered space	 Green facade	 Green Roof	 Shallow water	 Alternative materials
11	Built elements	 Indoor learning spaces	 Built in seating	 Gazebos	 Pavilions	 Niches

5.1 Guidelines

As well as design elements, guidelines and recommendations are required for the effective development of outdoor educational landscapes for children. Guidelines to be followed at designing stage considering different factors are as follows:

1. User group participation in design: When creating learning environments, including users in both the planning and implementation stages can help designers better grasp the affordances that users value.

2. Knowledge of the user group's gender and age: For their cognitive and physical development, children of different age groups have different environmental needs. Additionally, a child's preferences depend on their gender.

3. Ensuring the security of kids: Safety and health are important factors to take into account when developing environments for youngsters. To promote a safe and healthy environment, children's risks should be kept to a

minimum in educational settings. Access without obstacles, a zone free of vehicles, and visible connections to adjacent places for parental monitoring are necessary.

4. Easy access to the area from the school: Designing a space for children necessitates accessibility, especially walkability. In order to encourage children's autonomous mobility, educational surroundings should provide clear entrances and secure passageways connecting neighbouring schools.

5. Ensuring the presence of kid-friendly amenities: Since children are the primary users, educational landscape should be able to stimulate children's interests. Kid anthropometry needs to be taken into account as well in order for the facilities to be used appropriately.

6. A welcoming environment with weather protection: Schools ought to provide students with an environment that is climate-friendly. In the summer, it's also crucial to make sure that outdoor educational activities may be carried out in well-ventilated, shaded areas even when it's raining.

7. Provide a Variety of Natural Resources Throughout the Year: Children who are exposed to the diversity of nature benefit from outdoor education and forge strong bonds with the natural world. Integration of regional variances in vegetation, topography, and water bodies is conceivable.

8. Promote the use of several senses: Multisensory activities are crucial for experiential learning and help children develop a sense of connection to nature. The educational environment should develop a variety of sensory settings (visual, taste, tactile, auditory, and olfactory) in order to give children rich natural experiences and to activate their five senses.

9. Different environments for different learnings: Experiential learning is a key component of outdoor education. It is necessary to have an experiential learning area, a serene location for reflection and meditation, and an active, hands-on practising area.

10. Community spaces and spaces for introspection: In addition to spaces for group activity, educational facilities should have quiet areas for introspective study and meditation.

11. Encourage kids to feel a connection to the environment: The environment may offer special initiatives that assist youngsters in creating memorable experiences that deepen their emotional bonds. Children, for instance, are able to leave their unique imprints on the recycled graffiti walls. Kids can also tie the rope to one of the wish trees to make a wish.

12. Provide chances for social interaction: Children who are socially connected may learn more about their surroundings and develop a deeper sense of place. For instance, outdoor classrooms can be used for after-school cultural activities and child-parent interactions, enabling children to interact with the community in a secure setting.

6. CONCLUSION

Study finds that kids are influenced by their learning environment physically as well as psychologically. Having an outdoor learning environment has several advantages for the general health of both children and teachers. Outdoor learning environments contribute to the physical, psychological and cognitive development in the early childhood phase. The needs for children in different stages of cognitive development varies, so their learning landscapes will also be different. Also, in order to develop a generation having sensible considerations to protect the nature, children's interaction and place attachment towards the natural environment is inevitable. There should be a blend of classroom preparation and outdoor experiences in an outdoor area of learning; it simply can be an extension of the interior classroom too. Learning landscapes should be able to create multiple affordances for different types of plays as well as learning processes. Thus, to develop or design an effective learning landscape, design considerations and suitable elements need to be used according to the context, user group and preferable activities.

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