

Effects of Pre-School Architectural Characteristics on the Growth of Children

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Abstract - This paper investigates the effect of preschool's architectural characteristics on the growth of children. Children aged 1-5 years show rapid development in their cognitive development, social and emotional development, health and physical development, and language and early literacy. Therefore, the environment they stay in has a huge influence on this growth. Brain development at this stage has a significant effect on a child's ability for learning and achievement in life. Preschool is the place where they gain their basic education. Therefore, the preschool environment has a vast influence on the growth of children. The study of the architectural characteristics of a preschool is divided into three main parts: special arrangement, colours and lighting, and sustainable design methods. And then the influence of these factors is linked with the growth of children.

Keywords: Growth of children, spatial arrangement, colours and lighting, sustainable design methods

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I. Introduction

Architecture usually plays a vital role in shaping human behaviours and intuition. From a very young age of any individual, a proper atmosphere should be built around them to develop their minds at ease. Due to the related study by many psychiatrists, architects around the world are looking for ways to improve children's experiences during their preschool phase. A preschool should be like a small city, differentiated from space to space with a lot of inconsistent equipment and activities that are adaptable to children's imagination. Incorporating a set of architectural characteristics like using appropriate spatial arrangements, suitable use of colours and lighting methods, and sustainable design methods like ample use of nature, etc. will shape their health and physical, social and emotional, language and early literacy, and cognitive development which will help determine their success at school and beyond (Bunge, 2017).

This research will provide fundamental in-depth information on the effects of preschool architectural characteristics like spatial arrangement, colours and lighting, and sustainable design methods that are applicable in the growth process of a child.

Spatial arrangement in space is considered the most important element in an interior. Without proper spatial arrangements, the space would not function well. Therefore, when it comes to preschools, it is especially essential to organise the interior space appropriately in a manner that allows the children to move and play around with ease away from any danger. How the space is managed and arranged well will determine the brain stimulation and cognitive behaviour of the child.

Colours and lighting are usually two of the main important elements of any interior. If there is no appropriate use of colours and lighting that suit different atmospheres and spaces, people will feel uncomfortable which eventually affects their behaviour. Likewise in preschools, it is especially important to have appropriately suitable colours and lighting as they are important elements in early childhood development (Mukunthan, 2016).

Using sustainable design methods like incorporating nature is another key aspect an interior should contain for the proper health and physical, social and emotional, and cognitive development of human beings. During early childhood, children are advised to be associated with nature rather than technology (Graham, 2019).

Theoretically and practically proven information from four reliable preschools namely Bloom Preschool Piliyandala, Pebbles-Preschool & Daycare Battaramulla, Athena Montessori and Daycare Centre (AMI) Colombo 01 and Tiny Kids Nursery School Gampaha, that are functioning in good condition is incorporated into this research to evaluate and liberate insightful practical research. The need for this research is to provide trustworthy information and adequate insightful knowledge for future preschool organisations that are looking forward to start-up a new venture for children.

II. Methodology

This research was done using the research onion method. The very first stage of the research onion is the philosophy layer. Philosophy is based on beliefs and assumptions. It is the belief in which research should be conducted, data should be collected, and data should then be analysed (Melnikovas, 2018). In the philosophy stage, there are two extremes known as Objectivism and Subjectivism. This research falls under the subjectivism category because this

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was based on social factors as well as on opinions, assumptions and was conducted attached to the research.

This research was done using the deductive approach, which means there was a relationship between the two-variables assigned in this research, such as the relationship between the spatial arrangement of a preschool and the growth of children, the relationship between the interior colour and lighting of a preschool and the growth of children, the relationship between the sustainable design methods for a preschool and the growth of children. In the deductive approach, the researcher starts the research with a question, and the research is done to find answers to it. This will have to go through a process of data collection, rejection, or confirmation of facts and analysing them (Surendran, 2021).

The next stage was clarifying the methodological choice. The research problem and the general objective of the research may influence the choice of methods within the research; hence, at this stage, mono, mixed, or multi-methods are used to carry out certain study tasks. In this research, there were both quantitative and qualitative data. Therefore, this was done using a simple mixed method.

Research strategies refer to collecting and analysing data in different ways which suit the research and are practical for the researcher. The choice of strategy may differ according to the philosophies (Surendran, 2021).

Since this is conducted through a mixed method, this research had surveys and case studies. The research was based on a cross-sectional studies method as this was completed in six months and there will be no continuation of this research in the future. Next was the last stage of the research onion, which was the data collection and analysis method. Methods for data collection for the research were several methods such as; structured questionnaires, structured interviews, and observation.

III. Architectural Characteristics and its Effects on the Growth of Children

A preschool is an educational institution based on playing, singing, practical activities such as drawing, and social interaction as a part of the transition from home to school. It is the very first form of school education given to children aged 3-5. It is believed that creating a favourable environment that fulfils all necessary desires of growing children, like appropriate architectural characteristics within their surroundings can definitely affect their health and physical, social and emotional, language and early literacy and cognitive development significantly from an early age (Children, 2022).

Preschool Architectural characteristics can be branched into spatial arrangements, colours, and lighting and incorporate sustainable design methods.

A. Spatial Arrangement

"Spatial arrangement" in the words of a child is defined as the relative study of the positioning of their body and the objects around them (Mukunthan, 2016). Planning a preschool spatial arrangement is especially essential since the space should be designed in a way that connects children with their surroundings and nature. Children at an early age, when their brain

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is still immature, need adequate space that supports their nature of being active especially when it comes to activities with high mobility like running, jumping, dancing, etc. If a preschool is designed with spaces that cater to the different needs of children, their health and physical, social and emotional, language, and early literacy and cognitive development will improve significantly from an early age (Shahli, 2021).

The case study that was done by Callum B. Johnston, Teresa K. Herzog, Crystal R. Hill-Chapman, Caitlin Siney, and Ashley Fergusson in 2019, states that an environment with proper spatial arrangement and furniture is necessary for the growth of children (Callum B. Johnston, 2019). The interviews that were conducted with teachers in Bloom Preschool and Pebbles Preschool and Daycare stated that it is important to design a preschool with adequate space and zoning for children to move around.

Spatial arrangement can be broken down into three sub-variables namely, zoning, traffic flow, and size and scale of furniture. These sub-variables focus on how spatial arrangement can be organised in different ways as per the preference of the space and needs (Bowden, 2021).

Figure 1

Better_seating_arrangement					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	28	18.9	18.9	18.9
	Disagree	1	.7	.7	19.6
	Neutral	14	9.5	9.5	29.1
	Strongly Agree	103	69.6	69.6	98.6
	Strongly Disagree	2	1.4	1.4	100.0
Total		148	100.0	100.0	

The findings indicate a positive perception of the seating arrangement in preschool architectural characteristics, with a majority of participants (88.5%) either strongly agreeing or agreeing with it. This suggests that the seating arrangement is generally well-received by the participants and may be a favourable aspect contributing to the overall positive growth environment in preschool settings.

1. Zoning

Zoning in preschools includes separating the accessible space into particular ranges, each devoted to particular exercises or learning encounters. These zones may incorporate artwork corners, reading corners, sensory play areas, building block-making areas, and other gross motor skill developing areas. By making well-defined zones, teachers can offer an organised environment that energises children to engage in different activities and allow them to figure out where and when activities would take place on their own (Sullivan, 2018 Oct 25th). Zoning too makes a difference and builds up a sense of arrangement and reason inside the preschools, permitting children to get it where and when certain exercises are suitable. A well-zoned preschool encourages adjusted and comprehensive early childhood instruction that supports children’s cognitive, physical, social, and emotional development.

2. Traffic Flow

Traffic flow in a preschool alludes to the smooth and effective development of children inside the space. By creating a space with no congestion and obstruction, children can explore the environment securely and freely by promoting autonomy. Clear pathways and distinctive zones are especially essential to allow children to move easily from one area to

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another without disappointment or feeling anxious. Teachers or instructors can moreover move around the space more easily, empowering them to reply instantly to children needs and guaranteeing a secure learning environment (Nordtømme, 2012) In addition, a well-organised activity stream contributes to a concordant air, where children can centre on their exercises and education without superfluous diversions or disturbances.

3. Size and scale of furniture

The fitting measure and scale of decorations play a significant part in making a comfortable and available environment for preschoolers to learn. Child-sized furniture such as chairs, tables, and racks, guarantees that children can associate with their environment comfortably and autonomously. When children can effectively reach and control materials or objects, they create a sense of possession and control over their learning encounters. Child-sized furniture moreover advances a sense of having a place and makes a sustaining environment that regards the interesting needs and characteristics of children. Moreover, fittingly measured furniture improves children’s physical advancement, as they can move openly, and improves their gross motor skills immensely (Nordtømme, 2012). Having their own comfortable furniture may even install a quality characteristic such as teaching responsibility to protect and use what belongs to them. On the whole, considering the measure and scale of decorations contributes to a preschool that engages children, cultivates a positive self-image, and advances a sense of competence in their capacities.

Figure 2

comfortability_of_furniture				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	7	4.7	4.7	4.7
1	36	24.3	24.3	29.1
2	54	36.5	36.5	65.5
3	35	23.6	23.6	89.2
4	9	6.1	6.1	95.3
5	7	4.7	4.7	100.0
Total	148	100.0	100.0	

The findings indicate a mixed perception of the comfortability of furniture in preschool architectural characteristics. While a significant portion of participants found the furniture moderately comfortable, others had varying degrees of comfortability ratings. It is evident that there is room for improvement in terms of providing more comfortable furniture in preschool settings to create an optimal environment that supports the growth and development of children.

B. Colours and Lighting

Colours and lighting play a major role when it comes to preschools as well. According to research, it is believed that children between the ages of three to six years are strongly sensitive to colour and lighting (visual appearance) rather than forms (Goh, 2021). The case study that was done by Marilyn Read in 2019, states that incorporating colours into early childhood learning centres will immensely benefit the growth of children (Read, 2019) while the case study done by Michael Lekan-Kehinde and Abimbola Asojo states that appropriate natural and artificial lighting methods are essential in a physical learning environment for children to

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perform better academically and physically (ASOJO, 2021). The interviews that were conducted with teachers in Pebbles Preschool and Daycare and AMI Montessori stated that it is important to use variations of colours as well as natural and artificial lighting methods in preschool interiors, as it creates a dynamic environment for children to learn and grow.

1. Colours

Making an invigorating and positive learning environment is vital in early childhood education. Preschools contribute to playing a critical part in forming youthful minds and cultivating a cherish for learning. Colours have a profound impact on children's social and emotional, health and physical, language, and early literacy and cognitive improvement. The significance of utilising colours in preschools improves the learning encounter and makes an inviting, dynamic, and conducive environment for children (Chia, 2021). By understanding the characteristics of cool, warm, and neutral colours, and how they affect children's feelings and cognitive advancement, teachers can change the preschool space into a supporting and enhancing put for early learners.

Figure 2

		Colour_Variance			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	40	27.0	27.0	27.0
	Disagree	5	3.4	3.4	30.4
	Neutral	73	49.3	49.3	79.7
	Strongly Agree	28	18.9	18.9	98.6
	Strongly Disagree	2	1.4	1.4	100.0
Total		148	100.0	100.0	

The data indicate that a considerable portion of participants had a neutral stance toward colour variance in preschool architectural characteristics. While some respondents agreed or strongly agreed with the presence of colour variance. The mixed perception of colour variance might suggest that while colour variety can contribute to an aesthetically appealing environment, it might not be a decisive factor in creating an optimal learning environment for preschool children.

Cool Colours

Cool colours cultivate calmness and concentration. Colours such as blues, greens, and purples, have a common impact on youthful minds. They inspire a sense of tranquillity and quietness, making them perfect for ranges where concentration and unwinding are fundamental.

a) Blue: Considered one of the foremost relieving colours. Blue is culminated for making perusing niches and calm spaces. Utilising blues in preschool interiors makes children feel calm and centred, which allows them to concentrate and learn better under any circumstance.

b) Green: Typical to nature and development, greens cultivate a sense of adjustment and concordance. Utilising green in preschool interior ranges where children lock in hands-on or physical exercises such as cultivating, gardening, and exploring nature can fortify interest and appreciation for the environment (Meicheng, 2020).

c) Purple: As a colour related to imagination and creative energy, purple can be utilised in artwork corners, handwork areas, and in preschool spaces that empower imaginative expressions and problem-solving aptitudes (Meicheng2, 2020).

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Warm Colours

Warm colours empower vitality and imagination. Colours such as red, oranges, and yellows fall under warm colours and are a set of energetic-enthusiastic colours. They signify inspiration, excitement, joy and warmth and can be utilised deliberately to advance social interaction and inventiveness.

a) Reds: Whereas reds can be an effective and attention-grabbing colour, they ought to be utilised sparingly in preschools. They contribute to maintaining a strategic distance from overstimulation. Incorporating red colours complement more in preschool common areas which will contribute greatly towards engaging communication and play in children with each other (Meicheng, 2020)

b) Orange: Orange colours are known to be very warm and welcoming. Using orange colours in preschools can make an inviting climate in play areas or learning areas as it empowers interaction and makes a difference in installing excitement for learning purposes or other physical activities in children (Meicheng, 2020)

c) Yellow: Yellow colours are known to be shining and blissful and fortify mental actions and good faith. Utilising yellow colours in preschool spaces such as artwork corners and craftwork corners can rouse the minds of children to investigate their creative energy and grasp the bliss or self-expectations (Meicheng2, 2020)

Neutral Colours

Neutral colours such as whites, greys, and delicate pastels serve as calming scenery and offer assistance to keep up the visual adjustment within the preschool environment. They complement both cool and warm colours, avoiding tactile over-burden and advancing a generally concordant climate.

a) White: Whites are an amazing choice for dividers and furniture in preschool interiors. It improves the recognition of space and brightness as well as complements other colours, making it a flexible choice in making a clean and outwardly engaging environment for children (Meicheng, 2020)

b) Gray: Advertising an unpretentiousness and modern look, grey can be utilised for preschool flooring or furniture, making an impartial base that permits other colours to be highlighted more without overwhelming the space (Meicheng2, 2020)

c) Delicate Pastels: Pastels are very delicate and alleviating colours. Pastel colours such as light pinks, blues, and yellows can be utilised as complements or for furniture, including a touch of warmth and charm to preschool spaces due to their low saturation and high brightness. These delicate colours are ideal to be used in classroom interiors as children's learning spaces need to be more relaxing and calming compared to other spaces (Meicheng, 2020).

2. Lighting

Utilising distinctive lighting strategies in preschools is of utmost significance for making a conducive learning environment for children. Lighting plays a pivotal part in improving

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the general vibe, fortifying health and physical, social and emotional, language, and early literacy and cognitive development of children (Anon., 2021 Apr 19th).

Figure 3

Lighting_experience					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	5	3.4	3.4	3.4
	1	6	4.1	4.1	7.4
	2	49	33.1	33.1	40.5
	3	66	44.6	44.6	85.1
	4	12	8.1	8.1	93.2
	5	10	6.8	6.8	100.0
	Total	148	100.0	100.0	

The data indicate a varied distribution of participants' lighting experiences in preschool architectural characteristics. While the majority of respondents reported a moderately positive lighting experience, a substantial number of participants also had somewhat positive experiences. This suggests that the lighting conditions in preschool settings play a crucial role in shaping the overall environment, but there is room for improvement to provide an optimal lighting experience that supports the growth and well-being of children.

Natural Lighting

One of the foremost compelling and feasible lighting techniques is the integration of using natural lighting. Some of the key benefits of incorporating natural lighting into preschool interiors are;

An association with nature: Natural lighting frameworks, accomplished through deliberately installed windows, skylights, light tubes, etc. interface children to the ever-changing open-air environment. Daylight pouring into the classrooms and play areas makes a sense of ponder and interest, empowering investigation and imagination. This association with nature contains a significant effect on the development of children's health and physical, social, and emotional as well as cognitive well-being, cultivating a positive state of mind towards learning and ingraining an appreciation for the characteristic world.

Invigorating cognitive improvement: Considerers have appeared that introduction to natural light emphatically impacts cognitive improvement in children. Sunshine, with its changing concentration and colour temperatures, makes a difference enacting the brain and bolsters concentration. When children perform activities beneath natural lighting, they are more likely to excel in problem-solving aptitudes. The incitement given by natural lighting upgrades memory maintenance, making preschools a more compelling learning environment.

Advancing well-being: Natural light could be a common source of vitamin D, fundamental for children's bone improvement and general well-being. By coordinating natural lighting, preschools contribute to children's physical well-being, making a difference to avoid vitamin D insufficiencies and related well-being issues.

Upgrading enthusiastic direction: Natural lighting triggers the discharge of serotonin, a neurotransmitter dependable for sentiments of joy and satisfaction. By giving a wealth of natural light in preschool interiors, teachers make a positive and supporting interior, advancing enthusiastic well-being. A calm environment empowers children to construct more

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advantageous connections with their peers and teachers, driving them to a better agreeable, and comprehensive learning environment.

Language and early literacy supportability: Lighting is essential when it comes to reading texts, letters, or even when observing images. In preschools, children have different visions varying from each other, therefore, having adequate natural lighting will help children have better visual acuity to be able to observe and read better without difficulty. This will increase their communication skills and help them express their feelings better through different languages.

Artificial Lighting

In preschools, artificial lighting frameworks play an imperative part in making a positive and conducive environment for children to investigate, learn and create (Anon., n.d.). Through sharp execution, artificial lighting can upgrade visual clarity, set disposition, and bolster different activities which eventually contribute to sustaining and improving the health and physical, social and emotional, language and cognitive development of children. The benefits of utilising artificial lighting for preschool interiors are;

Promoting visual comfort and focus: Satisfactory and well-designed artificial lighting guarantees ideal permeability, lessening eye strains and visual weariness among preschoolers. Bright, uniform lighting in classrooms and action ranges makes a welcoming climate that improves centre and consideration. Accent lighting, such as movable work area lights or overhead lighting, gives focus to light for studying, drawing, painting, or craftwork activities. As a result, it encourages dynamic engagement and viable learning.

Adjusting to different activities (flexibility): Artificial lighting used in preschools entangles a wide range of physical and cognitive activities throughout the days and times they spend in the preschool. Therefore, artificial lighting offers adaptability to adjust to any need or activity that comes up from time to time. Dimmable lighting frameworks permit teachers to make a cosy and calming interior amid story time or unwinding sessions. Whereas brighter lights bolster high-energy activities and physical learning encounters. By altering lighting levels, teachers can easily move between activities, empowering smooth and viable classroom administration.

Setting the disposition and making an openly inviting environment: Artificial lighting used in preschool interiors plays a significant role in uplifting the mood and ambiance in any space. Warm and welcoming lighting can bring out a sense of consolation and security, making children feel at ease in their learning environment (Anon., 2021 Apr 19th). Delicate and diffused lighting can be utilised in calm corners or learning areas, giving an alleviating and quiet space for children to investigate books and enjoy their creative energies. The utilisation of lively and colourful lighting plans in assigned play ranges can invigorate inventiveness and cultivate a sense of energy in learning through play.

Improving security and way-finding: Security may be a foremost concern in preschool interiors. Well-designed artificial lighting guarantees that spaces are well-lit, decreasing the hazard of mischances and advancing a secure environment for children to move around openly. Lit-up pathways, crisis exit signs, and deliberately installed lights give clear way-finding prompts and engage preschoolers to explore the preschool surroundings and interior with certainty and autonomy (Anon., 2021 Apr 19th).

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Figure 4

		natural_and_artificial_lighting			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	78	52.7	52.7	52.7
	Disagree	2	1.4	1.4	54.1
	Neutral	41	27.7	27.7	81.8
	Strongly Agree	26	17.6	17.6	99.3
	Strongly Disagree	1	.7	.7	100.0
Total		148	100.0	100.0	

The data suggest that the majority of participants have a positive perception of the natural and artificial lighting in preschool architectural characteristics. This is reflected by more than half of the respondents agreeing with the lighting conditions. Moreover, a substantial number of participants holding a neutral position might indicate that the lighting conditions may be adequate but might benefit from minor improvements. Overall, the positive perception of lighting conditions in preschool settings indicates that appropriate lighting design is beneficial for creating a conducive learning environment for young children.

C. Sustainable Design Methods

Sustainable design methods being incorporated into a preschool can provide many benefits to children as well as teachers. As per research, using natural ventilation methods, and adding plants/trees in the interior (greenery) will especially stimulate the behaviour of children in an energetic and enthusiastic manner and therefore will improve their health and physical development. Greenery is an important element that collectively contributes to balancing off non-focused minds, which is especially important for preschool children as their minds are still being evolved and will help them to practise focusing by improving health and physical, social and emotional, language, and early literacy and cognitive development. Preschools that do not contain sustainable design elements such as indoor plants, and adequate use of natural ventilation systems, will not provide a favourable environment for children to learn and concentrate (Deniz KAHRİMAN-ÖZTÜRKA, 2012).

The case study that was done by Farhana Borg, states that incorporating sustainable design methods in preschools helps the growth of children by improving their physical, mental, and cognitive changes. The interviews that were conducted with teachers in Pebbles Preschool and Daycare and Tiny Kids Nursery School stated that it is important to design a preschool with ample indoor and outdoor plants and natural ventilation that contribute to the well-being and comfort of children.

1. Incorporating natural plants

Nature has an intrinsic capacity to fascinate and motivate youthful minds. Incorporating natural plants into preschools adds an element to the space while promoting ecological behaviour and sustainability. Plants not only create stylish esteem to the interior but also benefit the environment as well as children and teachers by allowing them to clear their respiratory systems. When associating nature with the interiors, children create a more

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grounded association with the environment, which can impact the state of mind toward supportability for nature in the future (Akasah, 2019).

Figure 5

Plant_to_better_concentrate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	74	50.0	50.0	50.0
	Disagree	3	2.0	2.0	52.0
	Neutral	26	17.6	17.6	69.6
	Strongly Agree	44	29.7	29.7	99.3
	Strongly Disagree	1	.7	.7	100.0
	Total	148	100.0	100.0	

The data suggest that a majority of participants perceive having plants in preschool architectural characteristics as beneficial for their ability to concentrate. This is evident from half of the respondents agreeing with the positive impact of plants on their concentration, and a significant number strongly agreeing with it. The positive perception of plants' influence on concentration might indicate that incorporating green elements in preschool environments could potentially enhance children's focus and attention during learning activities.

2. Advancing Indoor Air-Quality

Indoor air quality in preschools can be achieved by improving natural ventilation and reducing dampness. Incorporating natural ventilation into preschool interiors reduces the adverse effects of concentrated indoor air pollutants which can cause adverse health and physical problems. Natural ventilation also helps children stimulate creativity and cognitive growth while also improving their social and emotional skills.

Figure 6

Natural_ventilation_to_better_perform

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	60	40.5	40.5	40.5
	Disagree	13	8.8	8.8	49.3
	Neutral	24	16.2	16.2	65.5
	Strongly Agree	50	33.8	33.8	99.3
	Strongly Disagree	1	.7	.7	100.0
	Total	148	100.0	100.0	

The data suggest that a substantial proportion of participants perceive natural ventilation as beneficial for their performance in preschool architectural characteristics. This is evident from 40.5% of respondents agreeing with the positive impact of natural ventilation on their performance, and a significant number strongly agreeing with it. The positive perception of natural ventilation might indicate that providing adequate airflow and ventilation in preschool environments could potentially enhance children's comfort and well-being during various activities, potentially contributing to improved performance.

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3. Supporting well-being and comfort

The physical consolation of the learning environment, all together impacts a child's capacity to centre and learn successfully. The economic sustainability methods guarantee that preschools contribute ergonomically with comfortable furniture, advancing to a better pose and concentration amid activities. Comfortable learning spaces contribute to a positive and agreeable encounter, empowering children to effectively take an interest in their educational activities.

Besides, an appropriate acoustic plan also plays a pivotal part in making a conducive learning environment (Akasah, 2019). A calm and well-insulated space decreases diversions, permitting children to centre on their errands and empowering successful communication with peers and teachers.

Figure 7

exposing_kids_to_nature_outdoor_play_areas					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	53	35.8	35.8	35.8
	Disagree	1	.7	.7	36.5
	Neutral	1	.7	.7	37.2
	Strongly Agree	93	62.8	62.8	100.0
	Total	148	100.0	100.0	

The data suggest that a substantial majority of participants highly value the importance of exposing kids to nature and outdoor play areas in preschool architectural characteristics. This is evident from 62.8% of respondents strongly agreeing and 35.8% agreeing with the significance of this aspect. The strong positive perception of nature exposure and outdoor play areas in preschool settings indicates that providing opportunities for children to interact with nature and engage in outdoor play is considered essential for their holistic growth, development, and well-being.

Conclusion

This research aimed to explore the role of preschool architectural characteristics on the growth of children. A mixed method approach was used by incorporating quantitative and qualitative data through surveys and interviews. The findings revealed that architectural elements and characteristics significantly influence the overall educational experience for preschools. Proper spatial arrangements, lighting techniques, child-friendly colours, and sustainable design methods promote physical and mental engagement, enhancing children's performance and character development. The research onion model provided a structured framework for research approaches, methods, and data analysis. The findings emphasise the importance of utilising architectural characteristics to create a positive learning environment for preschools, paving the way for a brighter future for future generations.

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Recommendations

This study highlights the importance of preschool architectural characteristics on the growth of children. Key recommendations include prioritising natural lighting, using child-friendly colours, incorporating outdoor spaces and nature, ensuring safety measures and accessibility, promoting flexibility in spatial layout, and incorporating sustainable elements. These recommendations encourage collaboration in creating a nurturing environment for children, promoting their well-being, and reducing stress. By incorporating these architectural characteristics, it can contribute to a positive learning experience for children in preschools.

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