

**Consultancy Study on Accommodation Requirements
for Kindergartens**

EXECUTIVE SUMMARY

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in association with
Community Project Workshop, Faculty of Architecture,
The University of Hong Kong

1. Background

1.1 Providing practicable 15-year free education and better quality kindergarten (KG) education is one of the priorities of the current-term Government. The Committee on Free Kindergarten Education was set up in 2013 to study various issues relating to KG education, including KG accommodation requirements.

1.2 In this connection, a Consultancy Study on Accommodation Requirements for Kindergartens was commissioned to BARRIE HO Architecture Interiors Ltd. in July 2014 to analyze various issues relating to KG accommodation, and to make proposals on the future accommodation requirements for KGs as well as related issues in Hong Kong. The study was conducted in collaboration with Community Project Workshop, Faculty of Architecture, The University of Hong Kong, which aims to offer practical, pragmatic and buildable solutions to foster future KG design and analytical research findings.

2. Objectives

2.1 The objectives of the study are to:

- (a) examine the existing provisions and requirements of accommodation for KGs in Hong Kong;
- (b) gauge and analyze the views of major stakeholders on issues relating to KG accommodation requirements, through invited consultations with different KG-related stakeholders; and
- (c) propose feasible and practicable options for future accommodation requirements for KGs as well as related issues in the local context, with a view to providing a conducive environment for children's learning and development. The proposals and findings of the Consultancy will be provided for further consideration of the Committee on Free Kindergarten Education and its Sub-Committees for making recommendations on future accommodation requirements for KGs.

3. Methodology

3.1 The consultancy study is based on the following methodologies:

- (a) The study was designed with various methodologies, including overseas case studies, local site visits, invited consultations and

questionnaire.

- (b) Overseas case studies were examined as background research for the study. For example, cases of KGs in Asia, Europe, North America, and Australia were discussed and investigated to offer a more comprehensive view on existing requirements of KG accommodation, and to provide implications towards the proposal of future KG accommodation requirements in the local context. For instance, the idea of sharing of space and facilities by a centralized resources centre among different KGs of the community has been explored by the case of Korea. Award-winning international architectural successes were also reviewed.
- (c) From July to October 2014, local site visits to 21 KGs operating in different types of premises were conducted. Through observations on the actual learning environment and facilities in KGs, information on the present situation of KG accommodation and facilities was collected for further discussion and analysis.
- (d) In September 2014, three sessions of invited consultations with different KG-related stakeholders from KG with different operating modes and scales were successfully held. Different KG-related stakeholders such as principals, teachers and parents expressed their views on the existing accommodation and their vision on Ideal KG in the future.
- (e) Two sets of questionnaire for principals/teachers and parents were distributed during consultations. 85 questionnaire responses were collected for principals/teachers' group, while 14 questionnaire responses were collected for parents' group. The results were discussed with the data collected from overseas case studies, local site visits and invited consultations to offer a comprehensive view for the study.
- (f) Based on the data collected in above methodologies, basically three major components of future KG accommodations were derived, namely 'Teachers' Facilities', 'Students' Facilities' and 'Back of House'.

4. Major Findings of the Study

4.1 Stakeholders' Views

4.1.1 The views of major stakeholders on issues relating to KG accommodation requirements were collected through case studies of local KGs as well as consultations and questionnaire.

(a) Case studies of local KGs

4.1.2 Information on the present situation as well as views on KG accommodation and facilities were collected through case studies of local KGs. A total of 21 KGs situated at different types of KG premises were visited, including premises located inside community complex, within private estate (on ground level/ at podium level), within public estate (on ground level/ at podium level), inside shopping mall, inside self-owned complex, next to religious building, independent building and shared school campus with primary/ secondary school.

4.1.3 Major views collected are as follows:

- (i) **School Facilities:**
 - Facilities including more indoor play area, outdoor area, Music Room, Art Room, Multi-purpose Room, green area, proper first-aid room, etc. are required for students. There are also opinions that student toilets are far from classrooms.
 - Staff room and staff toilet, more space for Principal's Room and registry are required for teaching staff.
 - Other facilities including Conference Room for parents' activity/talk, more spacious pick up area, more storage space, larger washing and drying area are also required.

- (ii) **Classroom Facilities:**
 - Classroom space is considered insufficient.
 - There are demands for bed storage space, teacher's desk, washing basin and water drinking corner, hangers for students' coat and school bag shelves in classroom.
 - Better air ventilation and toilet inside classroom or at the centre of the school are also suggested.

(b) Consultation and Questionnaire

4.1.4 Views of stakeholders including KG principals, teachers and parents were collected through consultation sessions and questionnaire surveys. Major views of KG stakeholders collected are as follows:

- (i) **Students' Facilities:**
 - The minimum size of the future classroom for KGs should be reviewed.
 - Review the different curriculum strategies in parallel with the accommodation requirement; and review the Operation Manual.
 - Lack of space and spatial flexibility for teaching.
 - Distance from classroom to toilet should be shortened to minimize the required labor in supervising the children.
 - There are demands for facilities like display area, Art Room, Music Room, outdoor area, green area, hall, library,

decentralized toilets, vehicular drop-off area, washing basin in classroom; special treatment area for students with special needs.

- There are suggestions that “Environmental Design Approach” for future KG accommodation such as cross ventilation, natural lighting be considered. Corridor can also be used as display area to exhibit students' works.

(ii) Teachers' Facilities:

- Lack of space and spatial flexibility for teaching.
- Poor ergonomics for teachers as they are using children sized furniture.
- There are cases that Principal's Room is used for other purposes.
- Demand for staff toilet and administrative area.

(iii) Back of House Facilities:

- Lack of facilities including visitor area (waiting area, drop-off area), storage space (for stationary, bed and learning materials) as well as laundry area.
- Larger kitchen and bigger store room are required for whole-day KGs.

4.2 Analysis of Findings

4.2.1 Learning Environment

(a) Student Area

A vast majority of KG staff believed student activity areas are quite insufficient among most existing KGs, which is a pertinent issue that has to be addressed. This implies a spacious environment for future KG design is needed for healthy child growth both physically and mentally. Based on the questionnaire survey, the top three activity areas that were considered to be lacking are outdoor activity space, indoor activity space and student activity space (sports). It shows that space available for physical movement among students, regardless of indoor or outdoor, are found to be inadequate among existing KGs. Limited spaces in classroom also restrict group activity in learning corners. In Hong Kong where high dense environment is prevalent, more considerations should be placed on ensuring sufficient activity areas for students. The Education Bureau should therefore consider activity space provision requirement as one of the priority design requirement.

(b) Outdoor Space

KGs in Hong Kong lack outdoor activity area like playground, sky

garden, planting area etc. which can promote the learning of nature.

(c) Greening Area

Many KGs in Hong Kong are lacking greening area, constrained by limited space. To provide students with a more conducive learning environment, more greening area should be added in the future. Green area is emphasized by many KGs in Singapore. Hong Kong may learn from these international case studies.

(d) Indoor Space

There is a strong demand for indoor space for student activities. Indoor space provision should be sufficient so that more facilitates could be provided to enhance students' learning. There are also views that hall space is insufficient. A spacious environment is needed for assembly among students to organize group activities and provide gathering space for parent-teacher association (PTA).

(e) Sandpit and Water Pool

Some schools suggest adding a sandpit and a water pool in the KGs. Yet, some schools probably do not have enough space and hygienic problem may arise. To resolve the problem, a sand and water table can be provided.

4.2.2 Accommodation Requirement

(a) Rest Area, Staff Room

Many KGs do not have rest area for teachers. A staff room and a staff cafeteria area are requested by some schools. Based on the questionnaire survey, the top three types of staff facilities that were considered to be lacking are staff resting area, staff room and staff toilets. The provision of sufficient common space for teaching staff are essential for meeting basic physical and physiological needs, and most importantly a better working environment can cultivate teacher's sense of belonging to the KG. Indeed, teachers usually have to share their seats with other teachers. This may hinder teachers' efficiency in handling their work. To resolve the problem, resting area and a bigger staff room should be designated when designing KGs. The Education Bureau should therefore consider staff facilities provision requirement as one of the priority design requirement in future.

(b) Storage Space

Lacking storage space is a major concern of many principals and

teachers. Learning materials, sports equipment, stationary, play equipment, bed and food require abundant storing space. In the future, larger storage space should be provided in KGs.

(c) Kitchen

Whole-day KGs are required to provide lunch for students. Hence, reserving a space for kitchen is needed. Half-day KGs provide snacks like sandwiches, biscuit, cake etc. for students, and a pantry should be provided.

(d) Sick Room

A Sick Room that locates near staff room with good ventilation is requested by some schools so that it is more convenient for teachers to take care of the children. Furthermore, Sick Room should provide direct exit from campus to prevent spread of germs. In the future, sick room located in proximity to staff room is preferred.

(e) Room for Students with Special Needs

Some schools raised the concern that a designated room is needed for students with special needs to learn. An appropriate learning environment for students with special needs is needed.

(f) Meeting Room for PTA Meetings and Parent Pick-Up Area

Meeting Room is required for PTA meetings and workshops (PTA members often work as volunteers to prepare for student activities). A sheltered arrival and pick-up area should be provided for parents.

(g) Vehicles Drop-off Area

Lack of parking area hinders school bus from parking near to the school. This in turn makes teachers spend extra time on taking care of the children when classes are over. Thus, a drop-off area designated for each KG should be considered in the future.

(h) Flexible Design of Facilities (e.g. Sliding Doors)

Based on the questionnaire survey, more than 60% of the respondents consider that there is a need for improvements in flexibility in school design. Many schools suggested that sliding doors be installed to increase flexibility in KGs. When there are large-scale school activities held, individual rooms can be connected if sliding doors are installed. The Education Bureau should therefore consider flexibility of KG facilities as one of the priority design requirement in future. Adding sliding doors in

appropriate area in KGs could also be considered in the future.

(i) Stage in each classroom

Many agree that adding a stage in each classroom can boost and nurture students' confidence in presentation and performance. Thus, KGs in Hong Kong can also consider adding this element in each classroom.

(j) Bigger Windows

Many suggest that bigger windows should be installed in KGs to bring sunlight to the classrooms. More importantly, bigger window can help to improve ventilation in the classrooms to avoid infectious disease.

(k) Sleeping Area

Rooms designated for nap time can be considered so the beds are fixed without the need for bed-making every day. This saves janitors' time and students do not have to wait for bed-making. Thus, the Education Bureau can consider adding a nap room in the KGs if appropriate.

(l) The Size of Classroom

Many reflect that the classrooms are too small and there is a lack of space for storage. Hence, a larger size of classroom is needed.

(m) Washing Basin

Many principals reflect that a washing basin has to be added in each classroom. They said that whenever a student needs to go to the washroom to wash hands, a janitor or teacher has to accompany the student, which greatly increases the workload of janitors and teachers.

(n) Teacher Desk

There is the lack of teacher desk in some KGs. Only senior and part time staff got their own seat in the staff room. At least one teacher desk should be made available in each classroom.

4.2.3 Spatial Design

(a) Outdoor space design

With the provision of adequate outdoor space, outdoor activities can be regularly and smoothly conducted and the development of motor skills can be perfectly guaranteed. In addition, a green

natural environment also helps students to learn about nature, thus pleasant and effective teaching can be fulfilled.

(b) Lighting and ventilation in classrooms

Lighting and ventilation are widely highlighted for providing an amiable indoor environment for children to engage in various kinds of activities. Based on local case studies, indoor illumination is well provided in these KGs. However, KGs which are capable of exploiting outdoor lighting provision through large compatible windows are rarely seen due to the fact that some KGs are located in buildings which cannot be easily converted or lighting provision is generally poor within those buildings.

(c) Library corner design

Library corners are widely provided in Asian cases with each one demonstrating its own characteristics in terms of spatial design. Based on the local case studies, all of the visited KGs are equipped with bookshelves full of children books. Yet not so many KGs can afford to provide a specific corner serving as a small library mainly due to the lack of flexibility of indoor space.

5. Recommendations

5.1 Designs for Future KG Accommodation

5.1.1 In the medium or long run, the primary (fundamental) facilities suggested to be present in every typical KG, if space is available, include:

(a) Students' Facilities

(i) *Classroom*

- Learning corners
- Washing basin
- Flexible display board and painting board
- Furniture (including teacher's desk, ergonomically designed table and chair, book shelves, shoe rack, coat hangers, school bag cabinet and toy shelves)
- Equipment (including projector, computer)
- Flexible partition
- Acoustic proof wall
- Mechanical ventilation, e.g. exhaust fan
- Other items (including mosquito net, plant, safety mat, soft tiles, first aid kit, recycle bin)

(ii) *Indoor area*

- Art room
- Music room

- Sick Bay
- (iii) *Outdoor area*
 - Playground (long-term target)
- (b) Teachers' Facilities
 - Principal's Room
 - Staff Room
 - Staff's toilet
- (c) Back of House Facilities
 - Pantry or Kitchen (for whole-day KGs)
 - Store Room
 - Vehicular Drop-off Area

5.2 Enhancement of KG Design

5.2.1 Pollution Issue

Quite a number of KG stakeholders have explicitly expressed their concerns on the adverse effects of pollutions to children's health and growth. In view of this, the solutions to alleviate noise and air pollution in the design of KG accommodation have been explored.

(a) Noise Pollution

- (i) *Sound Barrier (Exterior) - Trees and Shrubs*
Planting trees and shrubs in open space in front of KGs, if available, can well serve as sound barrier to attain sound-proof effect and isolate from external noise.
- (ii) *Sound Barrier (Exterior) – Window Designs*
From the local case studies, it is observed that most KGs do not take into consideration the importance of window design. Indeed, window is an important hardware to isolate external noise from the KG.
- (iii) *Sound Barrier (Interior) - Sound absorbing acoustical panels*
Sound absorbing acoustical panels and soundproofing materials are used to eliminate sound reflections to improve speech intelligibility, reduce standing waves and prevent comb filtering. A wide variety of materials can be applied to walls and ceilings depending on application and environment in KGs.

(b) Air Pollution

- (i) *Cross Ventilation*
It is suggested that cross ventilation should be integrated into classrooms and activity rooms to enhance air flow, which can

greatly prevent the spread of diseases within the KGs. Also, cross ventilation helps to cool down the interior temperature in Autumn/Spring seasons, and energy for air conditioning could be largely saved.

(ii) *Air purifier*

It is suggested to install air purifier in the KGs, so as to reduce the risk of disease spreading, and at the same time, to promote a healthy learning environment.

(iii) *Mechanical Ventilation*

The use of mechanical ventilation, e.g. exhaust fan, in KG can remove unpleasant smells and excessive moisture, and help keep air within the building circulating.

5.2.2 Disabled Facilities

Disabled facilities are highly encouraged to ensure barrier free access in KGs. Hence, references should be made to relevant guidelines in the design of KG accommodation. Disable ramp is one of the examples to facilitate wheelchair users to access within the campus easily, in case level difference exists.

5.3 Estimation of Ideal Kindergarten Indoor Area

(a) Proposed Approach

5.3.1 In proposing the ideal KG indoor area, reference is made to the Operation Manual for Pre-primary Institutions regarding the requirement of “Basic Area” of indoor activity area. With reference to local, overseas and mainland KGs' case studies, the requirement of “Ancillary Area” is added onto “Basic Area”. The following indoor area requirement is proposed:

$$\text{“Basic Area”} + \text{“Ancillary Area”} = \text{Ideal Area}$$

where “Basic Area” is indoor activity area for students (including classrooms and indoor play area)

“Ancillary Area” is area for ancillary facilities (i.e. any passageway, store, kitchen, office, toilet facilities and staff room)

(b) Indoor Activity Area for Students

5.3.2 Operation Manual: Chapter 1 Premises Design Section 1.3.6 has the following guideline:

The minimum floor space requirement for institutions attended by children aged 2 to 6 is 1.8 m² per child inclusive of all indoor activity area but exclusive of ancillary facilities (i.e. any passageway, store, kitchen, office, toilet facilities and staff room).

5.3.3 From the study of overseas/mainland cases and local cases, as well as the **Designs for Future KG Accommodation** mentioned in paragraph 5.1 above, the extra area needed for various facilities is an extra 20% to 40% of "Basic Area".

5.3.4 An additional 20% indoor activity "Basic Area" can allow certain level of mobility, as well as the provision of space for play area, library, learning corner, shelves, school bag cabinet, computers and washing basin. However, it is not enough for representing the full requirements and improvement of future KG education.

5.3.5 An additional 40% indoor activity "Basic Area" can allow a higher level of mobility, as well as the provision of further and more space for play area, library, learning corners, shelves, school bag cabinet, computers, washing basin and various rooms, etc.

5.3.6 This report proposes an increase of 20% to 40% as the additional indoor activity "Basic Area" for students.

5.3.7 The ideal KG indoor activity area (including classroom and indoor play area) per child is proposed as follows:

$$\begin{aligned} &= \text{Basic Area} + (20\% \text{ to } 40\%) \text{ Extra area for various facilities} \\ &= 1.8 \times (1+20\%) \text{ to } 1.8 \times (1+40\%) \\ &= \mathbf{2.16 \text{ to } 2.52 \text{ m}^2 \text{ per child}} \end{aligned}$$

(c) Ancillary Area

5.3.8 Besides, the recommended schedule of ancillary facilities for a 6-classroom KG is as follows:

- Principal Office/ Staff Office/ Administrative Office =35m²
- General Store (2 store rooms)=18m² x 2 = 36m²
- Sick Bay=11m²
- Pantry=20m²
- Laundry=20m²

$$\text{"Ancillary Area"} = 35+36+11+20+20= 122\text{m}^2$$

5.4 Improvement Schemes in the Medium Term

5.4.1 According to the KG accommodation requirements as suggested from the discussion above, many of them are long-term goals and it is obvious that there is still a lengthy development for local KGs to achieve the ideal school design. In view of this, a "Medium-term Improvement Scheme" with some suggested improvement measures are provided below:

(a) Open Space

Though space within KGs is limited, in some cases, it is possible

to extend the use of open space to public area upon arrangement and obtaining approval from the Housing Authorities for public estates. For instance, KGs may request the exclusive use of public area such as the park and the sporting facilities in a particular timeslot, such that the area is free from intervention of irrelevant inhabitants or strangers, and is safe for children's activities. The feasibility of such arrangement is subject to further discussion and arrangement between KGs and relevant authorities.

(b) Administrative Area

From the above analysis, the need of individual space for teaching staff is a fundamental requirement in the KG settings. Therefore, Staff Room should be part of the core components in KGs, such that every staff can have their own adult-ergonomic furniture together with private space for storing personal belongings.

(c) Sick Bay

In KG settings, apart from the focus usually placed on the teaching and learning, a safe and healthy environment is also a major concern to the teaching environment. To prevent disease spreading in the campus, Sick Bay should be set up near the main entrance. Competent staff can assist children to check body temperature before entering the campus every morning, whilst sick child can be isolated from the others. An additional exit could be arranged for sick child to leave without further encounter of other children.

(d) Improvement of Existing Toilet Areas

In the existing layout of KGs, there is a tendency to locate toilets far and few from each other. This results in an otherwise unnecessary requirement for an excessive number of staff; purely for supervision to and from the toilets. An additional problem is that children would need to travel a relatively long distance to reach the toilets. The feasibility of decentralization of toilets, which implies the removal of the concept of a core toilet, may be explored. By increasing the number of toilet facilities, it ideally allows the placement of toilets directly next to classrooms. The travel distance to and from the toilets would dramatically decrease, and a smaller number of staff would be required for supervision; thus increasing the efficiency of labor, as well as the comfort level of students.

(e) Resource Centres

From the experience of visits to local KGs, it is observed that

some KGs do not have adequate space and facilities. As an intermediate improvement to the spatial problems, the feasibility of setting up resource centres, in different regions if feasible, could be explored. The setting up of resource centres would have the advantages of extending teaching and learning space for both teachers and students; maximizing the use of learning resources; enriching children's learning exposure and experience; and allowing more space for other teaching and learning purpose in KGs. However, there are a number of constraints to be considered such as the availability of land and management of the resource centres.