



**GUIDELINES FOR THE DESIGN & CONSTRUCTION
OF FACILITIES FOR
EARLY CHILDHOOD CARE & DEVELOPMENT**

**Nigel Wakeham
January 2000**

**GUIDELINES FOR THE DESIGN & CONSTRUCTION OF FACILITIES FOR
EARLY CHILDHOOD CARE & DEVELOPMENT PROGRAMMES BY WORLD
BANK FINANCED PROJECTS IN DEVELOPING COUNTRIES**

CONTENTS

A. INTRODUCTION

B. USE OF EXISTING FACILITIES FOR ECD PROGRAMMES

**C. GENERAL GUIDELINES FOR THE DESIGN & CONSTRUCTION OF NEW
FACILITIES FOR ECD PROGRAMMES**

1. GENERAL

2. PRELIMINARY & PREPARATORY WORK

2.1 SITE SELECTION

2.2 SITE ACQUISITION

2.3 SITE SURVEYS

2.4 SITE SERVICES

3. DESIGN & DOCUMENTATION

3.1 GENERAL

3.2 CLIMATE

3.3 DESIGN FOR EARTHQUAKES

3.4 SITES

3.5 BUILDING MATERIALS

3.6 SAFETY

3.7 EXTERNAL PLAY AREAS

3.8 FURNITURE & EQUIPMENT

3.9 DRINKING WATER & LAVATORIES

4. CONSTRUCTION OF FACILITIES

4.1 GENERAL

4.2 CONSTRUCTION BY CONTRACTOR

4.3 CONSTRUCTION BY THE COMMUNITY

5. MAINTENANCE OF FACILITIES AFTER COMPLETION

5.1 GENERAL

5.2 THE VANUATU MODEL

D. DETAIL DESIGN OF NEW FACILITIES FOR ECD PROGRAMMES

1. DAY CARE CENTRES, 0 - 3 YEARS

1.1 GENERAL

1.2 SERVICES

1.3 ACCOMMODATION

2. PRE-SCHOOL FACILITIES, 3 – 5/6 YEARS

- 2.1 GENERAL
- 2.2 SITES
- 2.3 ACCOMMODATION

3. MOTHER & CHILD CENTRES

- 3.1 GENERAL
- 3.2 ACCOMMODATION

TABLES

Table 1: Critical Stages in the Construction of New Facilities for Early Childhood Development Programmes

Table 2: Aspects of Climate that require control in the main climatic regions in the developing world

FIGURES

Figure. 1 Ground floor of existing house in UK converted into pre-school

Figure. 2 Proposed pre-school in Vanuatu for 30 children

Figure. 3 Proposed 60 place rural pre-school in Indonesia

Figure. 4 Outdoor play space for 26 place pre-school in UK

Figure. 5 Small creche with combined sleeping/activity space

Figure. 6 Creche for 20 babies with separate play and feeding areas

Figure. 7 Pre-school project in Indonesia: typical Group Room/Play Room

Figure. 8 A pre-school for 30 children in Indonesia

Figure. 9 Pre-school in Malaysia for 60 children in two shifts

Figure. 10 Urban pre-school for 80 children in Brazil

Figure. 11 Purpose-built pre-school for 40 children in UK

Figure. 12 Purpose-built pre-school for 30 children in UK

Figure. 13 Combined day centre and pre-school in one building in UK

Figure. 14 Proposed mother and child centre (BKB/Posyandu Post) in Indonesia

Figure. 15 Small mother and child clinic in Kampuchea

Figure 16: Combined day care centre, pre-school and mother and child centre in Kampuchea

BIBLIOGRAPHY

A. INTRODUCTION

1. The provision of facilities for early childhood care and development has to take into account two key aspects of early childhood development, that of care and that of education. The care component relates to the health, nutrition, safety and comfort of the young child and the education component relates to the intellectual, social, emotional and physical development of the young child.
2. Early childhood care provision for children under 6 years requires more facilities and services than comparable institutions such as primary schools and are therefore much more expensive to build, run and maintain. These guidelines try to address the problem of providing such facilities in the most cost-effective way.
3. Child care or education can take many forms such as day care centres, pre-schools, mother and child centres, play groups, childminding services, out-of-school clubs, drop-in centres for parents and small children and even play-buses. The most common types are those that these guidelines will concentrate on: 1) The Day Care Centre or Crèche that caters for children from 0 to 3 years. 2) The Pre-school, Kindergarten or Nursery that caters for children from 3 to 5/6 years. 3) The Mother and Child Centre that caters for the education of young mothers and the care of young children. There can of course be any combination of the three types of centre and all types of facilities will also require accommodation for parents, administration and management and other ancillary activities.
4. Facilities can be provided by using or adapting existing buildings or by building new facilities. The use of existing facilities for ECD programmes is briefly examined first but the guidelines concentrate on the construction of new, low-cost facilities. The general aspects that have to be taken into account in building any kind of new facility are dealt with and after that the more specific considerations for the various types of facilities are covered in detail.

B. USE OF EXISTING FACILITIES FOR ECD PROGRAMMES

1. GENERAL

- 1.1 ECD programmes can utilise a variety of existing buildings, some of which are discussed below.
- 1.2 Total expenditure on this type of provision should obviously not exceed the cost of providing facilities in new purpose-built buildings.

2. HOME-BASED PROGRAMMES

- 2.1 The use of existing houses/homes for facilities and mothers to the run them can provide a no-cost or very low-cost solution to the provision of ECD programmes for small groups of up to 4/5 children.
- 2.2 Support and training for the mothers will be required together with assistance with teaching materials, health kits and storage and possibly food for the children.

3. UNUSED or EXISTING PREMISES

- 3.1 It may well be possible to use existing unused or under-used buildings for ECD facilities. In some provinces of Indonesia for instance, the number of primary schools is being

reduced because of falling enrolment rates and there are proposals to use vacated schools for pre-schools

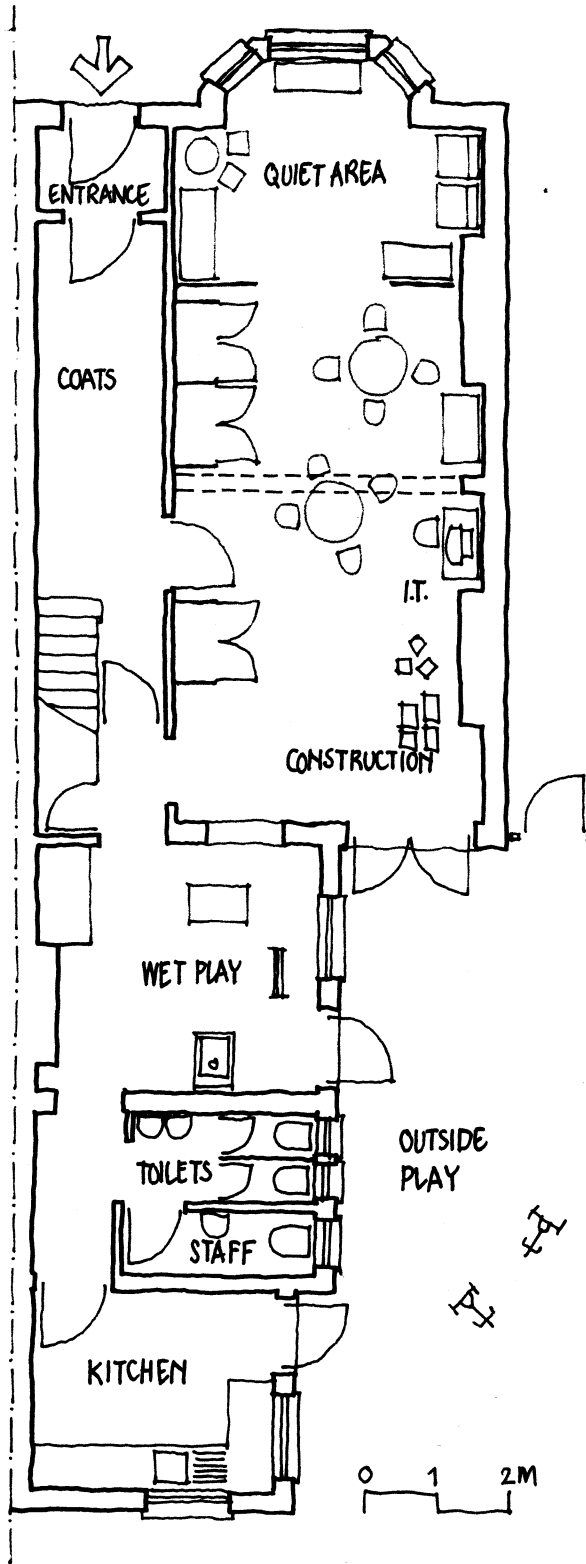


Figure 1: Ground floor of existing house in UK converted into pre-school for 15 children age 3-4 years and 4 children age 2-3 years. The main play space has been created by demolishing a central wall and there is a separate room for wet play. There is only minimal storage space and toilet provision.

3.2 The criteria for the selection of existing buildings for use as ECD facilities would be:

- A sound basic structure requiring only minor repairs.
- A good roof or one capable of repair.
- Adequate space for the intended function.
- Adequate size of site.
- An existing clean water supply or the possibility of providing one through the construction of a well, rainwater storage tanks, etc.
- Existing toilets or adequate space to build them.
- Low or no rent.
- The overall cost of using an existing building should not exceed the cost of providing new facilities.

3.3 It is unlikely that many existing buildings will be found that will meet all the above criteria but, even if some new construction is required, if the total cost is still below that of providing completely new facilities then this solution should be considered.

3.4 A degree of imagination will always help when considering the use or adaptation of existing buildings and ECD programmes have been and are being, run in many types of buildings. These include vacant garages or storage sheds, disused buses, disused houses, building sites, in flats on housing estates and even in the shade of an orchard with the provision of toilets and a well. See Figure 1: Ground floor of UK house converted into small pre-school.

C. GENERAL GUIDELINES FOR THE DESIGN & CONSTRUCTION OF NEW FACILITIES FOR ECD PROGRAMMES

1. GENERAL

- 1.1 Equipment should be provided in all types of facilities to encourage a diversity of play that will enhance the overall development of the child. This can be creative play, imaginative play, manipulative play, and physical and adventure play together with activities to encourage scientific interest and activities to encourage reasoning skills. Some centres, such as those in Malaysia, provide mini-zoos with animals that the children can help to look after and which give them an introduction to keeping pets and studying wildlife.
- 1.2 All facilities should have adequate numbers of trained staff to look after the children together with support staff such as cooks, cleaners and clerical staff if necessary.
- 1.3 There should appropriate facilities for children with disabilities.
- 1.4 When designing early childhood care centres, the scale of the child should always be taken into account. Windows should be low so that the children can see out, furniture and equipment should be of the appropriate size and toilets and washbasins should also be of the right size and at the right height.

- 1.5 Parent and/or community involvement should be encouraged. Child-care facilities can form an excellent base for a range of family and community services and with the provision of appropriate meeting rooms, offices, etc can have significant outreach functions. They can therefore be the focus of a fully integrated early child-care, education, information and training service.
- 1.6 There are four critical stages in the construction of new facilities: 1) Preparation which includes site selection, site acquisition and site surveys; 2) Design and Documentation which includes the design of the buildings, site layouts, working drawings and site works drawings, schedules of materials and/or bills of materials and tender documentation; 3) Construction which includes advertising and the tender process, evaluation of bids, award of contract, construction and supervision, practical completion, defects liability period, final inspection and final hand-over; 4) Maintenance which includes preparation of maintenance handbooks, maintenance training workshops and regular, cyclical maintenance of the buildings. Some of these activities could of course overlap. See Table 1: Critical stages in the construction of new facilities for early childhood development.

2. PRELIMINARY & PREPARATORY WORK

2.1 SITE SELECTION

- 2.1.1 Sites for facilities for early childhood care should be within easy access of children's homes and should preferably be situated within settlements.
- 2.1.2 The site should provide adequate space for the initial buildings and any possible future extensions together with space for outside play.
- 2.1.3 Sites should be as level as possible and have good, uniform soil conditions to avoid expensive foundations. Areas of soft, marshy ground where construction and the provision of proper lavatories will be difficult should be avoided, as should rocky areas where excavation will be difficult and expensive. Sites should be naturally well drained to avoid the possibility of flooding. See also sections on design for cyclones and earthquakes.
- 2.1.4 Sites should if possible be situated away from roads carrying vehicular traffic.
- 2.1.5 Any mature trees on the site should be kept to provide shade for buildings and occupants, protection to buildings (see section on design for cyclones) and to hang swings from, etc.
- 2.1.6 Any watercourses or ponds on or adjacent to the site should be properly fenced to avoid accidents.

2.2 SITE ACQUISITION

- 2.2.1 Sites for construction of World Bank projects must be provided either by the community or by government. No World Bank funds should be used for buying sites.

STAGE 1				
PREPARATION				
Site Selection				
Site Acquisition				
Site Surveys				
	STAGE 2			
	DESIGN & DOCUMENTATION			
	Preliminary & Final Designs of Buildings & Site Layouts			
	Preparation of Working Drawings and Site Works Drawings			
	Preparation of Schedules of Materials or Bills of Quantities			
	Preparation of Tender Documents			
		STAGE 3		
		CONSTRUCTION		
		Advertisement & Tendering		
		Evaluation of Bids		
		Award of Contract		
		Construction & Supervision		
		Practical Completion/Hand-over to Client		
		Defects Liability Period		
		Final Inspection/Rectification of Defects/Final Hand-over to Client		
			STAGE 4	
			MAINTENANCE	
			Preparation of Maintenance Handbook	
			Maintenance Training Workshops	
			Cyclical Maintenance of Facilities	

Table 1: Critical Stages in the Construction of New Facilities for Early Childhood Development Programmes

- 2.2.2 All sites must be properly surveyed and transferred to the government or the community and certification that this has been done and that the site can be used for the intended purpose must be provided to the Bank before any construction starts.

2.3 SITE SURVEYS

- 2.3.1 After sites have been acquired, levels surveys should, if possible, be carried out and drawings prepared showing the site levels in order that site plans can be prepared showing the layout and levels of all buildings, drains, roads, paths, etc.
- 2.3.2 If there is any doubt as to the bearing capacity of the ground, soil tests should also be carried out.

2.4 SITE SERVICES

- 2.4.1 It is essential that clean drinking water is available on the site. No facilities should be constructed if a dependable supply of drinking water cannot be ensured. If the water is only for drinking, 25 litres a day should be allowed per pupil. If there are flush lavatories then 45 litres a day per pupil should be allowed. These are the figures for ideal conditions and can be much reduced where water is difficult to obtain or where the facilities are only used for a few hours a day.
- 2.4.2 If there is no village or town water supply then all other possibilities for providing clean drinking water should be explored such as running a pipe from a spring, digging a well or providing rain water storage tanks. The site should be large enough to allow the well to be built at least 30 metres from any pit-latrines, septic tank or soakaway. The exact distance will depend on both soil and ground water conditions. See Section 2.9 below.
- 2.4.3 Lavatories should be provided for both pupils and staff. The type of lavatory will depend on whether there is running water on the site, whether there is a sewer to connect to and on local custom. Where there is no running water, dry pit-latrines will be acceptable in some countries, in others pour-flush latrines will be necessary. No facilities however should be constructed without the provision of adequate, working toilets. See Section 3.9 below.
- 2.4.4 Electricity is not an essential service in pre-schools that are usually used only in daylight hours. Electrical installations are expensive and can usually be omitted. However, schools built in urban areas with access to electricity and also used for other purposes may require an installation. It should not be forgotten however that they will also require an adequate recurrent budget to pay for the cost of the electricity.

3. DESIGN & DOCUMENTATION

3.1 GENERAL

- 3.1.1 A variety of factors will affect the design of facilities for early childhood care and these include the prevailing climate, design for cyclones and earthquakes, siting, local building materials and local building codes.

3.2 CLIMATE

- 3.2.1 Climate will be the major influence affecting the comfort of children attending the pre-school and, depending upon the zone in which the school is situated, a variety of measures can be taken to improve the comfort levels.
- 3.2.2 The major climate zones in the tropical regions are 1) warm, humid in the lowlands on either side of the equator and on tropical islands. 2) Intermediate in tropical inland savannah away from the equator. 3) Hot, arid in deserts or semi-deserts near and just beyond the tropics. 4) Cooler uplands along the equator and in the surrounding tropics. 5) Temperate or sub-tropical in the regions just outside of the tropics.
- 3.2.3 The design of buildings in the different zones will vary but the major factors that have to be taken into account when designing buildings are the sun (solar load and solar penetration during school hours), daytime temperatures, humidity, high rainfall in some areas and prevailing breezes. See Table 2: Aspects of climate that require control in the main climatic regions in the developing world
- 3.2.4 Correct orientation of buildings in the tropics is essential if the sun is to be kept out of rooms and off main walls. To do this buildings should be oriented if at all possible with their long axis on a line east - west so that the main window walls face north - south. In warm, humid climates it might be necessary to modify this orientation in order to face the buildings into the prevailing breeze. If this is done other measures such as the provision of shutters or louvres might be necessary to keep the sun out of rooms.
- 3.2.5 Roof overhangs should be large enough to keep the sun out of windows during pre-school hours. The size of the overhang will depend on the height of the roof and the latitude of the site. Solar charts should be used to calculate the exact overhang required. If large roof overhangs are not feasible or if the building is on two or more stories, then other means of keeping the sun out will have to be used such as vertical or horizontal louvres.
- 3.2.6 Large roof overhangs will also keep the sun off walls and thus reduce the solar load. Roofs will require insulation and/or ventilation to reduce the solar load through the roof.
- 3.2.7 The use of planting in providing shade and helping to keep buildings cool in the tropics should not be forgotten. Trees can be planted adjacent to buildings to provide shade and climbing plants can be trained over verandas and roofs.
- 3.2.8 Maximum ventilation in rooms is usually required throughout the year in hot, humid climates to increase comfort. Window openings should therefore be as large as possible (or there should be no windows at all just large roof overhangs to keep the rain out). In more temperate climates or at higher elevations, large window openings will be required for part of the year but it should be possible to close the windows for the other part of the year.
- 3.2.9 Ceilings or linings should be provided if possible to reduce heat gain from the roof and thus increase comfort.
- 3.2.10 In areas of heavy rainfall, large roof overhangs will help to keep rain out of rooms but other measures, such as windows or shutters, might be required for wind-blown rain.
- 3.2.11 Roof gutters should not be provided in tropical areas (unless necessary for collection of rainwater for storage) as they are easily broken, become blocked with leaves and

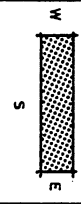

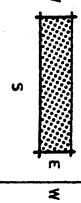
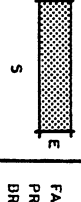

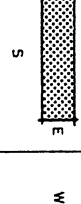
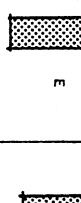




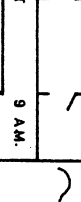

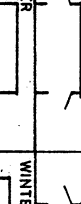
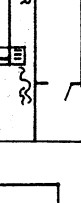
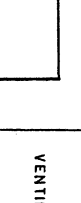
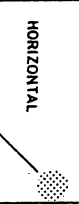
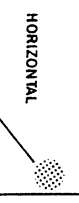
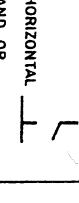



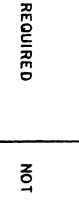
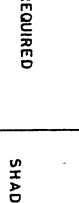
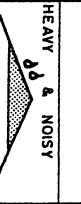
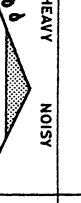
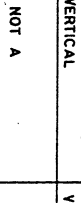
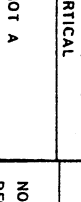
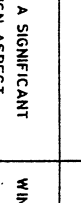
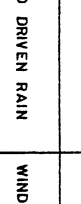
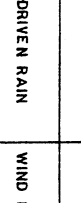
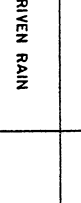

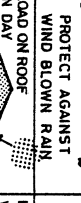




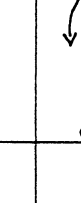
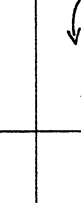
CLIMATE CONTROL ASPECT	WARM, HUMID		INTERMEDIATE	HOT ARID		COOLER		TEMPERATE OR SUB-TROPICAL	EXAMPLE OF LOCATION IN REGION
	EQUATORIAL LOWLAND	TROPICAL ISLAND		LOW LATITUDE DESERT / SEMI DESERT INLAND	HOT ARID / SEMI DESERT MARITIME	EQUATORIAL	TROPICAL		
EXAMPLE OF LOCATION IN REGION	MALAYSIA, BORNEO, SUMATRA, WEST IRIAN	INDIAN & PHILIPPINE ISLANDS eg. ANDAMAN PALAWAN & NEGROS	INDIA, KHMER REPUBLIC THAILAND	IRAN, PAKISTAN	COASTS OF IRAN, PAKISTAN	INDONESIA	BURMA, LAOS	CHINA, JAPAN NEPAL, INDIA	EXAMPLE OF LOCATION IN REGION
ORIENTATION									ORIENTATION
VENTILATION									VENTILATION
SHADING									SHADING
RAIN									RAIN
SOLAR LOAD									SOLAR LOAD

Table 2: Aspects of climate that require control in the main climatic regions in the developing world

provide breeding grounds for mosquitoes and increase maintenance costs. Storm drains should instead be provided around buildings to dispose of storm-water and protect foundations against erosion. If either gutters or drains are provided then they should be accessible and easily cleaned.

- 3.2.12 In areas that suffer from cyclones or hurricanes, measures will have to be taken in the detail design of the buildings to protect them from damage. These measures will include 1) the provision of adequate fixings to roof members and the tying down of roof members to walls. 2) Roof pitches of between 30° and 40° to reduce uplift. 3) The use of hipped ends to roofs rather than gable ends and the ventilation of roofs at the ridge. 4) Restricting the extent of unsupported roof overhangs. 5) Minimising window openings and keeping openings away from the corners of the building. 6) Providing windows with cyclone shutters. 7) Providing adequate bracing to roofs, floors and walls. 8) Proper tying down of the buildings to the foundations. Some of these measures, such as the small size of wall openings, will conflict with the requirements outlined above (such as in 3.2.8) and decisions will have to be made as to which criteria are the most important. It should be remembered that, if the facility is properly designed and built, then it could act as a sanctuary for the community in times of cyclones or hurricanes.
- 3.2.13 In colder regions some form of heating will be required in winter and care must be taken to ensure the safety of the heating system. If hot water radiators and heating pipes for instance are used they should be protected so that children will not be burnt.
- 3.2.14 Good lighting of the internal spaces is very important and windows should be equal to at least 8%-10% of the floor area of any room.

3.3 DESIGN FOR EARTHQUAKES

- 3.3.1 In areas affected by earthquakes, measures will have to be taken to protect the buildings against damage. The general construction and design principles are as follows: 1) Square or rectangular buildings are recommended as they have equal rigidity in all directions; 'T' or 'L' shaped buildings should be avoided. 2) Wall openings should be as few and as small as possible. 3) Buildings should be symmetrical about centre lines to reduce rotation. 4) Lightweight roof construction should be used where possible. 5) The building should be reinforced over the top of walls (ring beams), over openings (lintels), vertically at the side of openings, horizontally in walls and vertically at wall intersections and corners. 6) Foundations should be adequately reinforced and taken down to solid ground. Supervision to ensure that the buildings are properly constructed is most important (see below).
- 3.3.2 Again, some of these measures will conflict with the requirements outlined in 2.2 above and decisions will have to be made as to which criteria are the most important.

3.4 SITES

- 3.4.1 The size, shape and orientation of the site and the type of terrain will obviously have an effect on the design and layout of the school. The buildings should be arranged in the most economical way taking into account orientation, the slope of the site and any prevailing breezes, etc. This might mean that the buildings will have to be divided into separate units.
- 3.4.2 In areas affected by cyclones or hurricanes careful attention should be paid to the siting of the buildings. Exposed areas and sites close to abrupt changes in level and steep-side valleys that open onto the sea should be avoided. Advantage should be

taken of any natural shelter that is available such as enclosed valleys not open to the sea or groups of trees that can form wind breaks.

3.5 BUILDING MATERIALS

- 3.5.1 Whatever the design of the school buildings, it is most important that they are simple to build using, wherever possible, locally available materials especially if the school is to be built in the rural areas, by small builders or by local communities.
- 3.5.2 It is not so important what materials are used for construction, whether they are burnt bricks for walls for instance or soil-cement blocks, mud blocks or timber. What is important is that the materials are used in the simplest way possible and the limits to their use are recognised. If mud blocks are used for instance, then they must be built on proper foundations and be protected from water penetration at the bottom and top. If timber is used for walls and roofs, care must be taken to ensure that there is adequate bracing especially in areas prone to cyclones or hurricanes.
- 3.5.3 If the community can be involved in the construction process then local materials and techniques can be used even if they require frequent maintenance as the community will be used to maintaining their own houses and will be able to maintain the school. If they have been involved in the construction then they should be more willing to do this (see Section 4.3 below).
- 3.5.4 In Vanuatu for instance, there is a proposal for local communities to construct pre-schools using timber poles for the roof and wall framework, split bamboo wall panels, thatched roofs and coral floors, covered by mats. The buildings will be very cheap to build but the wall and roof coverings will require major maintenance or replacement every three or four years or after cyclones. See Figure 2: Proposed pre-school in Vanuatu.
- 3.5.5 If the buildings are to be constructed using more expensive or 'sophisticated' materials, the techniques required should still be kept as simple as possible and if communities are to be involved with construction, construction handbooks should be developed and training given if necessary.

3.6 SAFETY

- 3.6.1 Sites for day- centres or crèches should ideally have a fence at least at least 1 metre high and sites for pre-schools a fence of at least 1½ metres. These will keep animals such as dogs, cattle and goats from gaining access, keep older children out and keep the children from straying out on to roads, etc. There should be only one access point to the site with a gate, only operable by adults that should be visible from the staff-room or from the teaching/play rooms.
- 3.6.2 Exits to the building should if possible be in the view of staff and handles to exit doors (if provided) should be high enough to be out of the reach of children. Details such as this will obviously depend on the design of the building. In Vanuatu for instance doors between outside and inside are left open to allow free movement for the children but both inside and outside spaces are easily supervised.
- 3.6.3 The building layout should if possible take into account the need for visual supervision and the need to hear what children are up to when they are out of sight, in toilets for example.

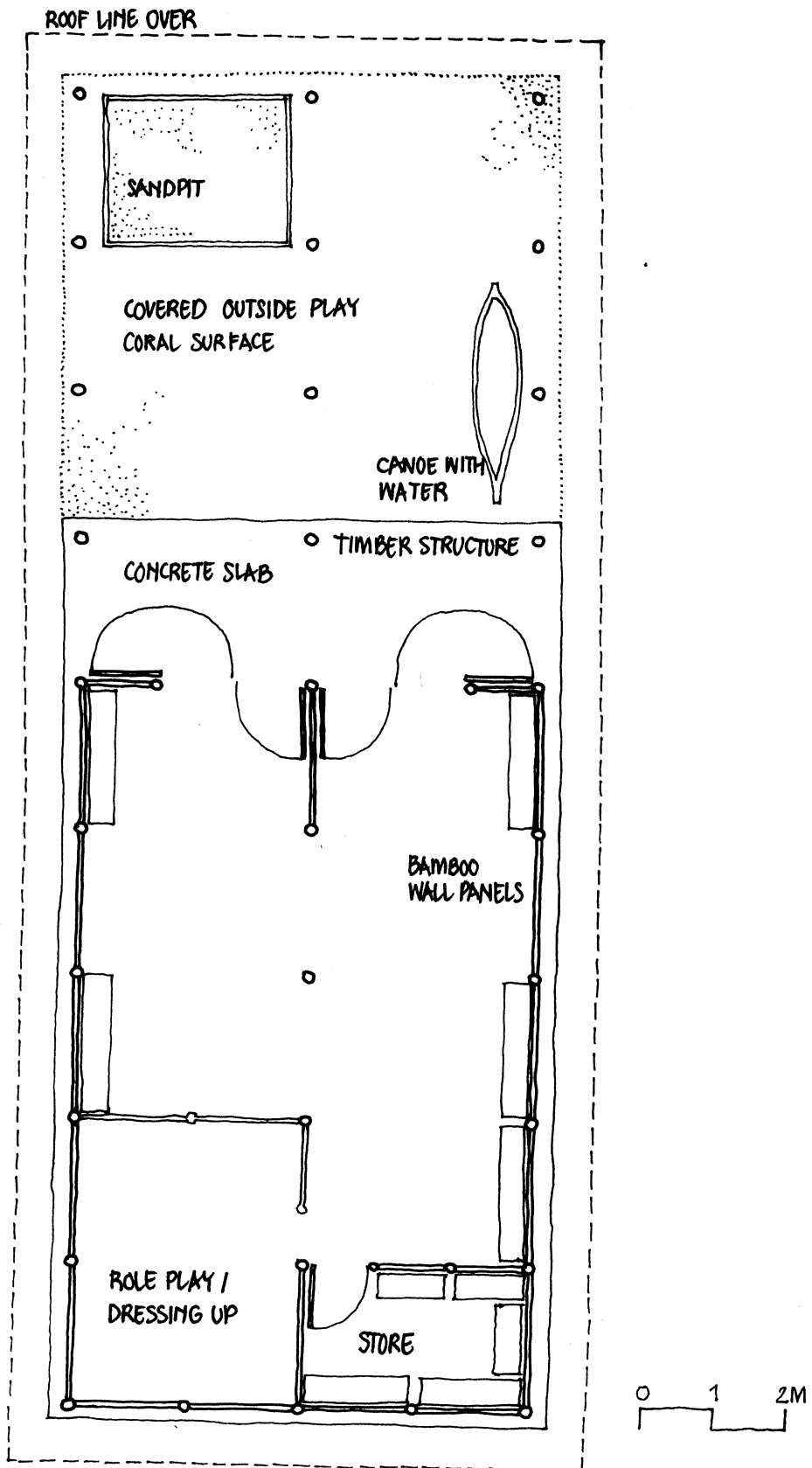


Figure 2: Proposed pre-school in Vanuatu for 30 children constructed by community labour of local timber with woven bamboo wall panels, a thatch roof and woven bamboo shutters. The building will require substantial bracing in order to stand up to cyclones.

- 3.6.4 Doors to cupboards containing cleaning materials or other potentially dangerous substances should be out of reach and lockable.
- 3.6.5 Any heavy loose objects should have safe storage places as should cutlery, crockery and glasses
- 3.6.6 In colder climates if there are radiators or hot water pipes, they should have guards or other protection and have round corners and not sharp ones.
- 3.6.7 All buildings should have adequate numbers of fire exits, fire or smoke detectors (if required) and fire fighting equipment all to comply with local regulations. Security might be an issue in some countries but any measures taken to keep buildings secure should not obstruct fire exits.
- 3.6.8 Furniture and fittings, especially at head height, should have round corners.
- 3.6.9 Electrical outlets if provided should be placed high enough to be out of the reach of children and/or have safety covers.
- 3.6.10 Children should not be allowed access to kitchens unsupervised to avoid the danger of being burned or scalded.
- 3.6.11 Steps should be designed with risers to fit the age group concerned. The maximum rise should be about 8cm for children below 3 years and about 12cm for children of 3 to 6 years. The treads should be normal width, approximately 250/300mm.
- 3.6.12 Any staircases, whether inside or outside the building, should be secured with gates at top and bottom to stop unsupervised access.
- 3.6.13 Floor finishes should be non-slip but easily cleaned.

3.7 EXTERNAL PLAY AREAS

- 3.7.1 A well-designed play area can be an important part of the pre-school and form a key learning area. Access to an outdoor play space that provides a range of experiences that can stimulate a child's inventiveness and imagination is therefore very important.
- 3.7.2 Access to play areas may be required for pushchairs, wheelchairs, prams and wheeled toys as well as pedestrians. Play areas (and access routes to them) should be easily supervised, have easy access from inside the building and there should be no direct access on to a vehicular road.
- 3.7.3 Play provision will need to cater for different age groups but it may be desirable to separate the older and younger children. For instance, children below the age of 3 can be kept away from equipment designed for older children by a step of 400mm or greater which they cannot climb. Older children will require more challenging equipment. Different sectors should therefore be created in the play area such as a toddler's area, a quiet area for passive play, an area with fixed equipment such as climbing frames, tunnels, etc, an area with moving equipment such as swings, see-saws, tyres, etc, an area for free play such as running, jumping, playing with balls, etc, a natural habitat area for nature study, enclosures for small animals, a gardening area for vegetables (which should be fenced), etc. See Figure 4: Proposed 60 place pre-school and play areas for Indonesia and Figure 3: Outdoor play space for a 26 place pre-school in UK

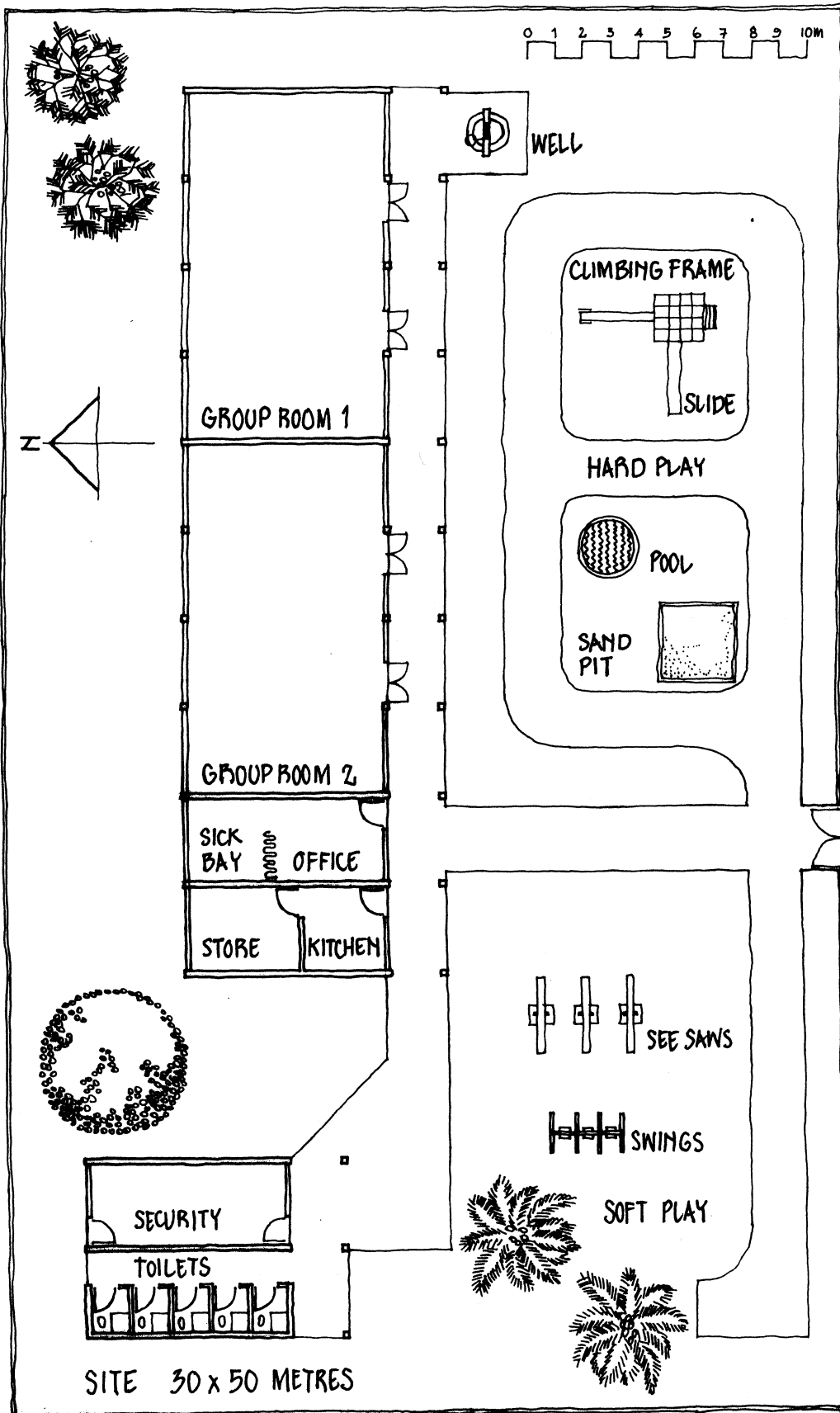


Figure 3: Proposed 60 place rural pre-school in Indonesia for two groups of 30 children with separate pour-flush latrines and a well and hard and soft play areas.

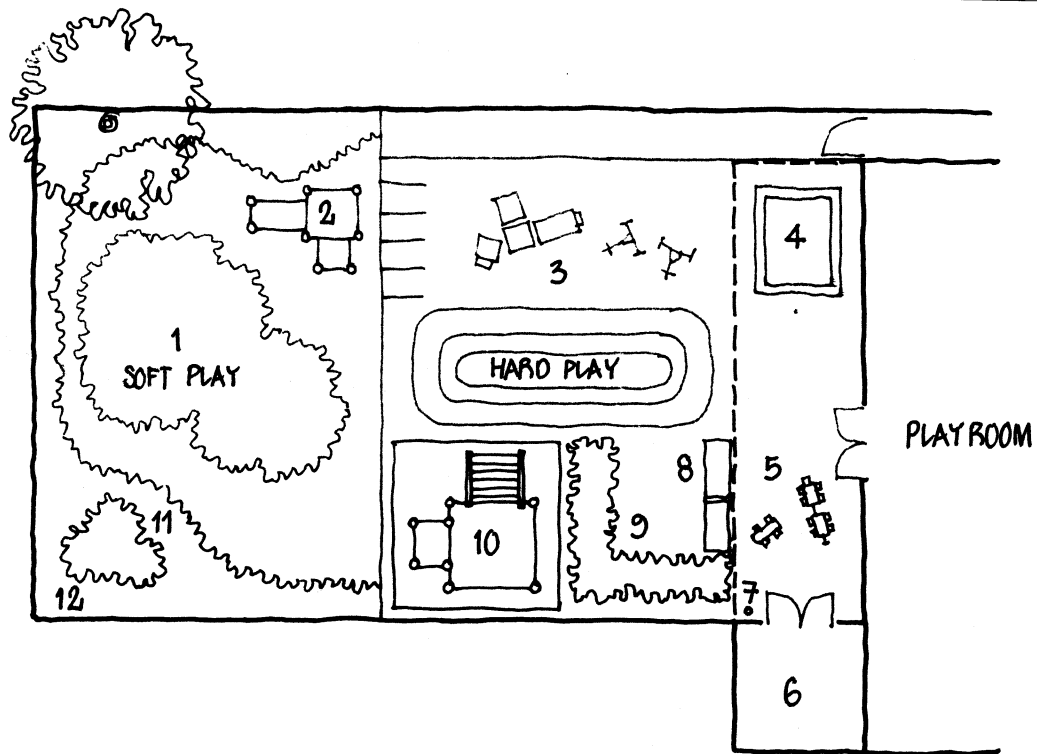


Figure 4: Outdoor play space for a 26 place pre-school in UK.

- 1 Soft play area with seating under trees
- 2 Small climbing frame on grass
- 3 Hard play area with painted markings for wheel toys, trucks and bikes
- 4 Sand-pit with cover
- 5 External covered area for outdoor play in wet weather
- 6 A store for outdoor equipment
- 7 Outside tap
- 8 Hutches for pets.
- 9 Planting area for flowers and vegetables
- 10 Fixed play equipment on safety surface
- 11 A mound with small bushes for making hiding places
- 12 Wildlife area

3.7.4 A minimum area of approximately 9m² of the site should be allowed per child for external play areas. The play area should be safe in layout, surface and changes of level and varied in materials, textures and natural features. Between half and two thirds of the area could, if required, have a hard, smooth and level surface for pushchairs, wheelchairs, bicycles, wheeled toys, etc and some of this can be in the form of paths. The rest of the site should have a soft surface such as grass together with a variety of features. Play areas are enhanced by the inclusion of natural features such as trees and water. In the tropics especially, there should be plenty of shade. Some play areas could be under verandas of buildings or under trees or pergolas could be built to provide shade. Space should be allowed for running, informal games and for socialising. The detail design and planting of the external spaces will obviously depend upon the climate, funds available, etc.

3.7.5 If sandpits are provided they should be kept clean and covered when not in use to avoid fouling by animals. If ponds or pools are provided they should be easily supervised and fenced in order that they cannot be used unsupervised.

- 3.7.6 Equipment should conform to accepted safety standards when installed but it should be remembered that poorly maintained or inappropriate furniture and equipment could cause injury. The main factors that contribute to accidents in play areas are 1) Poorly designed equipment. 2) Poor siting and layout. 3) Inadequate maintenance procedures. 4) Incorrect installation of equipment. 5) Lack of age-appropriate facilities. 6) Inappropriate use of equipment.
- 3.7.7 Equipment with moving parts should be kept clear of the entrance and minimum use zones (usually set out in national standards) should be allowed around most items of play equipment. Movement paths or desire lines (usually straight lines) between pieces of equipment should be anticipated at the design stage and these paths should avoid swings or other moving equipment. Guardrails should be fitted to any platforms over 1 metre high and in-filled barriers should be fitted to platforms over 2 metres high.
- 3.7.8 Surface materials should be considered as one of the range of design elements in development of a safe and successful play area. A new range of impact absorbing surfaces has been developed for play areas that will help reduce injury if correctly installed. European standards now recommend that these surfaces should be used wherever the height from equipment to the ground exceeds 600mm. It is also recommended that the surface extend 1.75 metres beyond the edge of static equipment and 1.75 metres beyond the maximum travel of any moving equipment. Where these materials are not available or are too expensive to use, bark, sand or other loose fill materials can be used but these will require regular, probably daily, maintenance.
- 3.7.9 There must be an effective inspection and maintenance programme for all play areas. Floor finishes should be checked regularly and maintained. Equipment in need of repair must be removed, replaced or repaired immediately. If this is not possible, it should be immobilised and isolated.

3.8 FURNITURE & EQUIPMENT

- 3.8.1 Well-designed furniture and equipment can make a major contribution towards creating a cheerful and stimulating environment. It can also be, after the building itself, the largest item of capital expenditure.
- 3.8.2 Furniture should be of a size appropriate to the child using it and sets of furniture such as tables and chairs should match. In order to establish the appropriate height for furniture and other equipment for a particular age group, the average standing height for that age group needs to be established. From the standing height (measured from the top of the head to the floor, with bare feet) most of the other dimensions of the body which have significance for the height of the seats of chairs, table tops, sinks, wash basins, etc can be established using a table of ratios (for details see UNESCO Educational Building Digest No.18). If the average standing heights are not known, they can be established by carrying out a simple survey of the heights of approximately 100 children of each sex in each age group (for details see Digest No.18).
- 3.8.3 Some low, adult size furniture should be provided so that teachers and carers can sit at the same level as the children for playing, talking, reading, etc.
- 3.8.4 It will be advantageous if furniture and equipment are light enough to be moved by teachers or even by children as this will permit rearrangement during the course of the

day for different activities. Furniture and equipment should however be robust enough to stand rough treatment and be easily cleaned and repaired. Demountable equipment should be especially robust and easily assembled and dis-assembled. Outdoor furniture needs to be weatherproof, rustproof and vandal-resistant.

- 3.8.5 Plastic furniture is light and washable but can be affected by sunshine and extremes of temperature and, unless it is very well made, can be easily damaged. Wooden furniture can be strong (if the joints are properly made) but tends to be heavy and can splinter. Metal furniture can also be heavy, can rust and will require a non-toxic rustproof paint finish. Furniture made from composite board, even when laminated or veneered does not last long in hot, humid tropical areas. In rural village situations especially, furniture should be designed to be easily made and repaired by local carpenters or other tradesmen, out of locally made materials.
- 3.8.6 Adequate storage should be provided for furniture, equipment and toys with if possible, some storage for furniture and equipment that is used outside.

3.9 DRINKING WATER & LAVATORIES

- 3.9.1 No early childhood care facility should be constructed unless a dependable drinking water supply and appropriate, functioning toilets can be provided.
- 3.9.2 Facilities without access to a dependable town or village supply should be supplied with an alternative supply such as a connection to a spring; a well excavated on site or rainwater storage tanks.
- 3.9.3 If a gravity connection is to be made to a spring or other surface-supply via a spring-box or similar, then the cost of providing and laying the pipe, which could be very long, will have to be allowed for at the beginning of the project. The pipe should be properly buried at a depth of at least 600mm to avoid damage.
- 3.9.4 If a well is to be constructed on the site then it should be properly lined, should penetrate the water table at its lowest level by at least two metres and should be covered to prevent contamination. Access to the water should preferably be via a hand-pump if this can be maintained and if spare parts are obtainable or by a captive bucket or similar that will avoid contamination of the well. If there is a significant dry season then the well should be constructed at the end of this season in order that the water table will be at its lowest and it can be excavated to the correct depth. Advice should be taken on well construction from the country's water supply unit if one exists or from organisations such as UNICEF that will have experience of constructing wells. These organisations should have standard drawings for wells and possibly moulds for casting linings and other equipment that might be useful. Any well should be at least 30 metres from the nearest pit-latrines, septic tank or soakaway to avoid contamination.
- 3.9.5 All facilities should be provided with adequate numbers of appropriate lavatories that will require minimum maintenance. The actual numbers will depend on numbers of children, parents and staff. Depending on whether water is available and in what quantity, and on local custom, these could be flush toilets, pour-flush privies or VIP latrines of a suitable size or height for the children. Again advice should be sought from the country's Ministry of Health, the water supply unit or organisations such as UNICEF on what sort of toilets are acceptable and can be expected to work. These organisations will probably have standard drawings for latrines and possibly moulds for slabs and plastic fittings for pour-flush privies for instance.

- 3.9.6 The necessity for clean drinking water and clean, working lavatories should be emphasised to the staff running the facility and funding should be made available for their proper upkeep and maintenance. The proper use of the water supply and the lavatories could also form part of the curriculum of pre-schools.

4 CONSTRUCTION OF FACILITIES

4.1 GENERAL

- 4.1.1 There are three ways that new facilities for early childhood care can be built: 1) they can be built by a contractor, whether large or small. 2) They can be built by the local community as a 'self-help' project and 3) they can be built by local builders or artisans managed by the community or the staff of the facility.

- 4.1.2 The second two methods are very similar and require similar inputs if they are to be successful. Two basic methods, construction by contractor and construction by the community will therefore be examined

- 4.1.3 Whatever method is used for construction, competent, professional supervision of the building work will be essential if good quality buildings are to be achieved.

4.2 CONSTRUCTION BY CONTRACTOR

- 4.2.1 When designs have been finalised, working drawings, specifications and either schedules of materials or bills of quantities (depending on whether the contract will be a lump sum contract or not) and tender documents will have to be prepared.

- 4.2.2 Site surveys should if possible be carried out in order that accurate site layouts, foundation drawings and site works drawings can be prepared.

- 4.2.3 Construction is always a high-risk activity and measures must be taken to reduce these risks by for instance making sure that a good contractor is selected. A short list of properly qualified and competent contractors should therefore be prepared before the job is put out to tender and it is important that the tender process is fair and unbiased and is seen to be so. Proper supervision of the construction work will also help to reduce the risks (see below).

- 4.2.4 The job will then be put out to tender and a contractor, probably but not necessarily, the lowest bidder, selected. Before the contractor starts work on site, a site supervisor must be selected. This will usually be the same firm that prepared the design and working drawings but, depending on local custom and the size of the project, other firms might be invited to tender for the supervision work. This is the case in Indonesia for instance.

- 4.2.5 A system of payment for the contractor must be put in place, either in the form of stage payments where the contractor is paid a percentage of the contract sum at various stages of the work or as monthly progress payments. It is of course essential that sufficient funds are available to make these payments when they are due to avoid any delays to the work and any disputes between client and contractor.

- 4.2.6 When the construction work is complete, the supervisor will carry out an inspection and prepare a list of incomplete and defective work that the contractor will have to complete or rectify. As part of the contract, there should be a defects liability period of at least 6 months during which time the buildings will be used. A percentage of

the contract sum (usually 2½-5%) will be retained during this period. At the end of the defects liability period there will be a further inspection and a final list of outstanding work will be prepared. The contractor will have to complete this work before receiving his final payment and handing over the buildings completely to the client.

4.3 CONSTRUCTION BY THE COMMUNITY

4.3.1 When designs have been finalised, working drawings, specifications and schedules of materials (rather than bills of quantities) should ideally be prepared as for a normal contract. Site surveys should also be carried out in order that accurate site layouts, foundation drawings and site works drawings can be prepared.

4.3.2 Construction of facilities by communities whether through 'self-help' or by using the community to implement and manage the construction, can be very cost-effective. It can also have other advantages in that a sense of ownership of the buildings can be instilled in the community if they are responsible for the construction and subsequent sense of responsibility for the upkeep and maintenance of the buildings. There are however a number issues that have to be faced:

- Great care must be taken in the selection of the communities to be involved. The communities must be fully informed of the amount of work and time that will be required of them and of the amount of materials that they will have to provide (if this is the case). Only when this is fully understood and agreed should the final selection be made.
- The scale of the development should be kept small in order that the communities are fully able to understand the project and provide adequate labour and materials to complete it.
- The methods and materials to be used to construct the buildings should be appropriate for their use, locally available and familiar to both the communities and the artisans working on the project.
- Factors such as the farming or fishing cycle, that will have an impact on the availability of labour, and the effect of a long rainy season on construction work, must be taken into account at the project planning stage and adequate time should be allowed for the completion of the project.
- If it is a self-help project, a system of incentive payments should if possible be built into the project from the start to assist small farming communities in providing adequate labour.
- Sufficient time must be allowed in the initial stages of the project for the preparation of documentation and the procurement of materials and equipment.
- Adequate transport must be provided for project staff and materials and particular provision must be made if necessary for the transport of bulky and heavy materials such as sand and aggregate to the site.
- Adequate and secure stores must be available both at the project headquarters and at the construction sites for the storage of equipment, materials and possibly fuel.

- Accurate records of payments and materials must be kept and equipment and materials carefully monitored at both the project headquarters and at the construction sites in order to avoid misuse and theft and to keep a check on the cost of the project.
- 4.3.3 It must also be recognised that a great deal of technical assistance will probably be required if the buildings are going to be completed successfully and this must be available throughout the duration of the construction programme.
- 4.3.5 Whether the buildings are actually built by the community or by local artisans managed by the community, proper supervision and management of the construction work will be essential if good quality buildings are to be ensured. Although local artisans might well be able to construct the buildings, it is doubtful whether they will be able to manage the work in a timely and cost-effective way.
- 4.3.4 It will also be a great help to communities if a simple and easily understandable construction manual is prepared to assist them in the construction process and it might be necessary to carry out some training of the community and local artisans in improved construction techniques.

4.4 SUPERVISION

- 4.4.1 As stated above, whatever method is used for construction, competent, professional supervision of the building work will be essential if good quality buildings are to be achieved.
- 4.4.2 Even if the buildings are to be constructed by reputable contractors, proper supervision of the construction work will be required if good quality buildings are to be ensured. This will be even more critical if the construction is to be carried out by small builders and/or if the sites are in remote rural areas. In these cases it might be necessary to have a full-time supervisor on the site or even to run the job as a management contract.
- 4.4.3 If the buildings are to be built by the community or by local artisans managed by the community, the need for competent and probably full-time supervision and/or management is even greater and, as stated above, this must be available throughout the construction period. The supervisors in this case will also probably need to exercise some financial control in order to ensure that the funds for construction are properly expended.
- 4.4.4 The supervisors will have to pay particular attention to the construction of foundations, to any concrete works, reinforced or not, to the roof and to finishing work. The construction of wells and toilets will also require special attention.

5 MAINTENANCE OF FACILITIES AFTER COMPLETION

5.1 GENERAL

- 5.1.1 However the buildings are constructed, they will require maintenance after they have been completed. Obviously in the first few years after they have been occupied they should not require very much maintenance but even so a proper programme for regular maintenance should be planned for.

- 5.1.2 A maintenance manual for the buildings should be prepared and if possible staff should be trained in simple maintenance.
- 5.1.3 Regular, preventative maintenance properly carried out will save money in the long run and ensure that the buildings will have a long and productive life.
- 5.1.4 If the buildings are constructed from non-traditional materials, funding will be required for maintaining the buildings during their lifetime. As stated above, regular maintenance will, in the long run, prolong the life of the buildings and also save money. If possible, a sum of money equivalent to between 1% and 2% of the cost of the buildings should be budgeted for annual maintenance. See Annex 1 for an Indonesian example of the money that can be saved through the regular cyclical maintenance of educational buildings instead of re-building them when they become too dilapidated to use.
- 5.1.5 In many developing countries there is no funding for maintenance of school buildings of any type and if any maintenance is to take place, then a degree of community involvement will be required. This will obviously be easier if there has been some community involvement in the building or renovation of the school buildings and if there is community ownership of the buildings.

5.2 THE VANUATU MODEL

- 5.2.1 In a recent EC primary school renovation project in Vanuatu, communities were involved in the renovation of schools through being required to supply local materials such as timber and aggregate and were given the responsibility for the maintenance of the buildings after they were completed.
- 5.2.2 The Ministry of Works developed a simple maintenance manual and a local NGO, the Foundation for the South Pacific (FSP), developed a manual for community participation in school maintenance. FSP then carried out training workshops with the communities involved to give them training in maintenance techniques and in ways of raising funds to pay for maintenance. This would seem to be a very good model for community participation in the maintenance of educational buildings of whatever type.

D. DETAIL DESIGN OF NEW FACILITIES FOR ECD PROGRAMMES

1. DAY CARE CENTRES, 0 - 3 YEARS

1.1 GENERAL

- 1.1.1 Malnutrition and ill health are major obstacles to the normal intellectual, social and physical development of the young child. Malnutrition makes young children, who are already in danger in many developing countries from endemic diseases such as malaria, more susceptible to other diseases. Health care is therefore a major concern.
- 1.1.2 The provision of facilities for childcare should therefore reflect this concern and clean drinking water, washing and bathing facilities, functioning toilets, separate accommodation for sick and healthy children and possibly access to primary health care should be provided.

- 1.1.3 Day care centres should provide space for food preparation and storage, safe places for children to play and adequate shelter and comfort taking into account the prevailing climate.
- 1.1.4 There should also be provision for management and staff for the centre whether they are nurses, nurse aides, teachers, ancillary staff or parents.
- 1.1.5 The main emphasis in the provision of child care should be on ensuring that children have enough sleep and food, are kept clean and are toilet trained, are kept safe and free from sickness and that the environment provides them with sufficient stimulation.
- 1.1.6 The mobility of the very young child has a direct impact on the facilities to be provided. Until the age of around 8 months, the child can only lie or sit up. From around 8 months, the child will start to crawl and from around 12 months the child will start to walk. By the age of 2 years, the child can walk up and down suitably sized steps and by the age of 3 years, the child can walk alone and with purpose.
- 1.1.7 Toilet training only becomes possible after the age of 2 years when children start to be able to control themselves. This means therefore that if the centre admits children below 2 years, provision will have to be made for changing and washing nappies and clothes, washing down children and disposing of excreta. The type of washing facility and lavatories to be provided will depend largely on the location, the country and local custom. By the age of 3 years the children should be able to use the toilet by themselves.
- 1.1.8 Day care centres should provide a variety of spaces for different activities and different age groups. There should be large spaces for active play such as running, jumping, rolling, crawling, etc and smaller spaces for less physical activities such as drawing, painting, playing with puzzles, building blocks, etc. These activities will take place in a random manner and therefore the two types of space should be easily accessible one from another with no doors, etc. If only one large space is to be provided, this should be sub-divided to form smaller spaces within it using light partitions, shelving, etc.
- 1.1.9 Day care centres should if possible be located away from any sources of loud noise.
- 1.1.10 The three main activities of children in day care centres are sleeping, playing and feeding. The percentage of time spent on each activity will vary with the age of the children. For the youngest children (age 9 months to 2 years), the pattern is one of sleeping alternating with feeding. Between the ages of 2 and 3 there is a distinct change towards less sleep, less frequent feeding and more play. The child begins to be able to feed itself and this means that different arrangements for cooking and meals are required.
- 1.1.11 Some centres will only offer morning or afternoon sessions while others will offer care all day. Centres that offer care all day will have to have a dining area and larger kitchen facilities together with a wider range of play facilities and provision for rest and sleep.

1.2 SERVICES

- 1.2.1 It is important that the day care centre has a dependable supply of clean drinking water and also water for washing children, washing clothes, washing hands after

using the toilet and before and after eating, and possibly for toilets. If the water is only for drinking and washing then 95 litres per day per child should be allowed. If the water is also required for flush toilets then an allowance of 135 litres per child per day should be allowed. These are the ideal provision and can be considerably reduced especially if the facilities are only to be used for a few hours a day.

- 1.2.2 Drinking water should be provided at height where the older children can reach it. Taps should be no higher than 800mm and a shelf for water containers not more than 600mm from the floor.

1.3 ACCOMMODATION

- 1.3.1 Playroom/Sleeping Room, 6 weeks to 9 months: Babies will require a separate space as well as special sleeping and feeding arrangements. There should be space for sleeping mats or cots and space around them for access for the nurses. There should also be a play/feeding and a changing/washing area attached. The area to be allowed should be around 3.7m² per child. If mats are used they can be rolled up to provide space for play and the space requirement can be reduced to 2.25m² per child. See Figure 5: Small creche with combined sleeping/activity space.

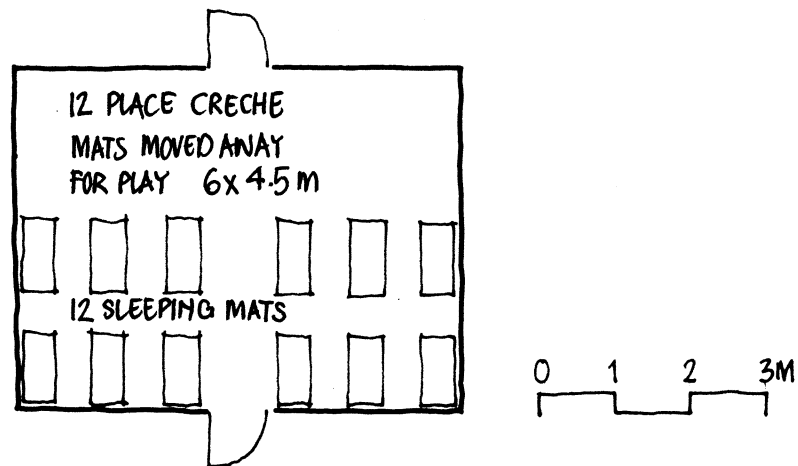


Figure 5: Small creche with combined sleeping/activity space and roll-up mats.

- 1.3.2 Playroom/Sleeping Room, 9 months to 3 years: Young children will also require their own space where they can sleep together with a play area and a changing/washing area. The floor coverings should be comfortable for crawling on and there should be stable furniture or fittings that they can use to pull themselves up on when learning to walk. Adults should be involved in their play and so there should be adult size chairs with low seats. The area to be allowed per child should be around 3.7m² per child. Again sleeping mats or cots can be used for sleeping. Mats allow crawling and can be rolled up and put away while cots take up a fixed area. Cots keep the child secure however, can assist the child to stand up and are easy to fly and mosquito proof. See Figure 6: Creche for 20 babies with separate play and feeding area.
- 1.3.3 Playroom, 3 to 5/6 years: Older children should be kept separate from the younger ones as they are more active and will require more play space as well as an area where they can sleep. The area to be allowed per child should be around 2.3m² per child.

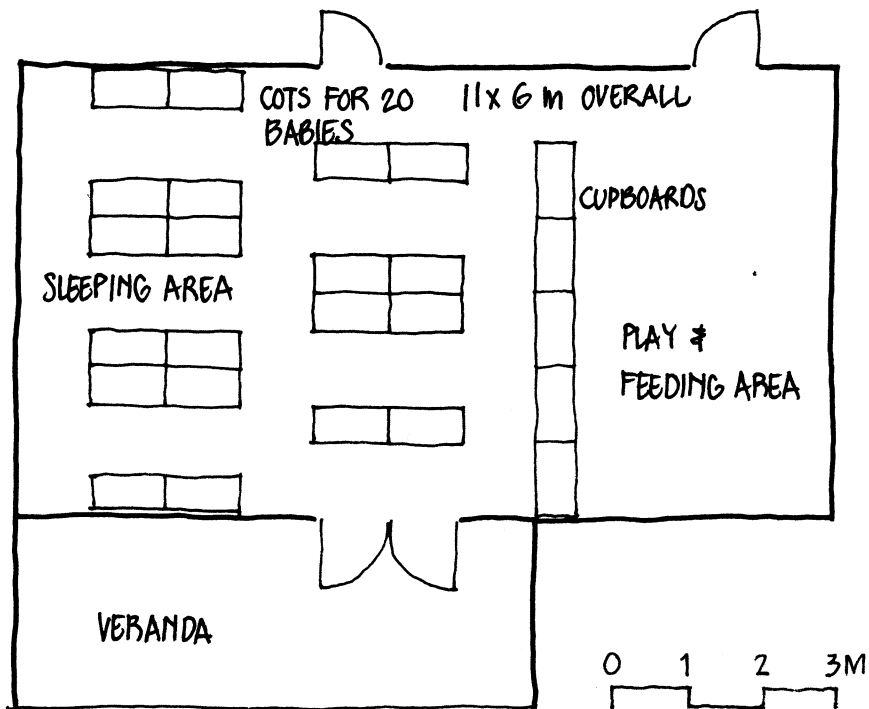


Figure 6: Creche for 20 babies with separate play and feeding area.

- 1.3.4 **Washroom:** There should if possible be a washroom/changing room adjacent to the playroom where children can be washed. There should be one large sink for every 10 children in which a child can be stood and washed together with benches on either side for drying and dressing children. If soiled clothes are going to be washed in the sinks they should have large outlets and traps. There should also be wash basins in or near the Washroom or Playroom. There should be storage available for nappies, clothing, etc. This is the ideal provision and may not be possible in many developing countries.
- 1.3.5 **Toilets:** The provision should ideally be 1 toilet and 1 wash basin for every 10 children. Where there is no tap or running water, a basin full of water should be provided approximately 500mm high for hand washing. The washbasins should be in an open space near the toilets and playroom so that the staff on duty can see that hands are washed after toilet use. The toilets themselves should match the body size of the children using them. In facilities catering for 2 to 3 year old children there should be 2 easily accessible toilets for staff to use when toilet training children. There should be separate toilets for staff.
- 1.3.6 **Outside Play Area:** A minimum of 2m² per child of outside play area should be allowed for children of 2 to 3 years and it will be better if more space can be provided.
- 1.3.7 **Laundry:** If possible there should be a laundry where clothes, nappies, etc can be washed. An area of approximately .25m² per child should be allowed.
- 1.3.8 **Sick room/Rest room:** A room should be provided for children who become unwell or need to rest. The area to be allowed for this should be about 3.5m² for 2/3 children reducing to about 2.5m² per child for 4/5 children.

1.3.9 **Kitchen:** A kitchen should be provided for the preparation of food. The size will depend on the number of children and whether they are there for only the morning or afternoon or all day. There should also be a store for food and utensils. The kitchen should be well-ventilated and easy to keep clean with some sort of water supply available. If wood or charcoal is used for fuel there should be adequate chimneys and it may be necessary or advantageous to separate the kitchen from the main building. There should be toilets and washing facilities for staff. The provision should be based upon 10m² for 20 children; 30m² for 60 children; 60m² for 120 children and 110m² for 240 children.

1.3.10 **Management:** The number of staff available should determine the number and groupings of children. Babies from 0-2 years should have a ratio of 1 staff to 3 babies; children from 2 to 3 years should have a ratio of 1 staff to 4 children and children from 3 to 5/6 years should have a ratio of 1 staff to 8 children. These are ideal ratios and in many cases in the developing world will not be possible. Day care centres could be run by parents or by paid staff, probably under the supervision of a local authority or the community. Office space should be provided in the ratio of 0.5m² per child for small care centres and 0.2m² for larger ones. Storage space should be provided in the ratio of 0.2m² per child.

2. PRE-SCHOOL FACILITIES, 3 - 5/6 YEARS

2.1 GENERAL

2.1.1 Pre-schools, otherwise called kindergartens or nurseries, cater for children between the ages of three and five/six years depending upon the country's education system. The term pre-school will be used in this document for all facilities catering for this age group.

2.1.2 From the age of 3 to 5/6 years, children are very active and although developing physically, their intellectual and social development becomes more important. Early childhood care programmes should therefore become more focussed on education although care will remain an important concern.

2.2 SITES

2.2.1 Children should if possible not have to walk further than ½ a kilometre to reach a pre-school. Pre-schools are quite often on the same site as primary schools but should be kept separate with a fence and have separate toilets and play areas.

2.2.2 If a pre-school shares a site with a primary school, an area of 15m² per pupil should be allowed for the pre-school. For a free-standing pre-school, site areas vary from 25m² to 50m² per pupil depending on the country they are built in, number and age of pupils, etc. 25m² per pupil should be regarded as the minimum adequate size. Of this area approximately 9m² per pupil should be allowed for external play areas.

2.3 ACCOMMODATION

2.3.1 Some or all of the following accommodation is required in most pre-schools

- A large Group Room/Playroom or rooms.
- A small Group Room for quiet activities.
- An Entrance Area with space for hanging coats in colder climates or space for storing shoes where shoes are not worn inside the building.

- Storage spaces for toys, equipment, cleaning materials, etc.
- A Staff room or rooms.
- A Kitchen for preparing food for pupils.
- Pupils toilets and washing facilities.
- Staff toilets and washing facilities.
- A Sickroom or Restroom.
- Verandas in tropical countries that can be used for some of the above activities.

2.3.2 A covered outside teaching and play area or veranda is very useful for when the weather is inclement and this should be directly accessible from the Group Room/Playroom.

2.3.3 In tropical countries where verandas are provided to most buildings, these can be used, if they are wide enough, as the entrance space, for storing shoes, for wet or messy activities, as outside play spaces for when it is raining and, as noted above, for other activities.

2.3.4 Activity spaces, both inside and outside, should allow space for quiet play (block construction, doll play, etc), active play (running, throwing, climbing, etc), self expression (role play, art, music, drama, etc), interacting with the environment (nature study, etc) and nutrition and hygiene (eating, cooking, washing, etc).

2.3.5 Group Room/Playroom

The area per pupil provided for Group Room/Playrooms in pre-schools varies widely in different countries. In the UK for instance the area per child is 2.3m²; in the USA, 3.25m²; in Denmark, 2.00m²; in Hungary, 4.00m²; in Vietnam, 1.40m² and in Malaysia, 2.40m². The area per child can be smaller in tropical countries where more use can be made of outside areas. The suggested area to be allowed per child is 2.70m² and the absolute minimum should be 1.40m². If a small Group Room is provided, its area should be included when calculating the overall area per child.

The maximum number of children to be accommodated in a Teaching/Playroom also varies from country to country. In UK the recommended maximum is 26 children, in Malaysia, 30 children and in Indonesia, 35 children. 30 children are probably the preferred maximum number.

The Group Room/Playroom should provide space for some or all of the following activities:

- A Games Corner: with cards, found objects, puzzles, etc.
- A Quiet Corner: with books, a comfortable seat, cushion or mats, for reading, being read to, looking at pictures, looking out of the window.
- A Drawing Corner: with pencil and paper and tables.
- A Painting Corner: with paper, pencils, paint, crayons, modelling clay, glue, tables to work on.
- A Craft Corner: with needles and thread, nuts and bolts and tables; for sewing and stitching, cutting paper and fabric, weaving and other handicrafts.
- A Construction Corner: with blocks of wood, cardboard boxes, tins, toys, etc.
- A Role-Playing Corner: with boxes or cupboards for storage for dressing up, playing house, playing shop, etc.
- A Messy Corner (could be outside): with sand, water, hand-tools, etc for water play, building, etc.

There should ideally be space for table work for at least one third of the children at any time. If there are funds/facilities available there could be space for play using computers.

The room should provide a large area of unobstructed space in order that many of the activities can take place on the floor. Partitions or furniture such as bookshelves and display units should be moveable and should be used to define the different areas. The layout of a Group Room/Playroom for a pre-school project in Indonesia is shown in Figure 7.

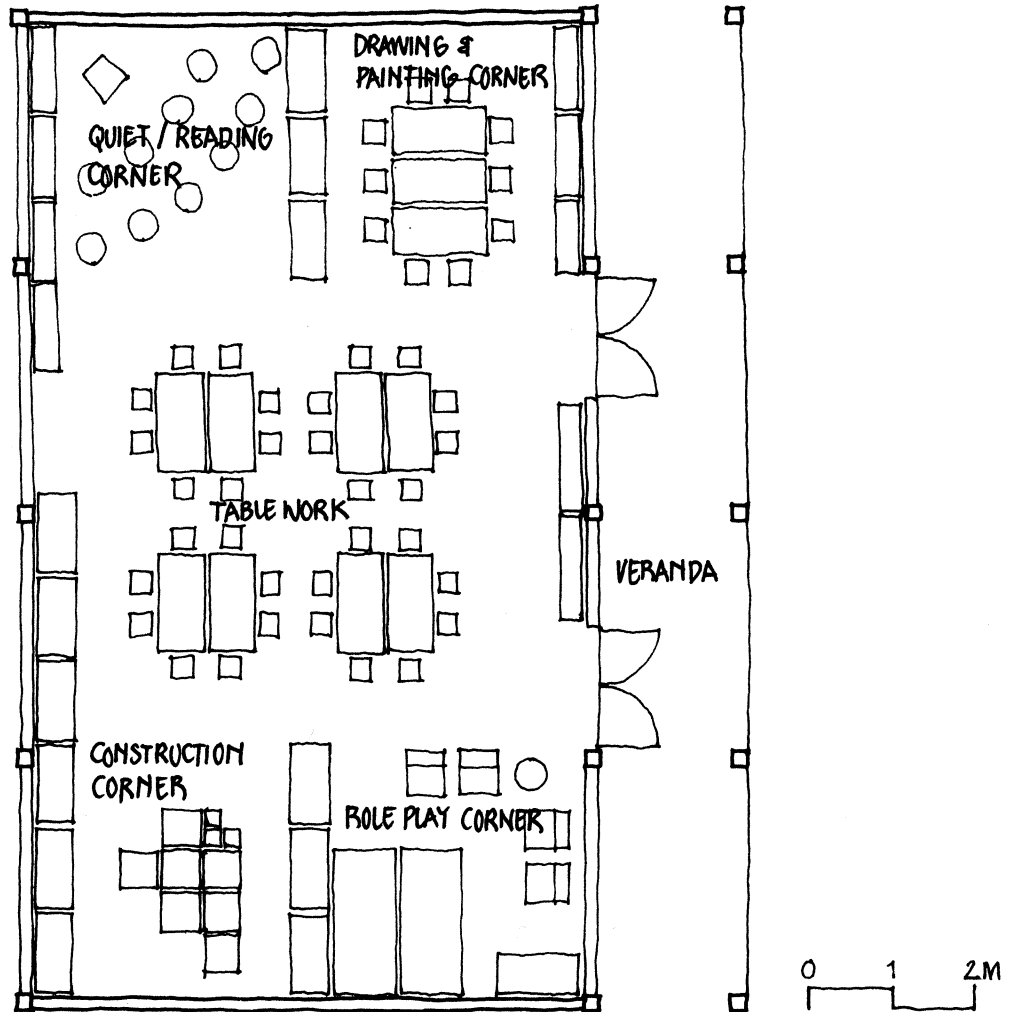


Figure 7: Pre-school project in Indonesia; typical Group Room/Play Room for up to 30 children. The room is divided up with cupboards and storage units and wet play will take place outside.

An important part of teaching and play involves the use of water, sand, clay and other messy materials. If possible a large sink with a tap should be provided that the children can gather round. If running water is not available, the sink can be filled with buckets. The wet area should have waterproof finishes and have direct access to the outside. In warm climates the wet area could be situated outside or on a veranda.

Storage cupboards, shelves and display units, within easy reach of the children, should be available for books, smaller toys and equipment that are used frequently. There should also be plenty of space for the display of the children's own art and craft work together with pictures, posters, charts, maps, etc and storage and display areas for three dimensional objects such as toys, geometric shapes, science materials, etc.

2.3.6 Small Group or Quiet Room

The provision of a separate, smaller Group Room can be an asset. This can be used for small group play and for quieter activities such as story telling. It can also be used as a rest room for individuals or groups. To be cost-effective it needs to be used regularly and therefore needs effective supervision from the main Teaching/Playroom or the provision of additional staff.

2.3.7 Ancillary Spaces

Storage: Adequate storage space is essential for storing toys and equipment. As stated above, shelving and storage should be available within the Teaching/Playroom for books and small toys and equipment. There should be additional secure, storage space for larger toys, equipment and consumables such as paint and paper and for cleaning and maintenance materials and equipment. In larger schools, storage space will also be required for stationery and other materials for teachers and administration staff. Another store accessible from the outside is desirable for storing outdoor toys, equipment and furniture.

Sickroom: All pre-schools should have (or have access to) a Sickroom or Restroom where one, two or three children (depending on the size of the school) can lie down.

Children's Lavatories: Lavatory and washing accommodation for children should be provided in the ratio of one lavatory and one washbasin for every ten children. In colder climates these should be accessible directly off teaching spaces. In hot, tropical climates it is probably better for them to be accessible from outside but they should then be easily supervised.

Food Preparation: A Kitchen or food preparation space should be provided that is easily accessible from the teaching areas. The size will depend upon the number of children and in larger schools a storage space for food and equipment may also be required. In some countries where wood or charcoal is used for fuel, an outside covered cooking area may be more appropriate.

Administration: A separate Office/Staff Room is desirable to provide space for administration, record-keeping, a private area for staff and somewhere for staff to talk to parents or other visitors. In larger, urban pre-schools, a separate office for the Head Teacher might also be required.

Staff Lavatories: Lavatory and washing accommodation will be required for staff. The actual provision will depend upon the number of staff.

Caretakers: In some countries accommodation may be required for a caretaker, watchman or cleaner as in Indonesia.

2.3.8 Figures 8 to 12 show examples of pre-schools in Indonesia, Malaysia, Brazil and the United Kingdom.

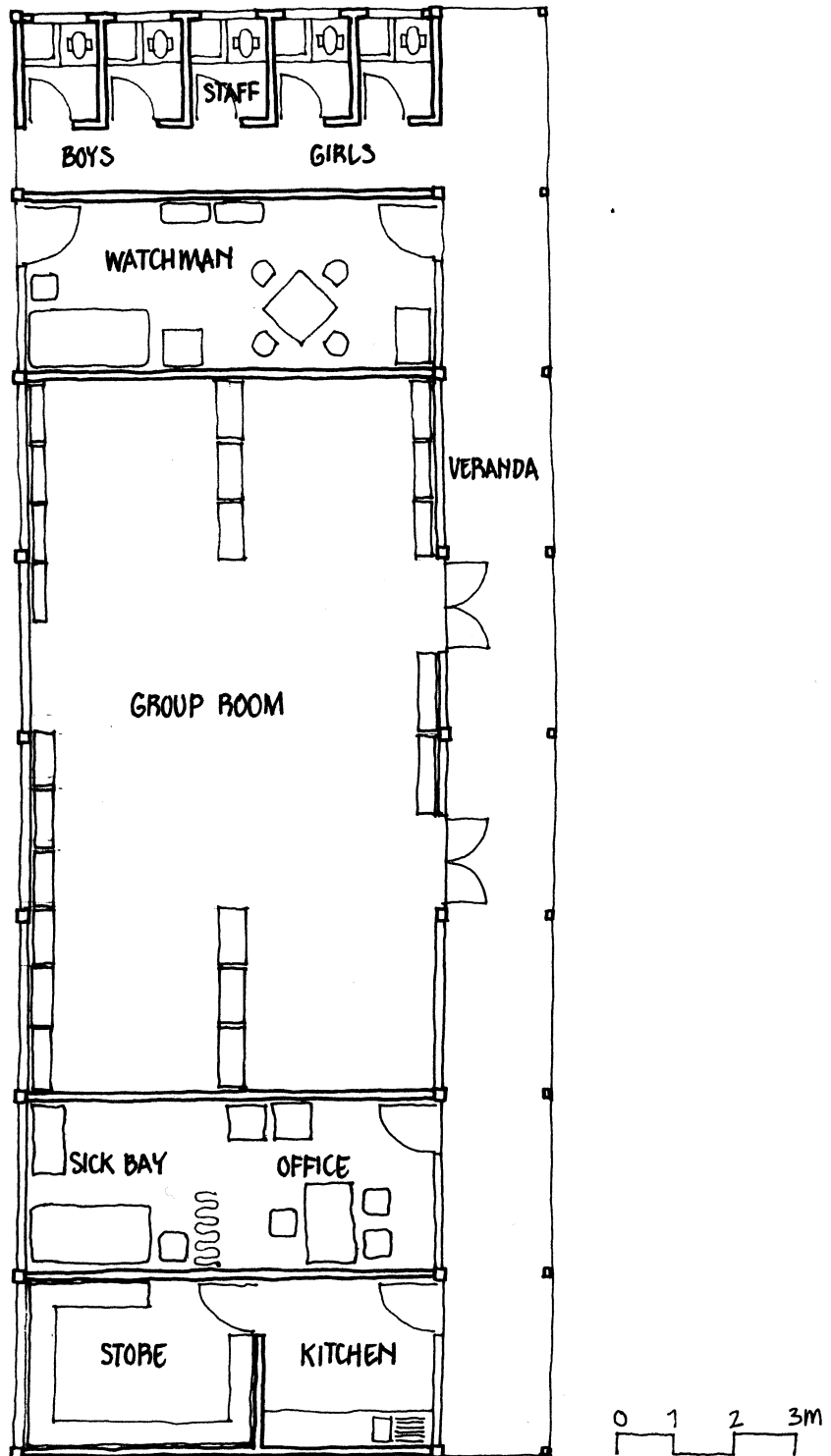


Figure 8: A pre-school for 30 children in Indonesia with one group room, a sickbay/office, a room for a watchman and toilets attached. Additional group rooms can be added and the watchman's room and toilets can be built separately.

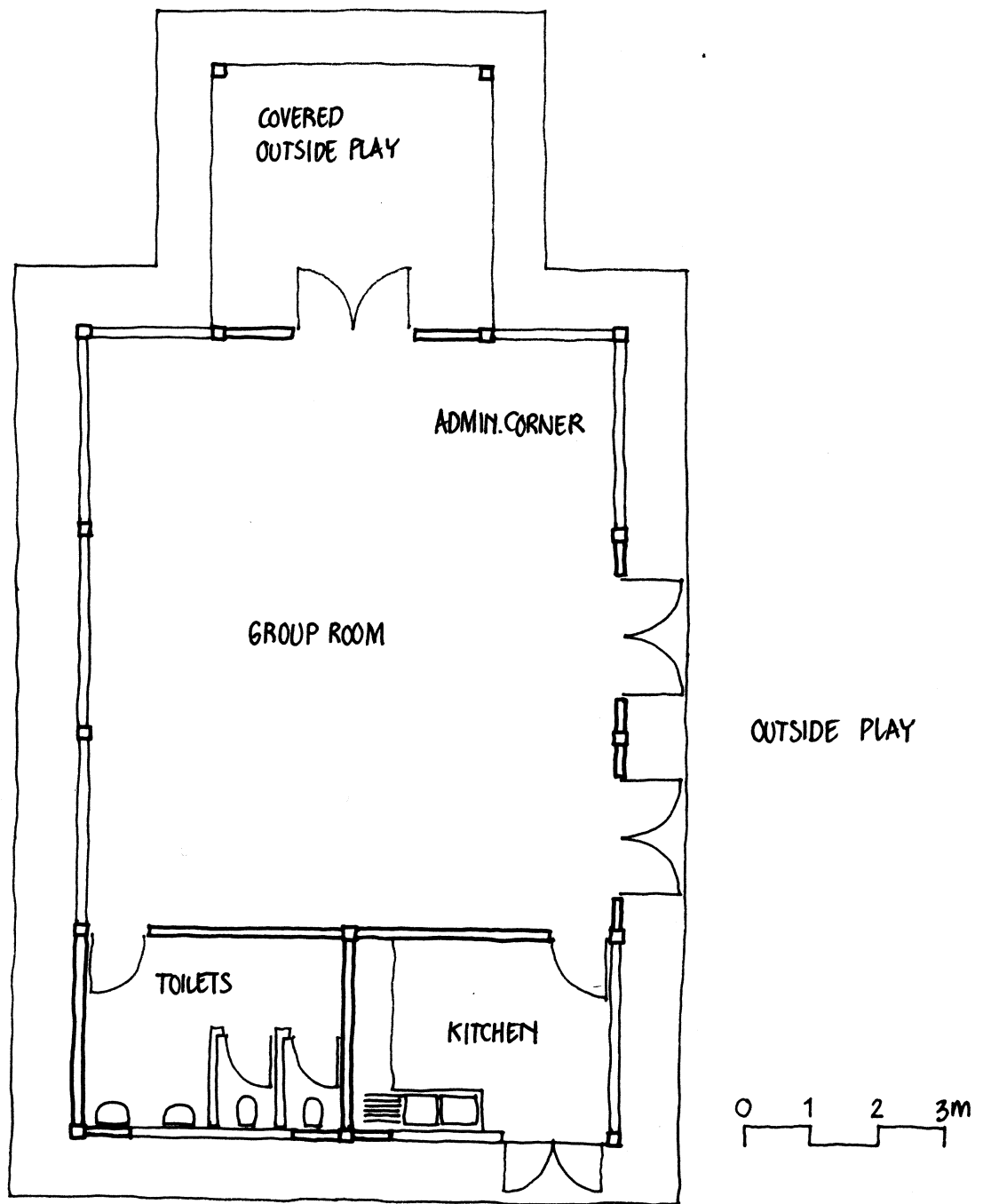


Figure 9: Pre-school in Malaysia for 60 children in two shifts. Note that there is no storage space and no staff accommodation.

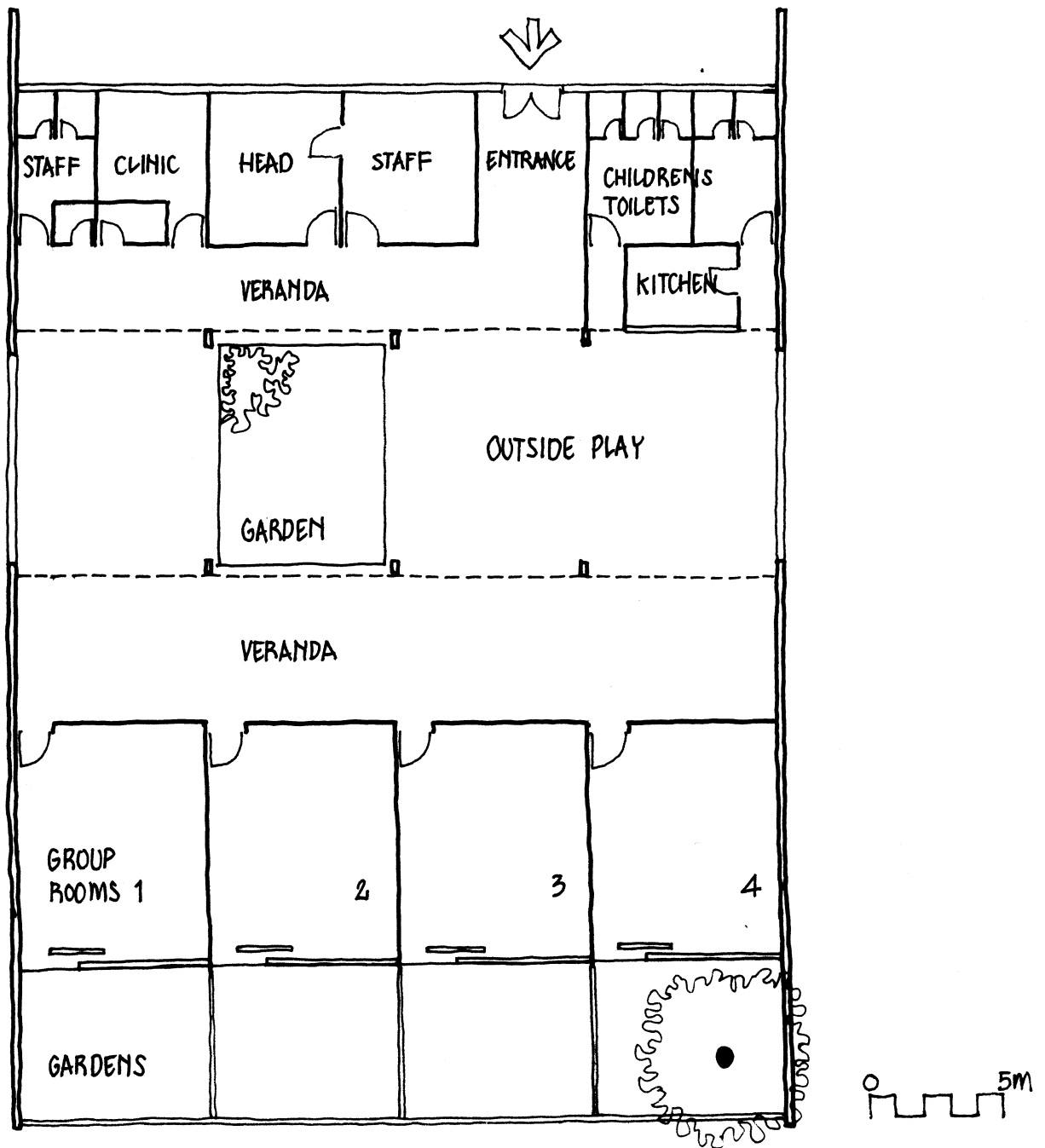


Figure 10: Urban pre-school for 80 children in Brazil, built around a courtyard.

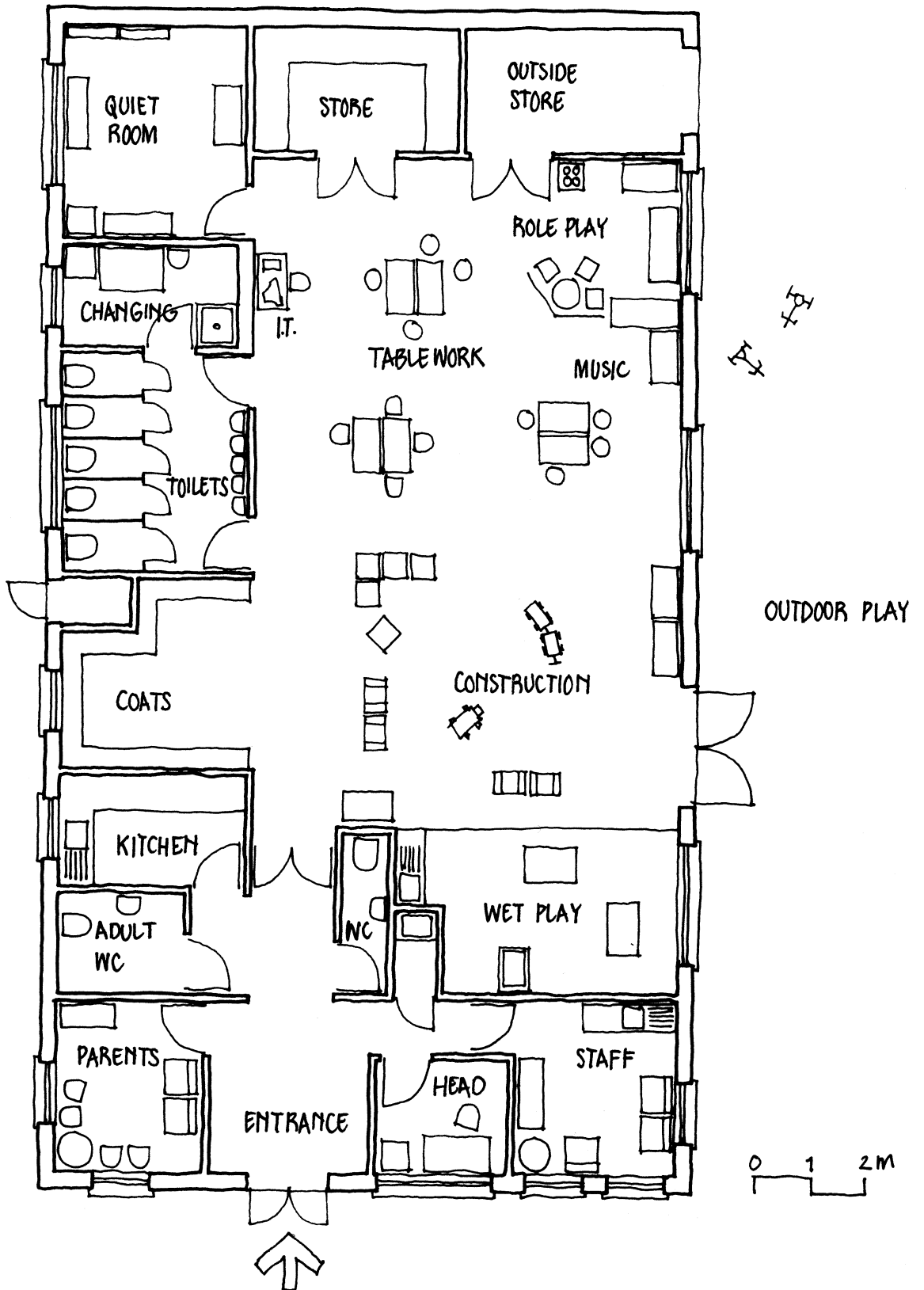


Figure 11: Purpose-built pre-school for 40 children in UK with full range of facilities.

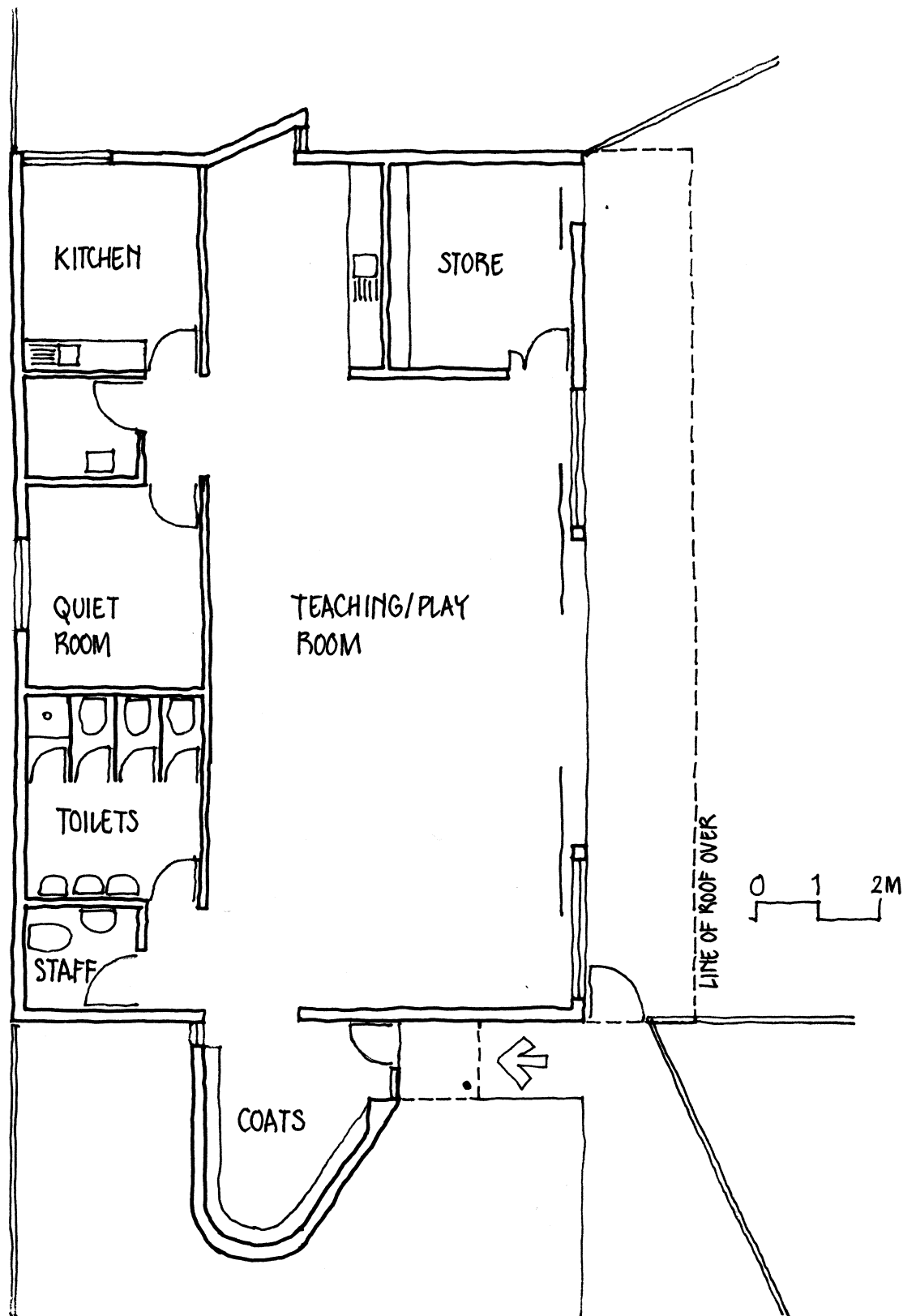


Figure 12: Purpose-built pre-school for 30 children attached to existing primary school in UK.

3. COMBINED DAY CARE CENTRE & PRE-SCHOOL

3.1 It is of course possible to combine the functions of a day care centre and a pre-school in one building on one site and an example of this in the UK is given in Figure 13.

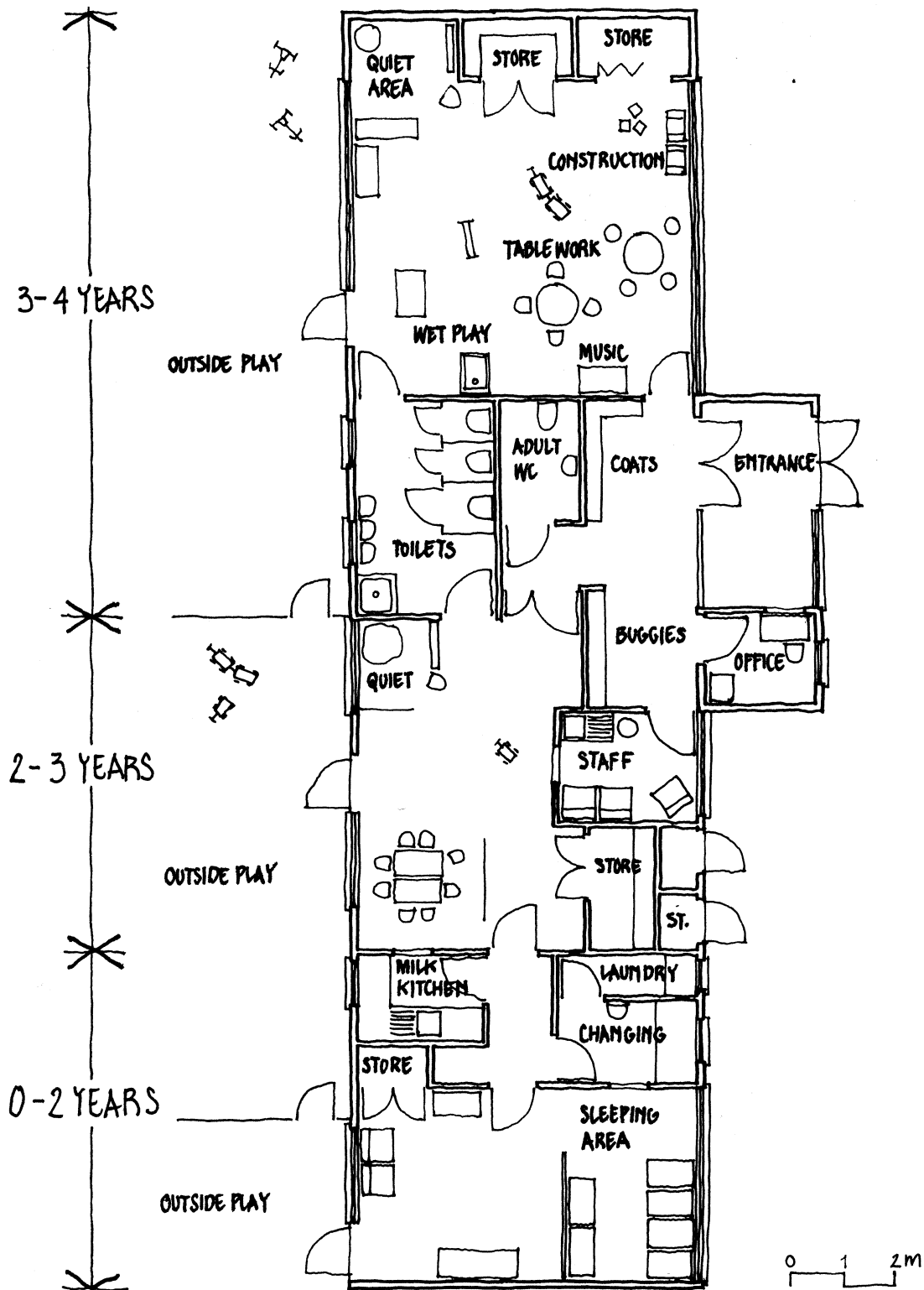


Figure 13: Combined day centre and pre-school in one building in UK.

4. MOTHER & CHILD CENTRES

4.1 GENERAL

4.1.1 A mother and child health centre can stand alone or be attached to a day centre or a pre-school. If it is attached to another facility there will have to be access from there as well as access from outside. It may be the only medical centre in the area even though it may only operate for one day a week.

4.1.2 The basic functions will be to provide immunisation and health checks for children and to weigh and measure them. There will also be an educational role in teaching mothers of young children how to look after them, how to promote their cognitive development and help prepare them for primary school.

4.2 ACCOMMODATION

4.2.1 A very simple mother and child centre that is being built in the rural areas of three Provinces in Indonesia consists of a consulting room (for a visiting doctor or nurse) of 9m², waiting space of 9m² and a large open covered space for meetings and education/demonstration. Total area 54m². See Figure 14.

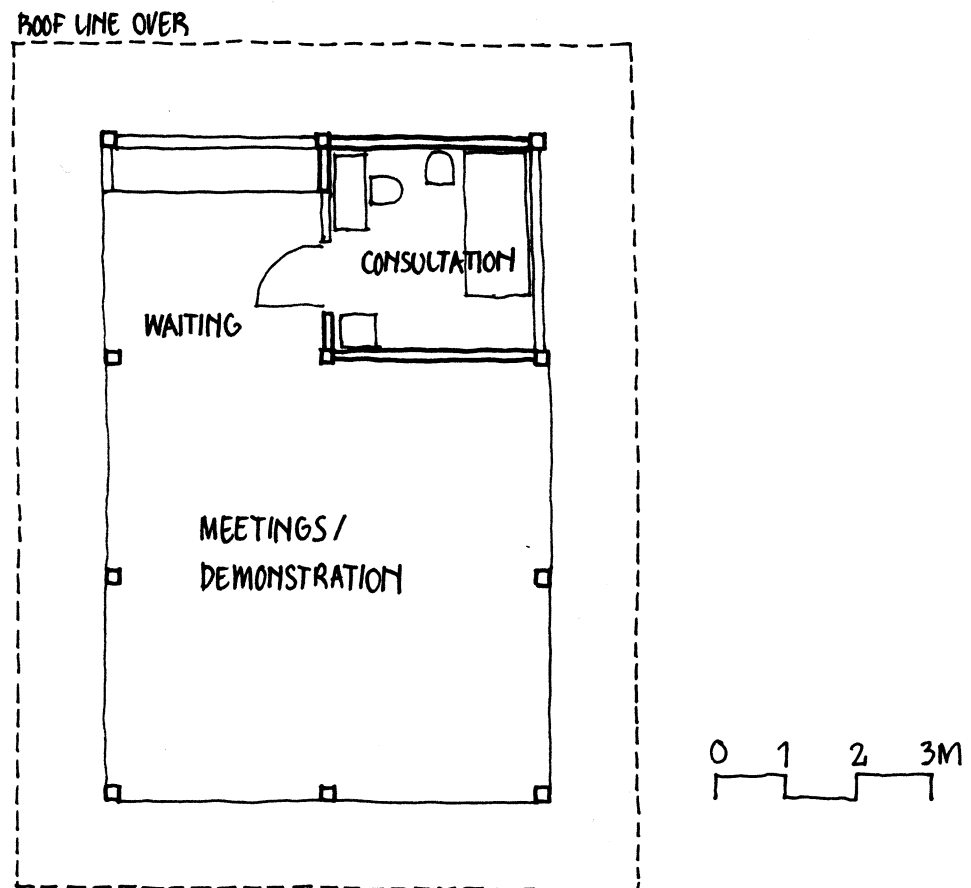


Figure 14: Proposed mother and child centre (BKB/Posyandu Post) in Indonesia

4.2.2 A slightly larger facility in Kampuchea set up to carry out medical functions rather than educational one's, consists of an entrance, waiting and child weighing space of 18m², a small office of 9m², an immunisation room of 10m², a consultation room of 10m² and a treatment room of 10m² plus a veranda. Total area 60m². See Figure 15.

4.2.3 These facilities could be combined with a day care centre or a pre-school and an example of a combined ECD centre in Kampuchea is shown in Figure 16.

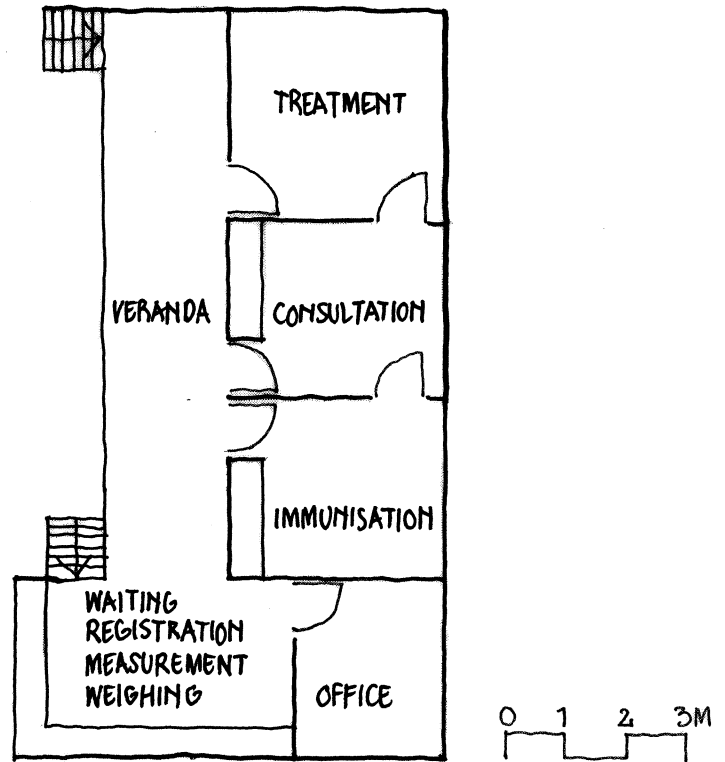


Figure 15: Small mother and child clinic in Kampuchea.

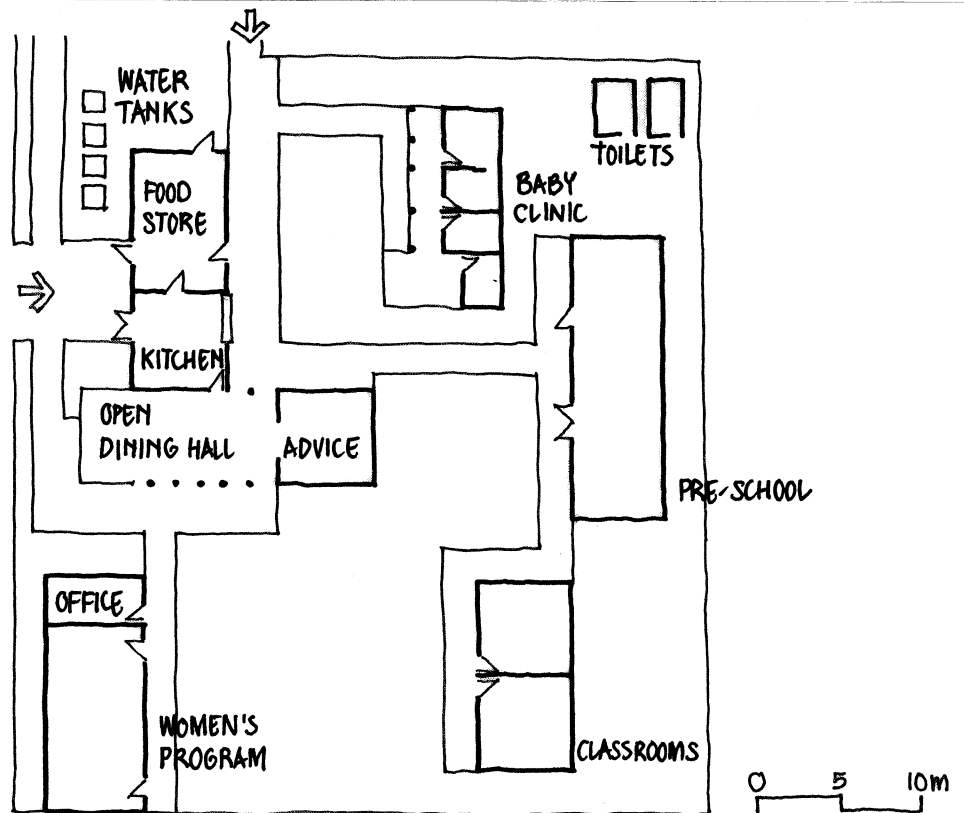


Figure 16: Combined day care centre, pre-school and mother and child centre in Kampuchea.

BIBLIOGRAPHY

1. DESIGN OF FACILITIES

Architects and Building Branch, Designing for 3 to 4 year-olds, Department for Education and Employment Publications, Nottingham.

Educational Building Digest No. 17 (1984), Design Ideas for Pre-School Centres, UNESCO Regional Office for Education in Asia and the Pacific, Bangkok.

Matrix (1986), Building for Childcare, making better buildings for the under 5s, Matrix and the GLC Women's Committee, London.

The Children Act (1989), The Stationery Office, London.

Vickery, David J. (1988), Educational Buildings and Equipment 10, A Facilities Design Guide, UNESCO, Paris.

Profil Taman Kanak-Kanak Negeri Pembina (1994), Departemen Pendidikan dan Kebudayaan, Jakarta.

Dudek, Mark (1996), Kindergarten Architecture, E & F. N. Spon, London.

School Building Design Asia (1972), Asian Regional Institute for School Building Research, Colombo.

2. PLAY SPACES

Educational Building Digest No. 19 (1987), Design Ideas for Play Spaces for Three to Six Year Olds, UNESCO Regional Office for Education in Asia and the Pacific, Bangkok.

Play Safety, Guidelines for Outdoor Play Provision (1997), National Playing Fields Association, London.

Information Sheet No. 1, Safety in Children's Playgrounds (1997), National Playing Fields Association, London.

3. CONSTRUCTION

Sinnamon, Ian T. and van't Loo, G. A. (1977), Educational Building Report No. 7, Cyclone-Resistant Rural Primary School Construction - a Design Guide, UNESCO Regional Office for Education in Asia and the Pacific, Bangkok.

Macks, K. J. (1987), Typhoon Resistant School Buildings for Vietnam, UNESCO Regional Office for Education in Asia and the Pacific, Bangkok.

Mayo, Alan (1988), Cyclone-Resistant Houses for Developing Countries, Building Research Establishment, Watford.

Boyle, Charles (1988), Disaster-Resistant Construction for Traditional Bush Houses, a Handbook of Guidelines, the Australian Overseas Disaster Response Organisation (ADRO), Sydney.

Mooij, D. (1973), Educational Building Digest No. 2, Small Buildings in Earthquake Areas, UNESCO Regional Office for Education in Asia and the Pacific, Bangkok.

Design Data for Light Timber Framed Construction (1980), Public Works Department, Suva.

National Building Code for Solomon Islands (1990), Pacific Building Standards Project, Suva.

Home Building Manual, Solomon Islands (1990), Pacific Building Standards Project, Suva.

Wakeham, Nigel (1989), Primary School Construction in Sierra Leone, The Role of Self-Help, (Unpublished).

Wakeham, Nigel (1992), Primary School Construction in Sierra Leone, a Case Study, (Unpublished).

4. WATER & SANITATION

Winblad, Uno and Kilama, Wen (1980), Sanitation without Water, SIDA, Stockholm.

Carroll, R. F. (1982), Overseas Building Note No. 189, Sanitation for Developing Communities, Building Research Establishment, Watford.

Carroll, R. F. (1991), Overseas Building Note No. OBN 196, Health Aspects of Latrine Construction, Building Research Establishment, Watford.

Morgan, Peter (1990), Rural Water Supplies and Sanitation, Macmillan, London.

Pickford, John (1995), Low-Cost Sanitation, A Survey of Practical Experience, Intermediate Technology Publications, London.

Brandberg, Björn (1997), Latrine Building, A Handbook for Implementation of the SanPlat System, Intermediate Technology Publications, London.

Manual on School Sanitation and Hygiene, (Draft undated), UNICEF/IRC.

5. SCHOOL FURNITURE

Guat-Lin, Evelyn Tan (1984), Educational Building Digest No. 18, Anthropometric Data and its use for Educational Buildings and Furniture Design, UNESCO Regional Office for Education in Asia and the Pacific, Bangkok.

Educational Building Documents No. E2, Classroom Furniture, Technical Notes (1979), UNESCO Regional Office for Education in Asia and the Pacific, Bangkok.

6. BUILDING MAINTENANCE

Miles, Derek and Syagga, Paul (1987), Building Maintenance, a Management Manual, Intermediate Technology Publications, London.

Healthy Buildings, a Handbook for the Maintenance of Rural Health Facilities, UNDP/ILO, Solomon Islands.

Bonner, Roger R. M. (1995), Maintenance of School Buildings, The Teacher's Role, British Council Division, British High Commission, Andhra Pradesh.

Community Participation in School Maintenance, a Manual (Unpublished), Foundation for the South Pacific, Port Vila.

A Manual for the Maintenance of Schools (1995), Public Works Department, Port Vila.