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BUILDING RESILIENCE IN EARLY CHILDHOOD EDUCATION: PRESCHOOL BUILT ENVIRONMENT QUALITY IN MALAYSIA

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Abstract

Positively valued developmental and learning outcomes contribute towards resilience in children's learning and quality provision has been shown to influence the impact of risks, thereby promoting children's wellbeing. As the built environment quality of preschools plays a role in supporting children's learning, the study aims to explore the quality of preschool built environment from the perspectives of preschool teachers and an architect. Three preschools adapted from corner lot terrace houses in Penang, Malaysia were selected as study sites. A questionnaire consisting built environment factors designed through a crosswalk between items from the Children's Physical Environments Rating Scale (CPERS) as well as existing standards and guidelines relating to the built environment of preschools in Malaysia was employed. A total of three stakeholders consisting of preschool principals were interviewed to supplement the results of the questionnaire. Interview data revealed that perspectives on built environment factors making up preschool built environment quality differed between the architect and preschool stakeholders. Interview data revealed that statutory requirements and parental requirements played an intrinsic role in preschool stakeholders' perspective of factors influencing preschool built environment. The interdisciplinary nature of this study culminates in better understanding between the fields of education and built environment, highlighting the difference between an aspired built environment for preschools with that of a realistic one. The paper hopes to provide useful suggestions for creating a better preschool-built environment where the aspired is achievable to enhance the wellbeing of children.

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Keywords: Quality education, preschool quality, preschool built environment quality, preschool stakeholders.



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1. Introduction

The disposition of resilience is based on the notion of positively valued outcomes (Kaplan, 2005) and has been disputed to be intricately linked to risk (Hall et al., 2009). In studies linking the impact of preschool to young children's development and learning, investigations point towards 'quality' provision influencing the impact of risks (Hall et al., 2009) whereby high quality provisions contribute positively towards children's developmental outcomes (Margaret, Sumsion, Mulhearn, & Grieshaber 2017), enhances children's learning and contribute towards their improved health (Majzub, 2013). High quality preschool provision thus mitigates risk for children in disadvantaged and non-disadvantage backgrounds (Burchinal et al., 2009; OECD, 2017; OECD, 2006; Peisner-Feinberg et al., 2001). In turn, 'quality' is linked to the 'structures' and educative 'processes' making up the provision (Currie, 2001). These 'structures' and 'processes', deemed as 'hidden' curriculum encompass values and attitudes upheld within a preschool, its physical and social environment and the setting of the school which supports health and wellbeing of both children and teachers (Jensen, Dür, & Buijs, 2017). Accordingly, as preschool quality influences the impact of risk, quality factors promoting the wellbeing of children and teachers would have to be discussed in a bid to build resilience in early childhood education.

1.1. Process and structural quality in early childhood education

With the quality of preschools playing a role in early childhood resilience, UNESCO (2010) posits two ways to measure and assess quality. The first is through process dimension which highlights the relationship between children and educators (OECD, 2006; 2017) and includes children's experience which influences their wellbeing and development (Taguma & Litjens, 2010). The second assessment of quality is via structural dimension which forms prerequisites for process quality (Slot, 2018). Indicators include class size, staff-child ratios, availability of materials and staff training (UNESCO, 2006) as well as built environment quality for young children such as buildings, space, outdoor environment and pedagogical materials (OECD, 2006; Wall, Litjens, & Taguma, 2015). As built environment quality of preschool can be deemed as a means for supporting aspects of process quality, built environment design considerations promoting positively valued outcomes in process quality measures can be seen as an effort in mitigating risk associated with adverse learning and developmental outcomes, thus contributing towards resilience in early childhood education including preschools.

1.2. Built environment factors affecting preschool quality

Built environment quality (structural quality) plays a role in supporting activities and interaction of users (process quality) that it shelters (Vischer, 2008; Wall et al., 2015). Hence, the built environment cannot be seen as a context without inhabitants and how the environment and users interact can be understood through the lens of environment-behaviour relationship (Rapoport, 1994). As definitions of quality diverge in relation to the needs of the community of users across countries and different stakeholder groups (OECD, 2012), quality cannot be universally defined. Thus, in discussing built environment design from the perspective of environment-behaviour relationship, Rapoport (1994) believes that since design includes decisions on what should be done and why, it implies that design is mainly "... problem identification and discovery and then problem solving on the basis of research-based

knowledge...” (Rapoport, 1994, p.67). As aspects of process quality may be hindered if the structural quality is poor (Phillipsen, Burchinal, Howes, & Cryer 1997; Wall et al., 2015), research-based knowledge through review of researches demonstrating positively valued outcomes on children’s learning can be used as a starting point to derive built environment factors contributing towards structural quality of preschools. Table 1 summarises these factors and corresponding findings.

Table 01. Built environment factors contributing and corresponding findings

Built Environment Factors	Relevant Authors	Major Findings
Neighbourhood Context	Stansfeld & Clark (2015)	Exposure to high levels of noxious elements (air and noise pollutants) causes children’s cognitive defects and negatively impact health and wellbeing.
Outdoor Environment	Fjørtoft (2004)	Accessibility to natural environment and playgrounds promote children’s health, social, cognitive and motor skills development.
Indoor Environment	Trancik & Evans (1995)	Availability of dedicated activity areas, restorative spaces, spaces for privacy and personalisation contribute positively towards different development outcomes.
Size & Density	Maxwell (1996)	Crowding due to high-density spaces (less than 2.5 m ² per child) leads to adverse behaviours (aggressiveness, withdrawal, hyperactivity, attention deficits).
Lighting & Visual Control	Heschong Mahone Group’s (1999), Wall (2016)	Lighting control (daylighting supplemented by electric lighting) correlates with positive student performance. Window location and size pertinent. Considerations of glare reduction and visibility of appropriate views significant.
Ventilation & Thermal Comfort	Wong & Khoo (2003)	Inadequate ventilation found to be unfavourable to health and academic performance. Cool thermal sensations more acceptable in the tropics.
Sound & Acoustic	Stansfeld & Clark (2015)	Good acoustics fundamental to academic performance. Shape of rooms, ceiling height, and interior finishes
Flexibility & Adaptability	Hunley et al. (2006)	Classroom flexibility is shown to promote children’s creativity. Possibility of improvising different play activities and fostering of different learning styles.
Furniture & Equipment	Wall (2016)	Furniture types and configuration support different styles of teaching and learning. Anthropometric an important factor in consideration of classroom furniture.

1.3. Impact of built environment design on preschool quality

While prior research provides the framework for understanding factors contributing towards quality built environment in preschools via research-based knowledge which built environment specialist (architects) are acquainted with, Walden (2015) notes that expertise of school planning does not rest only on architects and engineers but also on its users. Hence, designers should have a profound understanding of user’s experience in order to suggest forms users can identify with as meaningful building blocks. As preschool built environment design necessitates comprehension of children’s development and behaviour which may be beyond the available knowledge of architects (Iwan & Poon, 2018), the perspective of preschool stakeholders namely teachers and principals on this matter would ultimately culminate in better understanding between the fields of education and built environment. This is because while architects are trained in designing the built environment, teachers are trained to promote children’s development and learning, thus gaps between both perspectives on preschool built environment quality can be filled.

1.4. Preschool quality based on preschool stakeholders' and architects' opinion

When it comes to understanding quality in preschool education, preschool stakeholders, namely teachers and principals are more likely to view quality from process dimension with emphasis given to training and curriculum development (Iwan & Poon, 2018) while built environment aspects are largely discounted (Abbas, Othman, & Rahman, 2016; Shaari & Ahmad, 2016). Thus, the effects of the built environment as agents for children's development have rarely been regarded in Malaysian preschools (Mohidin, Ismail, & Ramli, 2015). On the other hand, while architects are acquainted with built environment aspects, the design of built environment should not only regard technical matters, visual expressions and form making but must also take into consideration cultural concerns (Thomas & Garnham, 2007), which in the case of preschools, include the consideration of the learning culture. Thus, the understanding of the built environment quality in preschools necessitates collaboration between architects and preschool stakeholders so that both views can be intertwined (Iwan & Poon, 2018).

2. Problem Statement

Though research-based knowledge can be obtained through review of prior studies, when it comes to built environment quality of preschools in support of children's learning and development, the perspective of preschool stakeholders (teachers and principals) as child development specialist and as users should not be discounted. Since little is known on what constitutes built environment quality of preschools in Malaysia, this study examines the importance of different built environment factors deemed significant to the overall built environment quality of preschools from the perspectives of preschool stakeholders and an architect to understand similarities or differences between the opinions of both these groups.

3. Research Questions

Typically, research on preschool environment has been conducted independently either from the perspective of preschool stakeholders (principals and teachers) or built environment specialist (architect). In an attempt to bridge this gap, this study explores the significance of built environment factors contributing towards quality preschool environment by taking into consideration both teachers' and an architect's perspective. The following questions guide the study:

- What built environment factors are deemed important for inclusion in consideration of built environment quality of preschools in Malaysia?
- Are there differences between the perspectives of preschool stakeholders (principals and teachers) and architect regarding preschool built environment quality in Malaysia?

4. Purpose of the Study

As built environment quality of preschools play a role in children's development and wellbeing, the study attempts to explore the importance of built environment factors deemed appropriate when considering built environment quality of private preschools in Malaysia from the perspectives of stakeholders (principals and teachers) and an architect so that issues surrounding preschool built

environment quality can be addressed from both early childhood education and built environment perspectives. Private preschools were selected as not only does this sector represent the largest number of students (Department of Statistics Malaysia, 2016), private preschools vary widely in operational outputs (Mustafa, Yunus, & Azman, 2014) compared to government preschools since there are no strict regulations for preschool operation in Malaysia (Mohidin et al., 2015).

Table 02. Summary of built environment quality factors included in the questionnaire

A Planning		
A1	Preschool Siting and Community Connectivity	Location and accessibility; visibility of preschools, distance from harmful elements. (e.g., heavy industry, sources of pollution, aircraft noise, etc)
A2	Minimum Floor Area	Preschool density meeting minimum floor area per child.
A3	Car Park & Drop Off Area	Availability of minimum car parks and safety considerations.
A4	Safety & Security	Boundary security and fire escape measures.
A5	Image and Scale	Non-institutional outlook and visibility of indoor activities from the outside.
B Building Programming and Design Outdoor Environment		
B1	Play Area: Functional Needs	Accessibility and availability of shading features catering to local weather conditions.
B2	Play Yards: Developmental Needs	Diversity of appropriate play equipment and materials.
Indoor Environment		
B3	Image and Scale	Availability of child-friendly scaled furniture and materials; non-hazardous material and interior finishes.
B4	Circulation	Availability of legible and well-defined circulation paths.
B5	Ventilation & Lighting	Appropriateness level of daylighting, natural ventilation and acoustics, and manipulability of artificial lighting levels and mechanical ventilation.
B6	Safety, Health & Security	Safety, health, hygiene, security, firefighting and emergency concerns meeting statutory requirements.
C Arrangement of Activity Areas		
C1	Play Area: Functional Needs	Visual connectivity, degree of enclosure, appropriateness of furniture and equipment.
C2	Quiet Activity Areas	Availability and state of dedicated spaces for privacy, reading and fine motor development.
C3	Messy Activity Areas	Availability and state of dedicated spaces for art, water play and nature/science.
C4	Physical Activity Area	Availability and state of gross motor play, dramatic/fantasy play and music/movement area.
C5	Computer Area	Availability and state of dedicated computer area.
C6	Child-related display	Availability of children's work as exhibition materials and child-height display.
C7	Classrooms	Flexibility and adaptability of classrooms for activities, availability of appropriate learning materials.
C8	Nap /Rest	Availability and state of dedicated nap areas.
C9	Dining & Kitchen Facilities	Availability and state of dedicated dining, food preparation and storage area meeting health and hygiene standards.
C10	Sanitary Facilities	Ratio of facilities meeting minimum statutory standards; child-height facilities.
C11	Staff Area	Availability and state of dedicated staff area.
D Inclusive Education Considerations		
D1	Disabled Friendly Design Principles	Width of circulation paths to accommodate wheelchairs; availability of disabled-friendly toilet; play area allows mobility for wheelchairs.

5. Research Methods

Three private preschools in Penang adapted from corner lot terrace houses were selected as study sites. Samples were selected through stratified sampling whereby the type of preschool premise was used as a basis of the stratification. A list of preschools within Bayan Baru and Sungai Ara in Penang were identified and listed out with consecutive numbers assigned to each preschool before simple random sampling was conducted on Microsoft Excel to generate a list of the first three preschools. A questionnaire consisting built environment factors designed through a crosswalk between items from the Children's Physical Environments Rating Scale (CPERS) (Moore, Donnell, & Sugiyama, 2010) as well as existing standards and guidelines relating to the built environment of preschools in Malaysia was employed (summarised in Table 2). The questionnaire consisted 23 questions based on a 5-point Likert scale ranging from 'strongly agree'(5) or 'strongly disagree'(1) which inquired into participants' agreeability on each factor's significance in contributing towards built environment quality of private preschool in Malaysia. As this study is part of a main study, only a total of six teachers from Preschool A, two teachers from Preschool B, six teachers from Preschool C and one architect (LAM Part III) participated in this study. Three stakeholders consisting of principals from the respective preschools were interviewed to supplement the results of the questionnaire. Raw interview data were analysed through In vivo coding and qualitatively interpreted into themes while questionnaire results were analysed through descriptive statistical analysis via statistical functions in Microsoft Excel. Ethical clearance and informed consent were obtained prior to the study.

6. Findings

Table 03. Summary of built environment quality factors included in the questionnaire

	Building Environment Factors and Attributes	Preschool A Teachers (Mean)	Preschool B Teachers (Mean)	Preschool C Teachers (Mean)	Mean Scores Preschools A, B, & C	Architect
A1	Preschool Siting and Community Connectivity	4.02	3.90	3.47	3.80	4.20
A2	Minimum Floor Area	3.60	4.00	3.57	3.79	5.00
A3	Car Park& Drop Off Area	4.95	3.66	3.83	4.15	4.00
A4	Safety & Security	4.83	5.00	3.83	4.55	5.00
A5	Image and Scale	3.25	0.50	3.25	2.33	4.00
B1	Play Area: Functional Needs	4.08	5.00	3.63	4.24	4.50
B2	Play Yards: Developmental Needs	4.05	4.00	3.57	3.87	4.50
B3	Image and Scale	3.92	4.75	3.21	3.96	5.00
B4	Circulation	4.22	5.00	3.23	4.15	5.00
B5	Ventilation & Lighting	4.92	5.00	3.98	4.63	5.00
B6	Safety, Health & Security	4.73	5.00	3.83	4.52	5.00
C1	Play Area: Functional Needs	4.55	5.00	3.53	4.36	4.33
C2	Quiet Activity Areas	4.22	4.33	3.83	4.13	4.00
C3	Messy Activity Areas	3.10	2.67	3.43	3.07	4.00
C4	Physical Activity Area	3.78	3.00	3.67	3.48	4.70
C5	Computer Area	4.17	3.00	3.83	3.67	4.00
C6	Child-related display	4.42	5.00	4.00	4.47	5.00
C7	Classrooms	4.56	3.00	3.94	3.83	5.00
C8	Nap /Rest	4.33	2.50	3.75	3.53	4.50

C9	Dining & Kitchen Facilities	4.80	5.00	3.33	4.38	5.00
C10	Sanitary Facilities	3.98	4.00	3.68	3.89	5.00
C11	Staff Area	4.38	2.75	3.62	3.58	4.50
D1	Disabled Friendly Design Principles	3.37	0.33	3.11	2.27	4.00

6.1. Disparity between architect’s and teachers’ perspective on factors contributing towards built environment quality of preschools

The results from the questionnaire (see Table 3) shows that on the overall, the architect agreed with all the aspects in the questionnaire being important when considering the built environment quality of preschools. In contrast, not all factors were thought to be important by teachers. Although there were differences in opinion between preschools, based on the mean scores of all three preschools, teachers seem to agree that ventilation and lighting (B5, 4.63 points) as well safety, security and health aspects in the planning section (A4, 4.55 points) and indoor environment section (B6, 4.52 points) were vital aspects contributing towards preschool built environment quality. Teachers rated the need for disabled-friendly design principles (D1, 2.27 points) the lowest of all the built environment factors, which indicates that teachers may not consider this aspect significant when considering preschool built environment quality. Image and scale (A5, 2.33 points) under the planning section received the second lowest score portraying that a non-institutional outlook and visibility of indoor activities from the outside may not be crucial aspects when considering built environment quality of preschools. When it came to the arrangement of activity areas, dedicated areas for messy activity (C3, 3.07 points) and physical activity (C4, 3.48 points) were ranked the lowest in this category.

Table 04. Summary of built environment quality factors included in the questionnaire

Principal of Preschool A	Principal of Preschool B	Principal of Preschool C
<ul style="list-style-type: none"> • Yes, it is important. Children need to be comfortable to learn. • Security is important. It is more secure in this area because we are gated. It is more secure for both children and teachers. Not like in commercial lots. They don’t have security because there is a gap from the car park which I feel is not safe for children. 	<ul style="list-style-type: none"> • Yes, definitely important. It has to be safe to the children and flexible enough for us to conduct activities. And it has to be clean. Safety is the number one concern we should have. 	<ul style="list-style-type: none"> • Yes, I quite agree because we are handling children. That is why space is very important. If they have space to move around, they are not grouped in one place and will not be so noisy. They also can have their private times. Secondly, I should say safety is important. So, the things that they use, for example, the cupboard they use cannot be taller than them.

As a whole, interview results demonstrate that preschool principals agreed with the preschool built environment playing a role in the overall preschool quality (Table 4). However, based on the interview, principals were found to discuss preschool built environment factors from behavioural, psychological, or connotative terms (Iwan & Poon, 2018). For example, in discussions on their agreeability of the role-built environment quality play in the overall quality of preschools, principals tend to connote preschools quality to aspects of safety, security, flexibility and comfort which relates more to behavioural and psychological aspects. These aspects brought up by principals also shed light into why factors which were rated lower by teachers might not be significant factors contributing towards preschool built environment quality to them. Interview results of principals are summarised as relevant texts in Table 5 which

highlights the respective principal's perspective on why factors in image and scale (A5), dedicated messy activity areas (C3), dedicated physical activity areas (C4), and disabled friendly design principles (D1) were not deemed relevant in contributing towards quality in preschool built environment.

Table 05. Principal's perspective on less significant built environment factors for preschools

	Principal of Preschool A	Principal of Preschool B	Principal of Preschool C
A5	<ul style="list-style-type: none"> Depends on the premise. When outsiders come in, there should be privacy so that when they come in, they are not allowed to see all the activities. This is for children's privacy and safety. 	<ul style="list-style-type: none"> It should look like a school. Not too much like a house. Indoor activity should not be seen from outside as strangers can also see children from outside. So, it is not safe. 	<ul style="list-style-type: none"> Preschool must look more like a school with bright colours to attract children. Indoor activities must not be seen from outside for safety and security purposes.
C3	<ul style="list-style-type: none"> No need for special place. Art and science can be done in classrooms. Waterplay should not be conducted indoors. 	<ul style="list-style-type: none"> Ideal to have these in different spaces but sometimes you do not have the luxury of space so mostly art and science are conducted in the classrooms. Waterplay should not be indoors. 	<ul style="list-style-type: none"> No waterplay indoors because we do not have a proper place. Children will wet the whole room. Unless there is an indoor pool. So far in Malaysia, I don't see any indoor pool. Only suitable for outdoor.
C4	<ul style="list-style-type: none"> It all depends on the spaces. For me this is acceptable. If we have space, then we can have different areas for that. 	<ul style="list-style-type: none"> Nice to have these spaces but considered luxury. We cannot allocate spaces for just a single activity. Only the expensive preschools can do that. 	<ul style="list-style-type: none"> Yes, it is must. We have 6 corners but can only cater to 3 children at a time in each corner. If there is a bigger space, we can cater to more children at a time.
D1	<ul style="list-style-type: none"> We cannot have this unless it's a special school for them. Parents won't send the children once they are on wheelchair. When children come with these conditions, they will get demotivated seeing others play well. 	<ul style="list-style-type: none"> There is no need for this. We are not special school for those physical challenged children. 	<ul style="list-style-type: none"> Not necessary because we do not enrol this type of children.

With regards to the factor on image and scale (A5), principals felt that preschools should look like a school as compared to being non-institutional looking. They also felt that visibility of indoor activities posts security concerns and thus no activities should be visible from the outdoors. Dedicated messy activity areas (C3) were deemed a luxury due to space constrain as principals felt that art and science activities can be conducted in classrooms while dedicated water play area indoors was deemed irrelevant. Although principals generally agreed with the need for physical activity spaces, dedicated areas for this activity (C4) were similar to sentiments on messy activity area. Dedicated spaces for physical activity was deemed a luxury due to space constraints and do not make up a necessary requirement for built environment quality as these activities can be conducted in classrooms and shared spaces. Sentiments on the necessity of accommodating disabled friendly design principles (D1) were similar between all principals whereby the common response was that children with disabilities would attend special schools. As such, requirements relating to this factor were considered irrelevant. Interview data also revealed that safety, security and health aspects (A4, B6) were main factors deemed significant in contributing towards

preschool built environment quality as these requirements formed part of local government statutory requirements and thus, these requirements should be met.

6.2. Statutory requirements and parental requirements play an intrinsic role in the direction of preschool built environment quality

In the interview, principals noted that safety and security aspects were the most significant factors contributing towards built environment quality of preschools as these factors relate to boundary security and fire escape measures that were part of statutory requirements and abiding by these requirements were paramount for renewal of the operating license. Nevertheless, some statutory requirements were deemed irrelevant and posted a burden financially. One principal noted that the budget required for building-use conversion from residential to commercial title by the city council in Penang could have been spent on upgrading facilities. The present predicament is explained as follows by the principal of Preschool A:

“To operate we need to have all the licenses. You know, we have to convert this building to commercial. It would be better if they (city council) let us operate without conversion. All these conversions take a lot of time and a lot of money. We have to convert the premise if not we cannot apply for license renewal...Because the actual conversion takes a lot of money, if the local or federal government give us some leeway, it would be very good for operators to operate. So instead of using the money for conversion, we can have more space to operate. We can give the children more space to run about. So, the quality would somehow be better...However, the staircase for the firefighting requirement we will follow because we know we need an emergency staircase for children to exit the preschool in case of fire. This is all for children’s safety, so it is important. But the conversion I don’t agree.” (Principal of Preschool A)

This scenario shows that while certain statutory requirements were necessary as part of safety and security measures in preschools, others compromised budgetary allocations that would have otherwise used for enhancing the existing built environment quality for children. Besides, the interview also revealed that parental demands and expectations in a way contributed towards the principal’s notion on preschool setting and the type of facilities provided in preschools. Essentially, principals felt that they have to live up to the expectations and demands of parents when setting up a preschool:

“Parents have to send the children to preschools on the way to work so the location of the preschool has to be convenient for parents as distance really counts.” (Principal of Preschool B)

“We cannot do like what they have overseas. For example, it may seem very fun to have mud play, but in Malaysia, it is not suitable. It is actually the parents who do not allow this type of play because of germs and all these sorts of things. So, a lot of things we cannot cater for the children because of the parents. They do not really agree.” (Principal of Preschool C)

As such, the overarching considerations for statutory requirement fulfilment, budgetary concerns and parental requirements may indirectly impact principals’ decisions on why certain built environment

factors such as availability of dedicated messy activity areas (C3) were not considered as a necessary requirement making up built environment quality of preschools. Thus, unlike built environment specialist who base their perspective of the quality built environment on research-based knowledge, when it comes to the perspective of preschool stakeholders, the need to accommodate the various aspects discussed above impact their perception of appropriate built environment factors making up preschool quality. This finding is consistent with findings by Iwan & Poon (2018) who opined that decisions on preschool designs are partly related to cultural influences as well as regulations by municipalities. Thus, all these related factors would have to be considered as factors contributing towards the built environment quality of preschools in Malaysia. Table 6 summarises the factors related to built environment quality which were most frequently mentioned by principals.

Table 06. Factors most frequently mentioned by principals

Factors	Description
Safety	Safety aspects including activity spaces and materials that are safe for children to use were considered as an important part of preschool quality.
Security	Security aspects concerning a preschool's resilience against potential harm from intruders were also equally significant in consideration of preschool quality.
Space limitation	Principals felt that the availability of space determined the possibility of accommodating dedicated spaces for activities while the present scenario of space limitations hindered the possibility of creating dedicated corners for activities.
Licensing requirements	Statutory requirements were fulfilled to merely attain license renewal as certain statutory requirements were deemed insignificant in contributing towards the built environment quality of preschools.
Parental demands	Parental demands and concerns played a role in determining the type of activity spaces provided by principals which would ultimately affect the quality of the built environment of preschools.

7. Conclusion

The study attempted to explore built environment factors contributing towards built environment quality of private preschools in Malaysia. While the architect deemed all factors derived from research-based knowledge important, teachers and preschool principals thought differently, indicating that not all research-based knowledge input was relevant in the context of preschools in Malaysia. This scenario highlights the difference between an aspired built environment quality for preschools may be far from what is realistic to be included for assessing the built environment quality of preschools. The findings also point towards three vital considerations for the assessment of private preschool built environment quality in Malaysia. First, although *research-based knowledge* may help derive factors contributing towards the quality built environment, to meet the local context definition of quality, the view of preschool stakeholders (teachers and principals) as users should be considered to provide a comprehensive understanding of why certain factors may not be relevant in discussions of built environment quality in Malaysia. Secondly, as a means for assessing built environment quality of preschools in Malaysia, a comprehensive assessment tool based on contextual appropriate understanding (Lim & Bahauddin, 2018) should be unearthed through discussions between preschool stakeholders, built environment specialist and related government officials as employment of global rating scales would not be fitting considering that most of the scales were derived in Western context where preschool conditions differ. Thirdly, as efforts to improve the quality of preschool education can be achieved only if stakeholders are conscious of

factors promoting a better environment, continuous dialogues between preschool stakeholders and built environment specialist are important so that gaps in *research-based knowledge* can be supplemented by *user's knowledge* in order to reach a common goal of creating better preschool built environment-one in which the aspired is achievable to enhance the wellbeing of children. As built environment enhancement contributes towards positively valued outcomes, by bringing together resources and expertise to focus on the resilience of young children's development and wellbeing, the impact of risks can be mitigated.

7.1. Limitations

As there was no existing rating tool for evaluating built environment quality of preschools in Malaysia, CPERS was cross walked with existing standards and guidelines relating to preschools in Malaysia as a starting point to identify built environment factors relevant to the Malaysian context. Therefore, the study acknowledges that the factors included in the questionnaire may not be exhaustive and is still in the preliminary stages of development. Secondly, the study was limited to only three study sites with sample profile covering only preschools adapted from corner lot terrace residences in Penang. Preschools in other premises and states should be considered in future studies. Test-retest reliability would also be required to generalize results to a larger group. Thirdly, due to human resource limitation, inter-rater-reliability for the architect was not present and should be considered for future studies.

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