

## MAPPING TYPOLOGY OF OUTDOOR PLAYScape FOR PRESCHOOL: CASE STUDY OF GOVERNMENT AND PRIVATE KINDERGARTENS IN KLANG VALLEY

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### ABSTRACT

The research maps the typology of outdoor playscapes in preschools, with an explicit focus on government and private kindergartens in the Klang Valley. The present study develops a map of the design and quality of outdoor playscapes in government and private kindergartens located in the Klang Valley, exploring how regulatory and economic factors influence the quality of play. Through a secondary resources approach, the research investigates the outdoor spatial layouts, relevant layout plans, and the types of play equipment supplied. The research explores how these design elements influence the functionality and overall character of the playscapes. Results show that most government kindergartens adhere to local authority guidelines, and their outdoor spaces are well-planned to facilitate active play, socialisation, and child development. In contrast, private kindergartens focus more on financial benefits, usually resulting in less thoughtful spatial arrangements and play equipment choices. Investing in outdoor facilities that appeal to children may not be the best practice for child development. The study develops a design framework that ensures well-organised outdoor settings, integrates different play equipment, and facilitates holistic development. It advocates more informed design practices beyond financial considerations, paving the way for public and private institutions to create nurturing, developmentally appropriate outdoor play spaces for young children.

**Keywords:** Landscape Design, Outdoor Play Environment, Preschool Playscape Typology, Spatial Layouts, Early Childhood Development

## 1.0 INTRODUCTION

Outdoor playscapes in preschool settings are vital in fostering holistic child development by offering avenues for physical engagement, social connection, and cognitive development. A well-designed outdoor environment contributes to children's physical and social development and emotional well-being. Hasim et al. (2023) highlight that outdoor play allows children to release stress, build resilience, and experience emotional stability, making it a crucial aspect of early learning environments. Similarly, Candiracci (2025) underscores that play should not be limited to designated playgrounds but should be integrated into broader public and learning spaces to support emotional, social, cognitive, and physical development. These perspectives emphasise that the design of outdoor spaces is fundamental to supporting children's comprehensive developmental needs.

In Malaysian preschool contexts, significant variability exists in the design and quality of outdoor playscapes. Public kindergartens generally adhere to local authority regulations that ensure the safety, accessibility, and developmental appropriateness of their outdoor environments. Their designs typically incorporate natural features and diverse play zones that encourage active, social, and imaginative play. Conversely, private kindergartens tend to prioritise aesthetic appeal or commercial competitiveness, resulting in spaces that may

appear visually attractive but offer limited developmental opportunities due to rigid layouts, restricted play equipment, and reduced integration of natural elements.

Public kindergartens' alignment with regulatory guidelines strongly emphasises developmental outcomes, particularly outdoor environments that encourage exploratory and risk-based play. Smedsrud et al. (2024) note that nature-based outdoor environments, which promote risk-taking, social collaboration, and problem-solving, are the key components of early childhood development. On the other hand, financial constraints and profit-driven decision-making often influence the design of private preschool environments, limiting their developmental effectiveness. Morgenthaler et al. (2023) point out that children are most engaged in play settings that offer challenge, autonomy, and opportunities to interact with familiar peers and animals. When such environmental qualities are compromised, the richness of play experiences diminishes.

To better understand how regulatory and financial considerations influence playscape quality, the present study investigates the typology of outdoor playscapes across public and private kindergartens in Klang Valley. It examines the spatial organisation, play equipment, and design characteristics that define children's outdoor play environments to identify how these elements collectively contribute to early childhood development, and the following objectives direct it:

1. To map and categorise outdoor playscapes in government and private kindergartens across Klang Valley, focusing on play equipment, layout, accessibility, safety, and natural features.
2. To compare outdoor playscape design and spatial layout between government and private kindergartens.
3. To examine how regulatory guidelines and financial factors influence the quality and functionality of outdoor playscapes.

The study examines the typology of outdoor playscapes in preschools, focusing on government and private kindergartens in the Klang Valley, Malaysia. It explores how research on spatial layouts, play equipment, and design elements establishes functionality and developmental outcomes through a secondary resources approach. This research examines the design characteristics of both institutions to determine how adherence to regulatory guidelines versus market-driven approaches affects the quality of the outdoor play environment. It is guided by the hypothesis that government-run kindergartens provide more developmentally appropriate and well-organised outdoor spaces since guidelines stipulated by the local authority would bind them. At the same time, monetary considerations govern private kindergartens. Hence, they are less child-centred in design.

While national and local regulatory frameworks formally govern public and private kindergartens in Malaysia, government-run institutions are typically more strictly monitored and demonstrate higher compliance with standardised design requirements. In contrast, private kindergartens exhibit greater design flexibility and inconsistent adherence to these regulations, often influenced by market demands or financial considerations. The World Bank (2023) reported that despite comprehensive early childhood education standards, regulatory enforcement and compliance across Malaysia's private preschool sector remain uneven, particularly in spatial and safety provisions. Similarly, Abdul Mutalib (2022) emphasised that while legal frameworks outline minimum requirements for the physical environment of preschools, implementation gaps persist due to limited inspection and oversight mechanisms in privately operated centres.

Building on these insights, this study investigates the theoretical and practical implications of the observed disparities, focusing on how outdoor play environments influence children's physical, social, and cognitive development. By examining variations in design quality between public and private kindergartens, the study seeks to develop informed design recommendations that promote equitable access to developmentally supportive and enriching playscapes for all preschool-aged children.

## **2.0 LITERATURE REVIEW**

In early childhood education, outdoor playscapes were intentionally created to contribute significantly to children's overall development. This review explores the critical role of outdoor environments in preschool settings, focusing on how spatial organisation and design features shape multiple dimensions of children's developmental progress. The review is organised into four main subtopics: the definition and developmental needs of children, the role of kindergarten in early education, the importance of outdoor playscapes in learning,

and the influence of spatial layout on children's play and social interaction. These subtopics establish how preschool outdoor environments can foster holistic child development.

## **2.1 Definition of Children and Their Developmental Needs**

Children in Malaysia are legally defined as individuals under 18 years old, as stipulated in the *Child Act 2001*, emphasising their right to protection, care, and holistic development (Siraj, 2019). Child development involves the physical, cognitive, emotional, and social domains, each influenced by the environments where children live and learn. According to the National Association for the Education of Young Children (NAEYC, 2017), outdoor play is essential for nurturing the "whole child," underscoring the need for thoughtfully designed outdoor spaces that encourage various play experiences and social interactions.

Although indoor and outdoor play contribute to early learning, their range of experiences and developmental benefits differ. Indoor play often occurs within structured, controlled environments that promote fine motor coordination, concentration, and problem-solving through guided, manipulative-based activities. In contrast, outdoor play exposes children to more open, dynamic, and unpredictable settings that stimulate physical activity, sensory exploration, creativity, and social cooperation (Dankiw et al., 2020). Such environments encourage movement diversity and risk-taking, essential for developing resilience, spatial awareness, and self-confidence (Sando et al., 2021). Integrating outdoor play within early childhood education thus extends learning beyond classroom boundaries and fosters holistic growth through direct engagement with natural and social surroundings.

## **2.2 The Role of Kindergarten in Early Childhood Development**

Kindergarten in Malaysia is formally recognised as an early educational setting for children aged four to six, emphasising holistic development through play-based learning and early childhood education principles (Radzi et al., 2023). From an educational perspective, kindergartens serve as childcare centres and structured environments designed to foster learning, creativity, social competence, and emotional growth. Maitland et al. (2020) emphasise that developmentally appropriate environments promote physical activity and overall child well-being, providing exploration, interaction, and experiential learning opportunities.

Public kindergartens in Malaysia are typically governed by local authority regulations, ensuring that spatial and educational provisions meet standards conducive to children's developmental needs (Shaari et al., 2020). In contrast, private kindergartens often operate with greater autonomy, leading to variability in quality and developmental focus due to differing financial capacities and institutional priorities. Research by Jeavons, Jameson, and Elliott (2017) indicates that publicly governed kindergartens tend to adhere more closely to national guidelines and prioritise safe, educational outdoor environments that support active learning. Meanwhile, Baker and McGinnis (2019) argue that privately managed institutions frequently emphasise aesthetic appeal and parental market expectations, occasionally at the expense of developmental functionality.

Overall, the kindergarten setting plays a pivotal role in shaping children's early learning experiences, serving as the bridge between home and formal education while providing the foundation for lifelong growth and development.

## **2.3 Importance and Function of Outdoor Playscapes in Early Learning**

An outdoor playscape is a purposefully designed environment that combines natural elements and play structures to encourage children's exploration, social interaction, and experiential learning. Dankiw et al. (2020) emphasise that engaging in nature-based play greatly supports the development of children's cognitive flexibility, creativity, and social skills, highlighting the crucial role of interaction with natural settings in fostering overall development. Playscapes, therefore, serve as essential extensions of the classroom, offering spaces for active, imaginative, and cooperative play that foster holistic growth.

Research by the Children's Nature Network (2021) further demonstrates that play in natural schoolyards promotes higher levels of physical activity, calmer behaviour, and richer social engagement, reinforcing that outdoor environments contribute to multiple developmental domains. Similarly, Nobre et al. (2022) argue that well-designed play environments should provide opportunities for movement, creativity, and social interaction, emphasising the need for diverse and dynamic spatial elements that support children's physical, social, and cognitive development.

## **2.4 Influence of Spatial Layout on Children's Play and Interaction**

The spatial arrangement of outdoor playscapes shapes how children interact, explore, and engage with their surroundings. Kamal and Gabr (2024) emphasise that integrating natural, elevated, and customised play elements within children's environments improves the quality of play and promotes the development of social and cognitive abilities. A well-planned spatial layout supports functional use and promotes inclusivity, accessibility, and active engagement.

Zhao et al. (2023) explain that the physical environment of a neighbourhood is influenced by several social and environmental factors, such as parental safety concerns, community design, accessibility to open spaces, and cultural preferences for play, which collectively affect how and where children engage in outdoor activities. Although Zhao et al.'s study focuses on neighbourhoods rather than kindergarten settings, these insights are transferable to early childhood environments where contextual elements such as parental expectations, safety regulations, and socio-economic conditions also shape the design and organisation of outdoor play areas. These influences determine how spaces are zoned, the level of openness for exploration, and the degree of supervision integrated into play settings.

According to KOMPAN (2024), effective outdoor environments include open areas that allow children to run, invent games, and interact flexibly and dynamically. Similarly, Park N Play Design (2023) emphasises that nature-inspired playgrounds foster cooperation, communication, and shared play experiences. Reinforcing this idea, the National Program for Playground Safety (NPPS, 2024) advises that playgrounds be designed according to children's age groups, ensuring that equipment and spaces are safe, accessible, and proportionately scaled to support their developmental stages.

Overall, thoughtful spatial design in outdoor playscapes enables diverse modes of play—active, imaginative, and social—while addressing safety, accessibility, and inclusivity. These design considerations are crucial for environments that physically engage children while nurturing their creativity, social competence, and cognitive growth.

This literature review integrates perspectives on children's developmental needs, the role of kindergarten environments, the significance of outdoor playscapes, and the influence of spatial layout design in creating effective preschool environments. Scholars consistently emphasise that well-planned outdoor spaces enhance holistic development. Government kindergartens adhere more to design and regulatory standards, while private institutions show broader variability due to differing priorities and financial capacities. The present research extends these insights by mapping the typology of kindergarten outdoor playscapes in the Klang Valley, Malaysia, to examine how regulatory compliance and market-driven design decisions influence preschool outdoor environments.

## **3.0 METHODOLOGY**

The present research adopts a secondary data analysis approach integrating Google Earth (GE) and Google Street View (GSV) to investigate the typology of outdoor playscapes in public and private kindergartens across Klang Valley. The integration of GE and GSV enables a comprehensive spatial understanding, with GE providing aerial perspectives for mapping and GSV offering ground-level imagery to assess playscape quality, accessibility, and design characteristics. This dual-method digital observation strategy supports a systematic analysis of multiple geographically dispersed sites while maintaining data consistency and accessibility.

### **3.1 Research Approach**

The present study employs a descriptive–comparative research design to map, categorise, and assess outdoor playscapes according to their spatial organisation and design quality. Using secondary visual data enables systematic spatial documentation while minimising the logistical constraints associated with on-site fieldwork. GE imagery was utilised to assess site layouts, open spaces, and vegetation patterns, while GSV was employed to examine play equipment, accessibility features, and surface conditions. Combining both tools ensures that macro-level spatial configurations and micro-level design details are captured comprehensively.

### 3.2 Sampling Strategy and Case Selection

A total of 15 kindergartens were selected using a purposive sampling approach to represent various institutional types and spatial contexts within the Klang Valley. The sample comprises five (5) government and ten (10) private kindergartens. This distribution reflects the actual institutional composition in urban and suburban areas of Klang Valley, where private kindergartens outnumber public ones (Ministry of Education Malaysia, 2023).

Selected sites were in Ampang, Pandan Indah, Taman Dagang, Sri Petaling, Bangsar, and Klang, providing a cross-section of urban and suburban neighbourhood typologies. The selection prioritised kindergartens with observable outdoor areas and accessible imagery through GE and GSV to ensure adequate visual documentation.

Selection criteria for inclusion were as follows:

1. The kindergarten must be clearly identifiable through signage or listing.
2. The site must have a visible outdoor playscape area that is observable via GE or GSV.
3. The location must fall within the Klang Valley administrative boundary.
4. Public kindergartens were verified using the Ministry of Education Malaysia Preschool Directory (2023).
5. Private kindergartens were verified through Google listings, visible signage, or institutional websites confirming private ownership.

This selection ensured diversity in site typology, institutional governance, and spatial quality, while maintaining a feasible scope for visual assessment. The list presented in Table 1 represents a mix of government and private kindergartens distributed across the Klang Valley. Institutional classification was verified through the Ministry of Education Malaysia directory (2023) for government kindergartens, while private institutions were verified through visible on-site signage, verified online listings, and official institutional websites. This classification ensured the accuracy and legitimacy of each kindergarten included in the study.

**Table 1: List of Kindergartens Involved in the Study**

Institution	Name	Location
Government	G1	Pandan Mewah
	G2	Taman Mulia Jaya
	G3	Kampung Tasik Tambahan
	G4	Taman Dagang Jaya
	G5	Pandan Indah 6/8
Private	P1	Pandan Indah
	P2	Taman Dagang Jaya
	P3	Taman Dagang
	P4	Taman Pandan Mewah
	P5	Taman Cempaka
	P6	Ampang Utama
	P7	Bangsar
	P8	Sri Petaling
	P9	Bangsar
	P10	Klang

Figure 1 illustrates the spatial distribution of the selected kindergarten sites across the Klang Valley, highlighting the geographical spread between government and private institutions to ensure representational coverage of urban and suburban contexts.



**Figure 1:** Distribution Map of Selected Kindergarten Sites in Klang Valley

### 3.3 Data Collection Process

Data were collected between January and April 2025 using a structured visual observation procedure via Google Earth (GE) and Google Street View (GSV)—the process aimed to ensure consistent, accurate, and comprehensive evaluation across all sites.

1. Site Identification—Kindergartens were located using verified names and addresses on Google Maps. Each institution was cross-checked with official directories and online sources to confirm its classification as public or private.
2. Aerial Mapping (Google Earth): GE imagery assessed the overall layout, outdoor space distribution, surrounding context, and vegetation coverage. Parameters such as site boundaries, play area proportions, and adjacency to built structures were recorded.
3. Ground-Level Observation (Google Street View): GSV provided ground-level imagery to examine visible design features, including entrance design, surfacing, shading, accessibility, fencing, and play equipment.
4. Data Recording and Verification – Observations were documented in a structured site profile matrix capturing layout type, surface material, safety elements, and equipment diversity. Institutional verification was further confirmed via signage on GSV or institutional web data.

Using such digital platforms enables a comprehensive preliminary examination of sites without requiring physical visits. GE provides high-resolution satellite imagery for spatial assessment, while GSV offers reliable ground-level perspectives of outdoor design details. Although these tools cannot fully substitute field observation, studies have demonstrated that GE and GSV yield high spatial accuracy and valid visual data for urban and landscape research when field validation is impractical (Booth & Lam, 2018). Their integration ensures consistent data collection and allows visual comparison across dispersed sites.

This digital approach ensures efficiency in data collection in terms of time, cost, and logistical feasibility, reducing the need for travel while maintaining systematic documentation. It minimises disruptions to school operations, allowing for ethical and resource-efficient analysis of 15 kindergartens' outdoor environments.

### 3.4 Data Analysis

The collected data were analysed using a spatial and typological mapping framework to identify patterns and variations in playscape design. Each site was evaluated based on:

1. Spatial layout – including zoning, circulation, and proportion of open areas.
2. Design Features – encompassing types of play structures, surfacing, and vegetation.
3. Safety and Accessibility – presence of fences, supervision visibility, and age-appropriate scaling.
4. Play Functionality – opportunities for physical, social, and imaginative play.

Comparative analysis was then conducted to identify similarities and differences between government and private kindergartens, focusing on how spatial design reflects regulatory compliance or market-driven considerations. This analytical approach enables the identification of design typologies and their implications for children's physical, cognitive, and social development.

### **3.5 Summary**

This methodological framework integrates secondary spatial observation tools to ensure systematic, cost-effective, and verifiable data collection. The combination of Google Earth and Google Street View provides dual perspectives: macro-scale spatial mapping and micro-scale visual analysis, enhancing reliability and replicability. The approach is particularly suitable for large-scale typological studies where physical access is constrained but detailed visual information remains available through digital platforms.

### **3.6 Data Verification and Reliability**

Several verification strategies were applied during observation and data recording to ensure the reliability of spatial interpretations derived from Google Earth (GE) and Google Street View (GSV).

First, cross-validation between GE and GSV imagery was carried out for each site. GE provided aerial perspectives useful for understanding the spatial organisation and roof coverage, while GSV enabled ground-level viewing of façades, fencing, entrances, and visible play equipment. For instance, in cases such as P5, where the play area was located beneath a semi-transparent sunroof, GSV provided clear side views of the integrated play structure and surfaced through street-level imagery captured at pedestrian height, complementing the limited aerial visibility.

Second, functional inferences in identifying a structure as a storage room were made based on multiple observable cues, such as location within the compound, size, access restriction, locked doors or lack of openings, and absence of play signage or child-scale features. These visual indicators are consistent with spatial reading techniques used in remote sensing and environmental observation studies (Booth & Lam, 2018; Li et al., 2022).

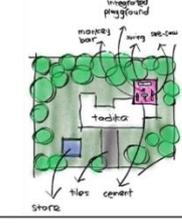
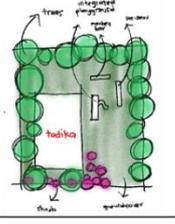
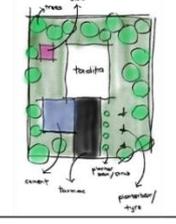
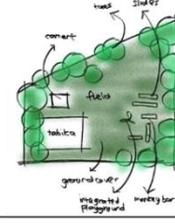
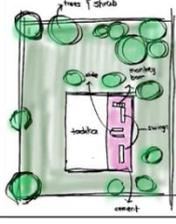
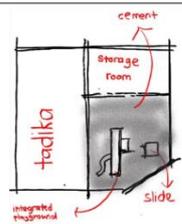
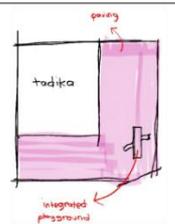
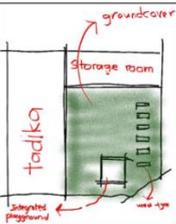
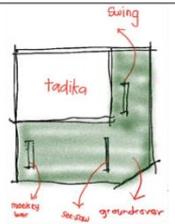
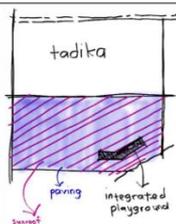
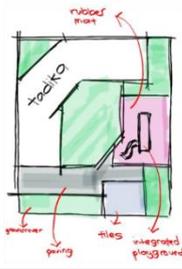
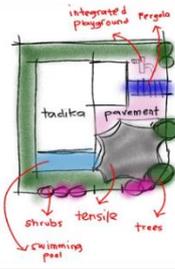
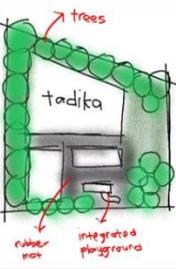
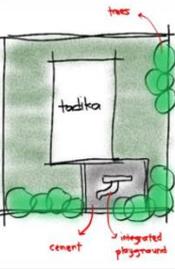
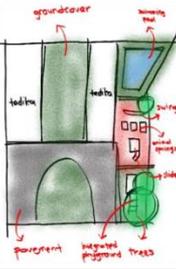
Third, to confirm image clarity and accuracy, several sites with different lighting and angles were compared across available GSV years (2019–2024). Locations such as G1 (Pandan Mewah) and P8 (Sri Petaling) provided high-resolution visuals where playground equipment, shade structures, and fencing materials could be clearly identified. Only kindergartens with sufficiently clear imagery were included in the final analysis, ensuring that ambiguous or obscured visuals did not bias interpretation.

Prior literature supports GE and GSV's high positional and visual accuracy for spatial documentation, reporting error margins within 1–3 meters for building footprints and consistent image resolution suitable for urban design assessment (Potere, 2008; Hu et al., 2020). These validations reinforce the reliability of the visual interpretations used in this study.

## **4.0 RESULTS**

The following table summarises the study's inventory, detailing the outdoor playscapes of selected preschools in Klang Valley. Each entry includes the kindergarten's name, location, Google Maps view, overall space and character, and types of play equipment provided.

**Table 2: Inventory on the outdoor playscape of government and private kindergartens in Klang Valley**

Location	Pandan mewah	Taman Mulia Jaya	Kampung Tasik Tambahan	Taman Dagang Jaya	Pandan Indah 6/8
Kindergarten	G1	G2	G3	G4	G5
View through Google Earth					
Sketch of equipment					
Space and characters	Bungalow Lot	Bungalow Lot	Bungalow Lot	Bungalow Lot	Bungalow Lot
Facilities	-Integrated playground -Monkey bar -Swing -See-saw	-Integrated playground -Monkey bar -See-saw		-Integrated playground -Monkey bar -Slides -See-saw	-Slides -Monkey bar -Swing
Location	Pandan Indah	Taman Dagang Jaya	Taman Dagang	Taman Pandan Mewah	Taman Cempaka
Kindergarten	P1	P2	P3	P4	P5
View through Google Earth					
Sketch of equipment					
Space and characters	Corner Lot	Corner Lot	Corner Lot	Corner Lot	Corner Lot
Facilities	-Integrated playground -Slide	-Integrated playground	-Integrated playground -Recycle tyre	-Monkey bar -See-saw -Swing	-Integrated playground -Paving -Sunroof
Location	Ampang Utama	Bangsar	Sri Petaling	Bangsar	Klang
Kindergarten	P6	P7	P8	P9	P10
View through Google Earth					
Sketch of equipment					
Space and characters	Flag Lot	Bungalow Lot/Corner Lot	Flag Lot	Bungalow Lot	Corner Lot
Facilities	-Integrated playground -Rubber mat -Paving	-Integrated playground -Swimming pool -Paving -Tensile	-Integrated playground -Rubber mat -Paving	-Integrated playground	-Integrated playground -Swimming pool -Paving -Sunroof -Swing -Animal spring

This section summarises the key findings from the spatial analysis of 15 kindergartens, organised according to the three research objectives outlined in the introduction. The study follows the framework established in the literature review, focusing on how outdoor playscapes support children's holistic development, particularly regarding socialisation, cognitive growth, and physical activity.

Each site was analysed using imagery from Google Earth (GE) and Google Street View (GSV) to identify design characteristics such as layout organisation, play-equipment variety, accessibility, and natural elements. Observations were recorded using a playscape analysis matrix, where features were coded according to functional and developmental affordances. GE provided macro-level information such as site boundaries, layout proportions, and shade coverage, while GSV provided micro-level details such as child-scale features, surfacing, and play-equipment visibility.

**Table 3:** Inventory on the outdoor playscape of government and private kindergartens in Klang Valley

<b>Objective</b>	<b>Key Findings</b>	<b>Government Kindergartens</b>	<b>Private Kindergartens</b>
1. To map and categorise outdoor playscapes in government and private kindergartens across Klang Valley, focusing on play equipment, layout, accessibility, safety, and natural features.	Classification of outdoor playscapes in government and private kindergartens based on play equipment, layout, accessibility, and safety features.	<ul style="list-style-type: none"> <li>a) Well-organised outdoor spaces designed to meet local regulatory guidelines.</li> <li>b) Variety of play equipment, including climbing structures and swings.</li> <li>c) Integrating natural elements such as trees, grass, and shaded areas.</li> <li>d) Child-centred design with accessible spaces for varied developmental activities.</li> </ul>	<ul style="list-style-type: none"> <li>a) Design emphasises aesthetic appeal and visual branding over functionality.</li> <li>b) Limited diversity of play equipment centred on a few large structures.</li> <li>c) Less integration of natural features.</li> <li>d) Spatial layouts appear fragmented, offering reduced accessibility.</li> </ul>
2. To compare outdoor playscape design and spatial layout between government and private kindergartens.	Comparison of spatial organisation, design features, and play-environment layout.	<ul style="list-style-type: none"> <li>a) Outdoor spaces promote active play, social interaction, and cognitive engagement.</li> <li>b) Clear zoning for physical, cognitive, and social play.</li> <li>c) Multi-functional spaces allow varied play experiences.</li> </ul>	<ul style="list-style-type: none"> <li>a) Design prioritises aesthetics over developmental function.</li> <li>b) Rigid spatial organisation with limited play-zone diversity.</li> <li>c) Fragmented layouts emphasising isolated play areas.</li> </ul>
3. To examine how regulatory guidelines and financial factors influence the quality and functionality of outdoor playscapes.	Examination of how regulations (public) and financial motivations (private) affect playscape functionality.	<ul style="list-style-type: none"> <li>a) Government kindergartens comply with local authority guidelines and meet developmental needs.</li> <li>b) Spaces are well-maintained and developmentally appropriate.</li> </ul>	<ul style="list-style-type: none"> <li>a) Private kindergartens focus on market appeal.</li> <li>b) Visually appealing spaces often lack support for holistic child development.</li> <li>c) Financial priorities limit the range of play structures.</li> </ul>

#### 4.1 Interpretation of Findings

The findings in Table 2 were derived from a systematic visual-comparison approach, in which observable features were categorised into four analytic criteria:

1. Layout organisation – spatial zoning, circulation flow, and visual connectivity.
2. Play diversity – number and variety of structures enabling physical, imaginative, and social play.
3. Natural integration – degree of vegetation, shade, and natural surface inclusion.
4. Accessibility and child-centeredness – visible access routes, safety boundaries, and appropriately scaled play elements.

Well-organised outdoor spaces displayed clear play-zone separation, connected circulation paths, and open sightlines for supervision. These traits were evident in G2 (Taman Mulia Jaya) and G4 (Taman Dagang Jaya), where GE imagery showed structured layouts and shaded play zones.

Regulatory compliance was evaluated using visible indicators consistent with the *Garis Panduan Prasekolah* (Ministry of Education Malaysia, 2023) and the *Garis Panduan Perancangan Tadika dan Taska* (PLANMalaysia, 2021). Government kindergartens exhibited fencing, shaded rest areas, and play-zone ratios proportional to these standards. Private kindergartens showed wider variation, often emphasising decorative landscaping and bright façades over functional zoning.

GSV's ground-level images interpreted child-centred design, revealing child-scale furniture, accessible surfacing, and age-appropriate play structures. For example, P5 (Taman Cempaka) featured low-height slides and visible access routes adjacent to classrooms.

Aesthetic-driven designs were apparent in private kindergartens such as P3 (Taman Dagang) and P7 (Bangsar), which displayed colourful façades and ornamental features but limited spatial variety for play. Such contrasts illustrate a division between regulation-driven functional and market-driven aesthetic designs across the two institutional types.

Although the observed trends correspond with prior literature (Shaari et al., 2020), the conclusions stem from empirical visual evidence obtained via structured GE–GSV analysis. This analysis supports the credibility of the typological distinctions between government and private kindergarten playscapes.

#### 4.2 Key Insights & Implications

The comparative findings highlight a consistent difference between the design priorities of government and private kindergartens. Government-run kindergartens, guided by regulatory frameworks such as the *Garis Panduan Prasekolah* (Ministry of Education Malaysia, 2023) and *Garis Panduan Perancangan Tadika dan Taska* (PLANMalaysia, 2021), demonstrate more organised and developmentally supportive playscapes. These environments integrate diverse play opportunities that promote physical coordination, social interaction, and cognitive exploration, aligning with the principles of holistic child development emphasised in the literature (Moore, 2024).

In contrast, while often aesthetically attractive, private kindergartens prioritise financial and marketing factors over developmental functionality. The emphasis on visually appealing yet spatially limited designs restricts the richness of children's play experiences. This imbalance indicates that financial motivations can inadvertently undermine the developmental quality of outdoor environments, especially where regulatory oversight is less stringent.

#### 4.3 Conclusion of Results

The findings confirm that government-run kindergartens provide outdoor playscapes that are more developmentally appropriate and spatially coherent, owing to their adherence to national guidelines and structured design standards. Conversely, private kindergartens show greater variability and often limited developmental depth, shaped mainly by economic and aesthetic priorities.

These outcomes reinforce the need for policy harmonisation and design regulation that extends beyond government institutions. Equal emphasis on child-centred and developmentally sound outdoor design across all kindergarten types would ensure that early learning environments in Malaysia holistically support children's physical, cognitive, and social growth.

## 5.0 DISCUSSIONS

This section interprets the study's findings concerning its objectives, theoretical context, and previous literature. It highlights how outdoor playscape typologies in public and private kindergartens across the Klang Valley reflect differences in spatial design, regulatory adherence, and developmental quality.

### 5.1 Linking Findings to Research Objectives

The mapping and typological analysis demonstrate that government-run kindergartens consistently exhibit superior spatial organisation, safety features, and developmental affordances. These findings substantiate the first two research objectives, confirming that adherence to national and local guidelines (PLANMalaysia, 2021; Ministry of Education Malaysia, 2023) produces playscapes that promote active, social, and imaginative play.

In contrast, private kindergartens emphasise branding, visual aesthetics, and compact layouts influenced by economic constraints and market demand rather than developmental value. This statement supports the third objective, showing that financial considerations significantly shape the design and quality of private preschool environments.

### 5.2 Interpretation in Relation to Literature

The findings align strongly with prior studies emphasising outdoor play enhances physical, cognitive, and social development (Raval, 2023). Government institutions translate these developmental principles into physical design outcomes such as distinct play zones, shaded rest areas, and child-scaled play structures.

This pattern supports Jeavons, Jameson, and Elliott (2017) and Shaari, Mohd Isa, and Hamzah (2020), who observed that systematic regulatory governance improves inclusivity, safety, and developmental outcomes in preschool environments. Conversely, the market-oriented tendencies in private kindergartens mirror Baker and McGinnis (2019), who noted that privatised educational settings may reduce pedagogical value when design choices prioritise consumer appeal.

### 5.3 Spatial and Developmental Implications

Holistic development requires an interplay between physical, social, and cognitive opportunities. Government-run kindergartens typically integrate open movement spaces, collaborative play zones, and quiet areas, promoting active learning and peer interaction.

Private kindergartens, by contrast, often limit unstructured play due to smaller site footprints and emphasis on ornamental or indoor-focused facilities. This imbalance supports findings by the Children's Nature Network (2021) and Smedsrud et al. (2024), who demonstrated that naturalised and flexible play environments enhance social cooperation, creativity, and emotional well-being in early childhood.

### 5.4 Policy and Design Implications

The contrast between regulation-driven and market-driven environments underscores the importance of unified enforcement across preschool types. Policymakers should extend government design guidelines to all early-childhood providers, ensuring that developmental priorities outweigh financial or aesthetic motivations.

This study offers a typological framework for practitioners to evaluate or redesign playscapes. It emphasises open-ended, inclusive spaces that foster exploration, collaboration, and physical activity. Embedding child-centred design within Malaysia's preschool landscape architecture could improve developmental equity nationwide.

### 5.5 Limitations and Future Research

This study relied on secondary spatial data, which are Google Earth and Google Street View, which limit behavioural observation of children's real-time play interactions. Nonetheless, the reliability of visual interpretation was strengthened through cross-validation across imagery years (2019–2024).

Future research could employ mixed methods, combining spatial typology with field observation, interviews with educators, or post-occupancy evaluations, to deepen understanding of how playscape design directly influences developmental outcomes. Comparative studies across states or international contexts could enrich the framework's applicability.

## **6.0 CONCLUSION**

Using geospatial secondary data, this study mapped and analysed the typology of outdoor playscapes in public and private kindergartens across the Klang Valley. The comparative analysis revealed clear institutional differences that significantly affect early-childhood development.

### **6.1 Summary of Findings**

The comparative analysis between government-run and private kindergartens revealed distinct patterns in spatial organisation, play diversity, and developmental affordances. Government-run kindergartens, which operate under national and local regulatory frameworks, demonstrated well-organised spatial layouts, diverse play equipment, and strong integration of natural elements. These characteristics align closely with developmental objectives, supporting children's physical, social, and cognitive growth through intentional spatial design and material provision.

In contrast, private kindergartens, often influenced by financial constraints and aesthetic priorities, tended to exhibit limited spatial diversity and fragmented layouts. Although these environments may appear visually appealing, they frequently lack the functional and developmental affordances observed in their government counterparts.

The findings underscore that regulatory compliance is crucial to developmentally appropriate playscape design. Where such standards are enforced, environments promote inclusivity, engagement, and holistic development. Conversely, unregulated financial motivations in private institutions may compromise the functionality and inclusiveness of outdoor play environments.

### **6.2 Contribution to Knowledge**

This study contributes substantially to early childhood design and policy literature by introducing a typological mapping framework that classifies preschool outdoor playscapes through remote spatial data. This methodological approach provides a replicable means of assessing and comparing playscape characteristics across diverse institutional settings.

Furthermore, the study offers empirical evidence that regulatory enforcement is critical in enhancing design quality and maximising developmental potential within early childhood environments. It also underscores how economic pressures influence private preschool settings' spatial form and functional quality, often leading to disparities in play affordances. These insights provide valuable guidance for landscape architects, educators, and policymakers in designing and managing outdoor learning environments that authentically support holistic child development.

### **6.3 Recommendations**

Based on the study findings, several recommendations are proposed to enhance the design and regulation of early childhood outdoor environments. First, policy integration should be prioritised by extending existing government design guidelines, such as those outlined by PLANMalaysia (2021) and the Ministry of Education (2023), to encompass private kindergartens. This policy would ensure that all institutions adhere to consistent quality and safety benchmarks.

Second, in design practice, landscape architects and educators are encouraged to incorporate natural play zones, flexible equipment, and accessible spatial layouts that foster exploration, creativity, and social collaboration among children.

Third, periodic audits across public and private preschools should strengthen monitoring and evaluation mechanisms to assess spatial quality, developmental support, and regulatory compliance.

Lastly, for future research, it is recommended that digital mapping techniques be integrated with qualitative methods, such as teacher interviews and direct observations of children's play, to validate spatial-behavioural relationships and further enrich the understanding of playscape affordances in early childhood education.

## 6.4 Overall conclusion

The study affirms that spatial design quality is a developmental determinant in early-childhood environments. Public kindergartens demonstrate that outdoor playscapes naturally promote children's physical, social, and cognitive well-being when they follow regulatory and pedagogical standards.

To achieve educational equity, Malaysia must ensure that public and private kindergartens provide safe, inclusive, and stimulating outdoor spaces. Creating such environments is not merely a design concern but a commitment to nurturing the next generation's capacity to learn, collaborate, and thrive through play.

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## REFERENCES

- Abdul Mutalib, N. (2022). *Regulatory compliance and environmental quality in Malaysian private childcare centres*. *Asian Journal of Early Childhood Education*, 14(2), 45–56.
- Baker, M., & McGinnis, J. (2019). Marketisation and the early childhood education environment: A study of private kindergarten design. *Early Years Education Review*, 37(4), 482–495.
- Booth, J. R., & Lam, S. W. (2018). Evaluating the reliability of Google Earth imagery for environmental and spatial analysis. *Journal of Spatial Science*, 63(2), 245–259.
- Candiracci, S. (2025). *Play is key to creating child-friendly public spaces*. UNICEF. <https://www.unicef.org>
- Children's Nature Network. (2021). *Green schoolyards for healthy communities: Building a national movement for green schoolyards in every community*. Children & Nature Network. <https://www.childrenandnature.org>
- Dankiw, K. A., Tsiros, M. D., Baldock, K. L., & Kumar, S. (2020). The impacts of an unstructured nature on health in early childhood development: A systematic review. *PLoS One*, 15(2), e0229006. <https://doi.org/10.1371/journal.pone.0229006>
- Hasim, N., Rosli, R., & Yusuf, H. (2023). The impact of outdoor play on children's emotional and social well-being in early childhood education. *Malaysian Journal of Early Childhood Studies*, 12(1), 1–10.
- Jeavons, M., Jameson, A., & Elliott, S. (2017). Designing outdoor play environments for learning and development. *Early Childhood Research Quarterly*, 41, 23–34.
- Kamal, A. A., & Gabr, H. M. (2024). Enhancing children's outdoor play experiences through natural and customised spatial design. *Journal of Environmental Psychology*, 90, 796–812.
- KOMPAN. (2024). *Designing natural playgrounds for social and physical development*. KOMPAN Play Institute. <https://www.kompan.com>
- Maitland, C., Stratton, G., & Foster, S. (2020). The importance of developmentally appropriate environments for children's physical activity and well-being. *International Journal of Early Childhood Education*, 26(3), 201–215.
- Ministry of Education Malaysia. (2023). *Preschool directory: List of public and private kindergartens in Malaysia*. <https://www.moe.gov.my>
- Ministry of Education Malaysia. (2023). *Garis Panduan Prasekolah Kebangsaan*. Putrajaya: MOE Publications.
- Moore, R. (2024). *Designing play environments for holistic child development*. *Landscape and Urban Design Review*, 62(1), 43–55.
- Morgenthaler, A., Sandseter, E. B. H., & Storli, R. (2023). Children's perspectives on environmental qualities that

- enhance their play experiences. *Early Child Development and Care*, 193(4), 512–526. <https://doi.org/10.3390/ijerph20031763>
- National Association for the Education of Young Children. (2017). *NAEYC early learning program accreditation standards and assessment items*. Washington, DC: Author.
- National Program for Playground Safety. (2024). *Playground safety standards and developmental design guidelines*. NPPS. <https://www.playgroundsafety.org>
- Nobre, F. S., Valentini, N. C., & Ridgway, A. (2022). Designing outdoor play environments to promote children's motor and social competence. *Early Child Development and Care*, 192(3), 419–430.
- PLANMalaysia. (2021). *Garis Panduan Perancangan Tadika dan Taska*. Jabatan Perancangan Bandar dan Desa Semenanjung Malaysia.
- Radzi, N. M., Othman, Z., & Zainal, S. (2023). Holistic development through play-based learning in Malaysian preschool education. *Journal of Early Childhood Research and Practice*, 18(1), 45–56.
- Raval, M. (2023). Exploring unstructured outdoor play and creativity in early childhood education. *Early Years Research Quarterly*, 58(1), 30–41.
- Sando, O. J., Larsen, L., & Moser, T. (2021). The physical environment of early childhood education and care: Associations with children's well-being and involvement. *Early Childhood Research Quarterly*, 56, 248–259. <https://doi.org/10.1016/j.ecresq.2021.03.004>
- Shaari, N., Mohd Isa, N., & Hamzah, M. (2020). Comparative analysis of public and private kindergarten environments in Malaysia. *Journal of Early Childhood Education*, 8(2), 112–125.
- Shaari, N., Mohd Isa, N., & Hamzah, N. (2020). Regulatory frameworks for preschool environments in Malaysia. *Asian Journal of Environment-Behaviour Studies*, 5(17), 59–69.
- Siraj, S. (2019). *Children's rights and welfare in Malaysia: Legal and social perspectives*. Kuala Lumpur: University of Malaya Press.
- Smedsrud, J., Brattbakk, I., & Kjørholt, A. T. (2024). Children's interaction with green outdoor spaces: Social and emotional outcomes in early education. *Children, Youth and Environments*, 34(1), 45–60.
- World Bank. (2023). *Strengthening quality and governance in Malaysia's early childhood education system*. World Bank Group. <https://documents.worldbank.org>
- Zhao, J., Liu, Y., & Huang, Y. (2023). Children's outdoor play in urban neighbourhoods: Social and environmental influences on spatial behaviour. *Urban Studies*, 60(5), 995–1013.