

CHILDREN'S DRAWINGS AS RESEARCH TOOL: ESTABLISHING CHILDREN'S ENVIRONMENTAL CONCEPTS AND PREFERENCES

WITH REFERENCE TO URBAN OPEN SPACE PLANNING AND DESIGN
IN JOHORE BAHRU, MALAYSIA.

Volume 2

by

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RESEARCH QUESTIONS

6.0 INTRODUCTION

Having reviewed various issues pertaining to the provision of and children's use of out door environments, together with the contextual aspect of urban open space planning and design in Johore Bahru has helped to place the research perspective in a clear direction. The topic of interest; children's environments was essentially a starting point that needed further refinement into specific problems and questions. Research problems and questions form a basis for designing a research project (Neuman, 2000). The overview of literature enables refinement of research problems, and promotes the right setting for a set of research questions to be addressed. The formulation of research questions is crucial in that it will determine the success of the research and this formulation evolve through several stages of the research process. During the research process, research questions and design reserve some flexibility to allow changes. The purpose of formulation of clear research questions is to seek, 'to explain, describe or explore phenomena' (Marshall and Rossman, 1995, pp.16). They also serves to clarify the expectations of data from the fieldwork, although new and unexpected findings may be predicted. This is true in the case of qualitative research as the research questions are mainly directed to 'case of phenomena' where both unanticipated patterns and expected linkages can emerge from data interpretation (Stake, 1995, pp. 41). The clear and precise nature of research questions will also serve to check the suitability of methodological approaches, as they determine or dictate the research method used (Robson, 1993; Strauss and Corbain, 1990), in answering the research questions (Flick, 1998).

This research seeks to explain and explore preferred landscapes and activities children represent in their ideal environment. The research enquiry, begins with questions that come from various sources: current local issues and problems focusing on children and their environments, researcher's interest and past experience, and existing theories in relation to children and environment. The purpose of study is exploratory, seeking to describe and explain future needs in relation to current children's environmental

phenomenon that happen everyday in urban environments. In order to answer research questions, the strategy of research involves field study where data collection utilises children's drawings as the main data collection technique and other technique including survey questionnaire and essay writing. It is appropriate for qualitative study to use a combination of several data collection methods over the course of study as each method has its own strengths and limitations that may work well with particular questions in the study. Why were drawings used as a main data collection technique?

In this research, there are many reasons for the use of a qualitative data analysis approach. First, is the need for environmental evaluation findings that can implicate or "offer for change" in planning and design (Cooper-Marcus and Moore, 1976). Thus, qualitative evaluations may have greater impact for change in planning of children environment as they have practical utilitisations compared to statistical quantitative research data. Second, through drawings, children are able to communicate freely (Adams and Ward, 1982). Drawing is cheap, easy and provides "a wealth of possibilities is opened up for the interpretation of individual differences," (Moore and Young, 1978, pp. 108). Drawings can also be used with children as a "quick and effective method to assess their own environment," (Moore, 1974c, pp. 107). It can also be assumed that children's drawings represent memorable or positively valued environment (Moore, 1980a, pp. 68); children will include liked items in representing familiar environment as they are prominent in the "schemata used to organize the environment," (Seibert and Anooshian, 1993, pp.619). Drawings are able to "provide richer sources of data" and represent preference for environment "more comprehensively," (Moore, 1978, pp. 299). Fourth, to answer the question of which "parts of the environment provide the greatest pull on children," children's drawings can be used as perceptual method of investigation (Moore, 1980, pp. 128).

Visual method like drawings can also dramatically improve the degree of children's participation (Hart, 1997). It is a medium that allows young children to express themselves. "It is familiar, enjoyable for most young children, and inexpensive," (ibid, pp. 162). Through drawings, children can represent their awareness of the visual qualities of the environment and possibilities for improvement as Adams and Ward (1982) explain further:

Children's drawings should be viewed as evidence of a learning process. There are evidence of a search for meaning. Sources to which a child might refer are direct sensory experience, received images, memory and imagination (which of course are dependent on previous inputs of sensory information). The drawing may be seen as a reworking of these as the child attempts to find out, work out, understand or communicate.... in different contexts, different types of drawing serve different purposes. Drawing as analysis contributes to perceptual development in terms of receiving, organizing and interpreting sensory stimuli and discovering relationship between them. Drawing is particular language which the child should learn in order to explain his experience to himself and others. It is a medium for developing perception, a way of communicating a feeling of response. Drawing as communication involves the sharing of ideas, a realization of feeling and thinking processes, and attempt to share them. (pp. 85)

In dealing with preferred environments to be created, Canter (1977, pp. 160) suggests that: "perhaps the greatest potential is for exploring sketches made of places to be created in the future, or of *ideal places*."

The lack of research on children's environments in Johore Bahru has hindered the understanding of how children actually use the environments provided for them, and of their needs and preferences in general. Without this knowledge, the opportunity for change and future progress in the provision of children's environment is very unlikely to take place. Perhaps, there will come a time when professionals, policy makers and the governing authorities listen to what children have to say about the environment they live in from their own view points (Cox, 1991). It is sensible to incorporate children's views into the planning of environments that cater for their needs. This approach gives the opportunity for children to participate to a certain extent. This study though does not aim at full children's participation. One of the many ways to improve the provision for children's environment is through integrating the users ideas and needs with the existing urban planning system.

In Chapter 5, it was obvious that children's environments within housing or neighbourhood environments are poorly planned. It is assumed that children use only playgrounds for their activities and places to be. As the city expands and population increases, the demand for children facilities grows proportionately. The need for such facilities goes beyond merely a token allocation for open space, but a new approach is needed and guidelines to broadly widen the policy and statement. New dimensions and innovative approaches in the planning and design of urban open space are required. Have the professional, policy makers and authorities truly understood children's environmental preferences? Can a greater understanding of environmental preferences and uses be developed through interpretation of children's drawings as communication tool? What can children's drawings of their environment communicate? Can ideas of children that concern and affect their living environment can be integrated into guidelines and policy in the planning system for a

change and improvement of children's urban environment? Therefore, in view to the above questions

posed, this study is investigating to find out how effectively children can communicate about their ideal home environment preference by means of drawings and what are the components constituted parts of environmental concepts, preferences, and their variation from ethnicity and gender differences. A series of research question and sub-research questions were put forward to answer all those questions of : how children form or portray the concepts of their ideal environment, and what kind of activities they prefer most within their conceptualised environmental settings?

The present provision of children's environment has failed in meeting the needs of children. There is a need to focus on finding how children view their future environment, knowing that children normally place a positive thought of affect, expressed through preference (Seibert and Anooshian, 1993, pp. 607). Children interact with environment without discrimination (Moore, 1986). The main aim of this research however, is to find out children's idea, concept on environment, activity preference elicited from their drawings as an effective communication tool in research. This aim is geared towards developing a greater understanding of children's environmental preferences and uses through drawings. Drawing is a spatial, affective, multi-layered non-temporal communicating tool.

At present, assumptions are made by the authorities that the provision of children's playgrounds in urban open spaces is meeting the needs of children. This research will also aim to test this assumption that most external spaces provided for children in the urban area fail to match those positively valued environment by children. In other words, there is a gap between provision, actual use, and users needs and preferences. The provision in relation to the issues and problems have been highlighted earlier, but exclude the children's actual experience, interaction or actual use of the environment in question. The research embarks exclusively on the search into children's concepts for ideal home environments. The concept of environment as suggested by Michelson (1977) is through a distinction between mental and experiential congruence between children and environment it self. If this environment successfully fits children's experiential personal characteristics, values, needs and preferences, it leads to mental congruence. Experiential congruence exists if the environment "accommodates" the children. The extent to which children adapt and achieve satisfaction in the environment is a function of mental and experiential congruence. Within the above context, although the research is not aiming to measure children's environmental experience, it is expected that some aspect of environment related experience will influence and be invested into the formation of drawn concepts of environment. Children's environmental ideas, experience and their preferences will shed some light on many

aspects and issues for environmental change. Another important issue to understand is the opportunity and limitation the present system can offer in incorporating new requirement in the planning or urban environment. This understanding concern the discovery of the problems faced by children, society and the urban planning system in the city of Johore Bahru.

This chapter establishes research questions interrelated with research strategy, data collection methods and analysis of data. The first section identifies the questions together with purposes. Factors or aspects of ethnic background and gender differences need close examination and review as they are socio-cultural aspect likely to influence the findings and of interest to this research. Other aspects such as parent's socio-economic status (SES), types and locations of present home may also have an influence upon the findings but were not considered in this research although briefly touched incidently throughout the discussion of findings. These factors or aspects in qualitative research term can be defined as "analytic categories" and become means of research process which changes in the course of research (Glaser and Strauss, 1967; McCracken, 1988). More importantly, the research is looking for interrelationship patterns that may appears between various factors or aspects of ethnic and gender differences. Literature which provides informations will be transmitted with data that come before theory (Bryman and Burgess, 1999). The research interest is the comprehension and interpretation of meanings as represented of drawings and this can be through the discovery of themes (Tesch, 1990). In this qualitative research, analysis and interpretation is a key approach to develop theory through iterative process of grounded theory from data (Bryman and Burgess, 1999, pp. xxv). With respect to this, Neuman (2000) further explains:

The language of qualitative research is one of interpretation. Researchers discuss cases in their social context and develop grounded theories that emphasize tracing the process and sequence of events in specific settings. They explain how people attach meaning to events and learn to see elements from multiple perspectives. Only rarely does one hear a qualitative researcher discuss variables or hypotheses. (pp. 144)

The use of drawings as a main method as discussed earlier to sought information from children, allows flexibility, is less precise but is able to gain much broader data on children's environments. This approach give access to environmental preferences according to children's constructed cultural categories (McCracken, 1988, pp. 16-17). Children's environmental preference has to treated as a unified whole, not as separate variables. Research questions are set in general terms to allow exploration but are focused enough to delimit the scope of study (Marshall et al., 1995). Information from literature and theory is used to help frame and refine specific topics or aspect. Throughout the research process,

relevant concepts were developed and the research proposal included themes based on knowledge of the literature.

6.1 RESEARCH QUESTIONS

The broad research question is concerned with the formation of children's concepts and activity preferences of ideal home environments. Children's drawings are thought to be effective communication tools in eliciting information about concepts and preferences. The important questions within this study are:

- a. What can children's drawings tell us about their ideal environment?
- b. How effective are children's drawings as a tool in environmental research and design?
- c. Can children communicate effectively through drawings environmental concepts and activity preferences?

These questions can be further subdivided into six main categories. The first category deals with physical landscape components in the environment. The second deals with climatic aspects of environment. The third with children's attachment to animals and wildlife is explored. The fourth category looks into children's broader landscape contexts. The fifth explores spatial dynamics in children's environments. Finally in the sixth category, the question of children's preference for certain type of activity or their favourite activity in the environment is addressed. These categories are summarised as follows:

- i. Physical landscape components.
- ii. Climatic aspects.
- iii. Children's relationship with animals and wildlife.
- iv. Broader landscape context in children's drawings.
- v. Spatial dynamics and affective aspects in children's drawings of home environment.
- vi. Preference for outdoor activities.

The above six categories form a broad themes of children's landscape in response to the issues and problem discussed earlier in Chapter 1, Chapter 3, Chapter 4 and Chapter 5. These categories are relevant concepts of environment developed through the research process: during and after analysis of data through refinement (funneling) process. As the research proposal suggests themes based on knowledge of the literature, the formation of

categories are influenced by suggested themes and further developed for salient, grounded categories of meaning held by children.

In focusing the study, each category will be a basis for posing general research questions. Each specific topic of the research questions is related to literature and theory which helps discussion of, framing and refining the topics. For instance, under physical landscape components, various topics: physical landscape elements, vegetation, waterbody, climatic aspect and location of house in relation to landscape become salient, and need further investigation through sub-research questions. For each category, a detailed discussion will explore meanings, and their importance and significance in relation to the context of children's environments.

6.1.0 Physical Landscape Components

Understanding children's relationship to space and place requires many common but vital links: children's relationship with natural landscape elements such as vegetation, waterbody, animals and wildlife; spatial experience; and preference for certain environmental settings. Children are known to have the ability and considerable competence to imagine a preferred environment (Spencer et al.,1989; Bernaldez et al., 1987; Wood and Beck, 1995). Children's needs associated with natural environments may accumulate in drawn evidence of physical landscape components. Analysis of the physical landscape elements portrayed by children can inform about their association with surrounding environments. Physical landscape elements children normally associate with in their home environment, perhaps can help us to understand why adult's planned housing and neighbourhood have failed to accommodate children's needs. Thus, it is believe that systematic knowledge about children and their preferred physical landscape components can be used to improve the design of children's settings (Weinstein and David, 1987).

Children form concepts of their ideal environment through a cluster of connected physical landscape components or elements. Knowing what elements children associate their environment with is crucially important aspect in this study. Within this category, five associated themes have been identified in formulating sub-research questions.

6.1.0.0 Physical Landscape Elements

- a. What elements of physical landscape form part of the children's ideal home landscape?
 - i. Does the children's ethnic background affect the preference for different types of physical landscape elements?

- ii. Does the children's gender affect the preference for different types of physical landscape elements?
- b. How do elements of vegetation form part of children's ideal home landscape?
 - i. Does the children's ethnic background affect the preference for different types of vegetation?
 - ii. Does the children's gender affect the preference for different types of vegetation?
- c. How are waterbodies presented as an element in children ideal home landscape?
 - i. Does the children's ethnic background influence their preference for different waterbody element?
 - ii. Does the children's gender influence their preference for different waterbody element?

6.1.0.1 Climatic Aspects

- a. How are climatic aspects represented by children in their ideal home landscape?
 - i. Does the children's ethnic background affect the way they portray the climatic aspects in the environment?
 - ii. Does the children's gender affect the way they portray the climatic aspects in the environment?

6.1.0.2 Attachment to Animals and Wildlife

One of the essential aspects that determines children's use of natural environment, is being able to relate to animals and wildlife. This emerges as an important concept in drawing. Close-relationships with animals and wildlife has influenced the planning of children's environments (Moore, 1986; Titman, 1994; Kidd and Kidd, 1995; Hart, 1997). Natural environments are associated with the presence of animals and wildlife. The link between children and animals and wildlife has "positive relatedness" which is important to children as it gives a sense of closeness to nature and is central to the emotional life of children (Searles, 1960, cited in Hester, 1975, pp. 63). Thus, drawings are expected to reveal strong attachments for animals and wildlife within representations. Questions for evaluation of the drawings would include:

- a. How do children represent their attachment to animals?
 - i. Does ethnic background influence children's representation of attachment to animals?
 - ii. Does gender influence children's representation of attachment to animals?
- b. How do children represent their attachment to wildlife in relation to home landscapes?
 - i. Does the ethnic background influence children's representation of attachment to wildlife?
 - ii. Does gender influence children's representation of attachment to wildlife?

6.1.1 Spatial Dynamics: Aspects and Expressive Qualities in home landscape drawings

Identifying qualitative aspects of the home landscape in drawings is important as they may communicate the basic emotional and psychological needs of the children. A drawn ideal landscape may reveal dimensions of space dynamics, ambivalence, permanence, and environmental values as qualitative aspects of the home environment concepts. Those qualitative aspects and expressive quality need to be defined and explained. Their meanings and theoretical terms that may apply in the context of study are explained below:

6.1.1.0 Aspect of Space Dynamics

The way space and its use is represented in drawings is related to '*space dynamics*'. Aspects of location, size of space, relationship and linkage between them are communicate about space dynamics. Children normally associate the aspect of space dynamics mostly for their adventurous and exploration quests. Representation of spaces at different levels linked either through paths or steps that allows continuous exploration from one activity to another. In this sense, children are able to exert their own right of dominance or control over space or place for more behavioural freedom. Above all children may not discriminate spaces within environment and their concepts of place can be different from adult's. To a child, space in physical environment supports their attitudes and behaviour and facillitates certain ways of venturing into and experiencing environments.

6.1.1.1 Aspect of Ambivalence and Permanence

Children are known to have emotional attitudes or feeling toward the "spatial configuration of the home." (Barbey, 1974, pp. 147). Their needs for opposition between two concepts of environment is related to the qualities of and demand for important aspects of living. Spatial configuration can take in differing and opposite typologies: vertical against horizontal; central, static, self-enclosed against open and vast; protection or dependence against independence; initiative and discovery against passivity and complacency.

The appreciation for "rural" or "traditional" aspects of environment may indicate an undesirable change of "socio-cultural values, religion and symbolism as of climate, site and technology," (ibid, pp. 148). Traditional and vernacular housing for instance provide a "pleasant and reassuring feeling of permanence," (ibid, pp. 148). Children may be sensitive to the change in new urban housing development that eliminates this value and instead replaces it with environments which lack security and stimulation. New housing development is concerned with efficiency for financial reasons and uses economic technological approaches to building construction. Another aspect related to the concept of permanence is "social convention" in terms of arrangement of objects, cleanliness, useful space for experience with nature and quality of space. Children's social conventions may be different and they do not often share the same values as adults, though adult may have influenced them to adopt certain attitude toward responsibility in home environment.

6.1.1.2 Environmental values and Thematic Content

Environmental values and characters are related to the qualities of space or place that "appeal to the eyes," and have sensory and psychological affects. These include for instance environments that are "beautiful," "comfortable," "peaceful," "safe," "free" and "happy," "active" and have "landscape dominance." For each of these values, children may portray different functions and purposes and the needs they served. It is suggested that ideal landscapes vividly mirror positive qualities of actual environments.

Children's drawings of environment may be based on certain principles both individual and cultural which influence environmental themes. The underlying structure or theme of drawings will be presented in diverse graphic styles. "Drawing of different themes encourage some degree of spatial differentiation," (Golomb, 1992, pp. 6). In play themes for instance, there are two types of spatial organization which could be adopted by children. The horizontal side-by-side alignment of figures or the triangular arrangement that uses elevations to depict both depth and distance among the figures. Preference for horizontal alignments yields limited differentiation of space. Drawing themes are found to influence

the realistic use of colours, and children will be able to depict their feelings most successfully when themes are personally meaningful to them. In drawing representation, thematic and structural composition of elements are important factors which influence children's expression as Golomb (Ibid.) explains:

In order to depict a theme, that is to state the subject matter of the drawing or to narrate an event, figures as well as other pictorial objects have to be organised in the pictorial plane, that is, they have to be grouped in some meaningful way. (pp. 165)

6.1.1.3 Meaningful Contexts: Figures, emotional content and spatial matters

Children's drawings of home landscape can expect to portray a meaningful context for activity and have emotional significance. This includes a context for play, recreation, groups of people, presence of animals and gardening activity. The home landscape is an important medium for children to reflect their emotional expression in drawings as "emotions are most successfully depicted when they are embedded in a meaningful context, (Golomb, Ibid., pp. 144).

Children approach drawing as a medium for representation of their feelings. Feelings can be portrayed through the presence of figures, and through shape or facial expression. The portrayal of happiness, may be for examples with a figure with smiling face. "Expression is also manifest in spatial matters such as the size and location of a figure in space." The choice to represent people playing with friends in the natural areas or in home compound as preferred spatial settings in drawing carry different expression from drawings without figures as Golomb (1992) notes:

While the use of gesture, movement, facial expression, line quality, and color combinations are all important ingredients, expression lies in the thematic and structural arrangement of elements. (pp. 164)

6.1.1.4 Children's Choice of Colours for Environment

Certain colours in children's spaces may be related to their activities. For instance, play spaces for children may be represented with bright and colourful colours. Some colour of landscape elements may have a direct link to children's emotions, and children always respond to colours in drawings as 'colour is beautiful' (Golomb, 1992). Questions of colour preference in environment can be explored in terms of children's rank order of colour, and how colour links with children's expression of emotions in association with people, meaningful context of landscape, activities, and environmental themes. In drawing

representation, colour combinations are one of important ingredient for expression of theme and arrangement of landscape elements (Golomb, 1992).

6.1.1.5 Attachment to people

Through pictorial representation, figures may suggest a basic feature of friendship among children of different age, gender, or culture (Pinto et al., 1997). Children of different culture may have distinctive ideas about friendship and conceptions in relation to other people. Using drawing, gives access to ideas of importance of friends or peers and others within environment for social interaction in various activities. Themes representing interaction may indicate cultural variation especially in relation to gender for the activities involved (Rubenstein et al., 1987).

It is suggested that all the above factors will inevitably be part of home landscape children represent in their drawings. The question is what aspects and components or elements will be presented? Several sub-research questions have been formulated in order to reveal information as follows:

- a. Are there ambivalent desires of the children for their ideal home landscape?
 - i. Does the children's ethnic background affect their desire for basic ambivalence?
 - ii. Does the children's gender influence their desire for basic ambivalence?
- b. What kind of space dynamics do children represent?
 - i. Does the children's ethnic background affect the representation of space dynamics?
 - ii. Does the children's gender affect the representation of space dynamics?
- c. How are "aspects of permanence" revealed in children's drawings of ideal home landscape?
 - i. Does ethnic background influence aspects of permanence in their drawings?
 - ii. Does the children's gender influence aspects of permanence in their drawings?

- d. What "environmental values" and character are revealed in children's drawings of ideal home landscape?
 - i. Do the children's environmental values and character differ according to their ethnic background?
 - ii. Does children's gender influence environmental values and character in drawings?

- e. How do children represent their preference for surrounding facilities in their drawings?
 - i. Does the children's ethnic background affect their preference for surrounding features and facilities?
 - ii. Does the children's gender affect their preference for surrounding features and facilities?

- f. What are the main themes of expressive qualities in children's ideal drawings?
 - i. Does the ethnic background affect the thematic content of children's environment?
 - ii. Does the gender affect the thematic content of children's environment?

- g. What are the contexts the children present for expressive qualities in their drawings?
 - i. Does the ethnic background affect the children's context for their environment?
 - ii. Does the gender affect the children's context for their environment?

- h. How do children represent figures, emotions and spatial settings within their drawings?
 - i. Does ethnic background influence the children's preference for figures, emotions and spatial settings within their environment?
 - ii. Does the gender influence children's preference for figures, emotions and spatial settings within their environment?

- i. How do children represent their attachments to people in drawings of home landscape?
 - i. Does the ethnic background influence children's representation of attachment to people in home landscapes?
 - ii. Does the gender influence children's attachment to people in home landscapes?

- j. How is house arranged in relation to landscape?
 - i. Does the children's ethnic background affect their house arrangements in relation to landscape?
 - ii. Does the children's gender affect their house arrangements in relation to landscape?

The following sub-research questions are formulated in relation to children and colour of environment:

- k. What colours do children prefer to use in representing ideal home landscapes?
 - i. Does gender influence the colours used in drawings?
 - ii. Does ethnic background influence the colours used in drawings?
- l. How do children use colours for specific objects?
 - i. Does ethnic background influence children's choice of colours for specific objects?
 - ii. Does gender influence children's choice of colours for specific objects?
- m. Is there any pattern of preferences in children's choice for colours in their drawings?
 - i. Does ethnic background affect the preference for colour choice?
 - ii. Does gender affect the preference for colour choice?
- n. Do colours indicate children's feelings as depicted in their drawings of ideal home environment?
 - i. Does the use of colour indicating feeling vary across the ethnic background?
 - ii. Does the use of colour indicating feeling vary across the gender?

6.1.2 Children's Broader Landscape Context: Home Range and Territory

The concept of home-range is related to children's environmental cognitive development (Gaster, 1995) in the form of territory or nodes within which children's activities take place (Anderson and Tindall, 1972). These activity nodes may be represented in the form of significant landmarks or important features closely associated with character or function of spaces such as mountain with trees to represent forest. Other concrete measurable aspects of home-range that can be inferred from drawing perhaps is the structure of territorial range in form of activity nodes, the extension of spaces surrounding home and bicycle ownership among children. Home range expands with age from small to greater areas of an environmental setting. Having a clear picture of children's home-range helps us to understand how children present their accessibility to neighbourhood environment as easy, difficult or restricted. Children living in restricted home-range may have limited concepts of environmental range as their experience and exploration is confined to a smaller area (Andrews, 1973).

Concepts of home-range may vary across children's ethnic background and gender. Although through drawings, children may not represent home-range as distant travel to various places within home environment however, children may imply their preference, ability and opportunity to get access to surrounding neighbourhood as well as how much neighbourhood should be readily accessible to them from their point of view. Home-range interpretation provides a useful data for neighbourhood policy, planning and design.

Research questions on home-range and territory serve to explore representation of immediate home-range, i.e. surrounding building but also a broader setting. Drawings may be able to reveal some concepts through components and character of home-range. Within their home landscape, children may perceive and represent the extent of territory, spatial arrangements and activities. Children may in their drawings represent their mobility: how each space links to another in creating a setting for activity? Children's familiarity with utilised territory within home base environment and larger explored areas in form of activity nodes can possibly be inferred from drawings. The main purpose of these research questions is to evaluate how much information on home-range can be inferred from drawings that may be useful in the planning and design of children's environment.

- a. What aspects of home-range are represented in drawings?
 - i. Does the children's representation of home-range and territory aspect vary across ethnic background?
 - ii. Does the children's representation of home-range and territory vary across gender?
- b. What types of areas do children represent as part of their home territory?
 - i. Does the types of areas children represent as part of their territory vary across ethnic background?
 - ii. Does the types of areas that children represent as part of their territory vary across gender?

6.1.3 Activity Preferences

Information on children's activity preferences helps to identify children's needs in response to environmental settings. Activity settings can be defined in terms of components of children's facilities. The approach suggests that children's activity preference can be translated into performance requirements that are useful in planning and designing activity facilities. Many questions on children's activity preferences must be established and answered before settings or spaces for activity can be planned.

Activity is related to appropriate activity settings that are affected by various components: physical, human, social, interaction, circulation, convenience, security, comfort, territory, policy, and developmental (Hester, 1975, pp.87). Asking a series of question on activity, will help to describe activities leading to more information on characteristics, function of environmental settings and provide insights into what are directly applicable to the design of children's environmental settings. The main purpose of sub-research questions on activities that children preferred are: to determine various types or categories of activity children project in their representation of environments and to establish various types of activity settings. The sub-research questions posed are as follows:

- a. What types of activity do children choose to represent in their ideal environments?
 - i. Does children's ethnic background affect choice of represented activity?
 - ii. Does children's gender affect choice of represented activity?

- b. Where places are depicted as settings for chosen activities?
 - i. Does the choice of places for activities differ according to children's ethnic background?
 - ii. Does the choice of places for activities differ according to children's gender?
- c. With whom do children associate in their favourite activities?
 - i. Does children's association with people for activities vary with their ethnic background?
 - ii. Does children's association with people for activities vary with their gender?

6.2 ORIENTATION OF RESEARCH QUESTIONS: ASPECTS OR FACTORS FOR CONSIDERATION

A variable can be simply defined as 'a concept that varies'. Although the variable is a focus of interest in quantitative research that relies heavily on differences and relationships between variables (Neuman, 2000), qualitative research may also approach part of the analysis in a quantitative manner (Margot et al., 1994) (see Chapter 7). In respect of this research, it is more appropriate to utilise the term *aspect* or *factor* rather than the term *variable*.

It is acknowledged that in quantitative studies, the research question is designed to establish a relationship between variables. Qualitative studies on the other hand have the research questions orientated holistically 'to cases or phenomena, seeking patterns of anticipated as well as unexpected relationships.' (Stake, 1995). This research, emphasises qualitative analysis or interpretation of data. Important aspects or factors are known to affect responses or findings to the questions previously outlined. In this context, aspects or factors of ethnic background and gender help in the process of bringing order, structure, and making sense of data. The aspect or factor of ethnic background and gender are likely to affect the findings and need to be explored further in understanding and establishing the relationship between those two aspects or factors by comparing between sub-divided data of certain values.

6.3 THE ASPECT OF ETHNIC/ CULTURAL BACKGROUND

The aspect of ethnic background has rarely been studied in most environmental design research. Some studies are the exception to this for example a study on the effect of culture and school ethos on the formation of environmental perceptions in English and Mexican children (Barraza, 1999); adolescent children's use of urban environment (Banerjee and Lynch, 1977; Lynch, 1977), adolescent view of neighbourhood environment (Ladd, 1970), the effect of physical environments on play and play patterns (Berg and Medrich, 1980), structuring the city (Appleyard, 1970), and children use of landmarks (Darvizeh and Spencer, 1984) which have placed ethnicity as an important agenda in their research. Others, have carried out extensive research on children and their environments and strongly suggested for future directions to look into aspect of cross-cultural differences (Moore and Young, 1978). This research particularly focuses on different ethnic backgrounds. Titman (1994, pp. 15) identified the significant role of culture in influencing children's relationship with social and physical nature of environment.

For the unique multi-racial and cultural environment in Malaysia especially in the urban area of Johore Bahru, it is appropriate to focus this research orientation because it has not been studied before. Orientation towards aspects of ethnic background as part cultural based informations is dominant. Influenced by ethnicity one may expect diverse, rich and significant differences as well as similarities. Cultural aspects imposed or expected for in each ethnic group is a factor that influence children's behaviour, i.e. there is a link between ethnic background and behaviour (Chazan et al., 1998, pp. 20). Rapoport (1987) suggested the influence of cultural symbolic meanings and message upon children's environmental experience. Aspects of culture are also found to influence children and childhood (Tuan, 1978). Thus, there is a need to look at Malaysian children's ethnic and cultural context to establish behavioural links. This emphasis in the research approach has been discussed earlier, also culture different from 'Western' culture and research (see Chapter 5, section 5.6).

The city of Johore Bahru with its role as a southern gateway city of Malaysia has developed and expanded rapidly and dynamically from state capital to metropolis. Despite its vision 'to become a city of international standing' there are current problems of haphazard development, traffic congestion and visually poor environmental qualities of city centre (ISI, 1996, pp. 1-1). The ethnic composition in urban areas reflects well the composition of Malaysian population generally with the Malay proportion of 51 percent, Chinese 34 percent, Indian about 8 percent, and others making up the rest. Within this proportion, children aged below 15 constitute as high as 32 percent of the whole city population (ISI, 1996, pp. 2-12). As a user of urban space, one can expect children of different ethnic

background may respond differently to research questions. This research includes the factor of ethnic background as an important one to test whether different response to the research questions may be identified on the basis of ethnicity. In decision-making, policy, legislation and other aspects in relation to political, socio-cultural and economics has always taken aspects or factor of ethnic into consideration, but not in the planning of urban spaces for children. Therefore, data on differences between children of different ethnic background can act as a stepping stone towards planning of future environment with children in mind.

Children's responses toward various aspect of representation of physical landscape elements may significantly vary across the ethnic groups. Different concepts may be influenced by their attitude, knowledge, experience, familiarity, and present living environment, parental upbringing, socio-cultural, and many other facets of children's development. Malay, Chinese, and Indian children may portray their ideal home landscape differently. A comparative study may reveal cross-cultural differences in preference and needs in urban Johore Bahru. What ever concepts the children envisage may reflect a picture of environment contrary to what adults may think.

Children of different ethnic groups may communicate significantly different dimensions of qualitative aspects of the environment. Each group of children might foresee the environmental setting in different fashion. Their concepts of permanence have been shaped and may be deeply rooted in ethnicity. The fast changing environment in Johore Bahru may also affect the children's desire for basic ambivalence. Each individual child has a different value and registers a different set of environmental characters, together with features and facilities in supporting their activities and needs in the environment. Imagined ideal landscapes may be embedded with thematic content and a diverse meaningful context or environmental settings as portray by each children. How children of different ethnic backgrounds present emotional and spatial matters as well as attachment to people are also of research interest. Ethnic difference may contribute to each dimension of qualitative aspect of the environment differently as discussed above. Children of different ethnic group may reveal their attachment to different place in relation to physical qualities of preferred home landscape.

Other aspects of children's attachment to animals and wildlife, activities and colour preferences, and finally children home-range and territory may also subject to the variable of ethnic background. Under each aspect, sub-research questions will address important themes or categories that may arise differently across ethnic groups.

6.4 THE ASPECT OF GENDER

Many studies in the past have noted gender differences in children's response to the environment. Aspects of gender are considered "highly important in any consideration of social interactions," (Chazan et al., 1998, pp.17). It was observed that boys prefer spatial arrangement and building with structural component as compared to girls who tended toward furnishing and decorating of interior spaces (Hart, 1987, pp. 11). A study by Rheingold and Cook (1975, cited in Weinstein, 1987) found boys preference for objects oriented has a greater inclination to be away from home. As for girls the objects were closely related to activities toward caring and maintaining of home. It was suggested that boys and girls need to be treated differently as they were different (Hutt, 1972, cited in Bilton, 1999, pp. 65), that led to different societal expectations (Chazan et al., 1998). It was observed in many studies on children and their behaviour in outdoor environment have placed aspect of gender to see the difference between girls and boys within similar contextual location (Cooper-Marcus and Moore, 1976, pp. 24). The findings of most studies on children and their environments looked at and presented significant gender differences between black adolescent children's view their neighbourhood (Ladd, 1970); images of neighbourhood and city amongst different ethnic groups (Maurer and Baxter, 1972); interaction and activity between gender (Rubenstein et al., 1987); gender differences in attachment, sense of control and affect within home experience (Alder, 1996); place preferences (Malinowski and Thurber, 1996); and activity in the social environment of home (Smith, 1996).

In the planning and designing of environment for children, gender difference may play an important role, and vary significantly. Unfortunately, in most cases, hardly if response any has been incorporated in design. In Johore Bahru, young children of multi-racial and of different age group use the outdoor environment freely, indiscriminately without much concern for the need for differentiation between genders. However, their needs and preference, and special requirement may vary to certain extent, offering an opportunity for comparative study.

All the research questions and sub-research questions posed to aspects of ethnic background are equally valid for the variable of gender. Between boys and girls, response in portraying physical landscape components, dimension of qualitative aspect of their environment, attachment to animals and wildlife, various outdoor activities and colour preference, finally their home-range and territory may differ from each group. The difference expected may or may not be significant for each question.

Aspects of home-range seem to be affected by gender difference. Many other aspects of environmental interaction, attitude and behaviour could possibly be gender related. Thus, evaluation of response to various question from gender perspectives may offer variation and diverse informations, prompting a qualitative interpretation on themes and categories applicable to the design of environment to fulfill the needs and preferences of all children.

6.5 CONCLUSION

All the issues pertaining to children's home landscape including elements of physical landscape, qualitative aspects of environment, children's relationship with animals and wildlife, activities preferred, the link between colours and emotions in environment, and children's home-range have been highlighted. Those issues have been projected to reflect the aspect of ethnicity and gender differences that in turn have shaped and influenced the formulation of research questions. Important aspects of research questions are seen as a governing factor that determines or dictate the research method used, i.e children's drawings, questionnaire, and essay writing (see Chapter 7). Research questions help to narrow down aspects of a problem to a more focused and workable setting of boundaries on what will be studied. The next chapter on research methodology will further place the research questions in the broader perspective of methodological framework, and theoretically outline the approach and methods utilised in the research. Certain issues are inevitably inter-connected with certain chapters. Understanding the utilisation of drawings, it's potential and limitations as a data collection technique in Chapter 3 had placed the research framework in a broad approach. Consequently, the choice of research method (Chapter 7) is also partly shaped and influenced by research questions (Chapter 6) to answer research problems. Each of these chapters serve to explain, complement and understand in depth issues and problems which underpin the research.

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Chapter 7

METHODOLOGY: RESEARCH DESIGN AND PROCEDURE

7.0 INTRODUCTION

Many environmental researches involving children in the past aimed to understand and to serve children better. Various approaches have been employed to seek information about children. These include observation, questionnaires, participatory observation, interviews pencil and paper test as well as children's drawings (Chapter 3). In recent decades, more interest has grown in the use of children's drawings in environmental design research in an effort to understand children better especially in relation to children's environmental perceptions and their expectation, concerns for the future (Barraza, 1999), the provision of children facilities in the urban environment, children's participation in community planning (Hart, 1997); children's experience of place (Hart, 1979); children's interaction with the environment (Moore, 1986); and children's evaluation (Moore and Young, 1978). This positive shift has allowed an alternative approach incorporating children's views (Davidoff, 1980) for it provides insights into the many problems relating to children and their environment in urban areas.

As it has been discussed in Chapter 3, drawing is chosen as a technique for data gathering from children for numerous reasons. It is necessary to recall and highlight briefly those important reasons in this Chapter. Children are able to communicate freely by means of drawing (Adams and Ward, 1982). Drawing is cheap, easy and provide "a wealth of possibilities is opened up for the interpretation of individual differences," (Moore and Young, 1978, pp. 108). Drawings can also be used with children as a "quick and effective method to assess their own environment," (Moore and Wochiler, 1974, pp. 107). Moore (1980a, pp. 68) suggests that we can assume children's drawings represent memorable or positively valued environment. Children will include liked items in representing familiar environment as they are prominent in the "schemata used to organize the environment," (Seibert and Anooshian, 1993, pp.619). Drawing are able to "provide richer source of data" and represent preference for environment "more comprehensively," (Moore, 1978, pp. 299). Children's drawings can be used as perceptual method of investigation (Moore,

1980b, pp. 128), answering question of which "parts of the environment provide the greatest pull on children."

Visual methods like drawings can dramatically improve the degree of children's participation (Hart, 1997). It is medium that allows young children to express themselves. "It is familiar, enjoyable for most young children, and inexpensive," (ibid, pp. 162). Through drawings, children can represent their awareness of the visual qualities of the environment and possibilities for improvement as Adams and Ward (1982) explain further:

Children's drawings should be viewed as evidence of a learning process. There are evidence of a search for meaning. Sources to which a child might refer are direct sensory experience, received images, memory and imagination (which of course are dependent on previous inputs of sensory information). The drawing may be seen as a reworking of these as the child attempts to find out, work out, understand or communicate.... in different contexts, different types of drawing serve different purposes. Drawing as analysis contributes to perceptual development in terms of receiving, organizing and interpreting sensory stimuli and discovering relationship between them. Drawing is particular language which the child should learn in order to explain his experience to himself and others. It is a medium for developing perception, a way of communicating a feeling of response. Drawing as communication involves the sharing of ideas, a realization of feeling and thinking processes, and attempt to share them. (pp. 85)

In relation to environments yet to be planned and the use of drawings Canter (1977, pp.160) suggests: "perhaps the greatest potential is for exploring sketches made of places to be created in the future, or of *ideal places*."

The employment of drawings techniques for data collection and object of evaluation however, has some drawbacks. Children are known to possess various level of graphic competence, so the effect of good and poor graphic skills (Moore, 1980a), will need to be considered. There are also practical problems involved in asking children for a drawing (e.g. cognitive map) as some could not express their "environmental knowledge and its pattern of organization." However, "drawing experience and the learning of the techniques as well as spatial knowledge in the resultant product" (Spencer et al., 1989, pp. 106-114). It is also suggested that analysis of children's drawing need to regard their intentions in drawing (Butterworth, 1977, pp. vii-viii) and this can be done by asking children to explain (Moore, 1986) or tape-recorded children's verbal descriptions throughout the drawing process (Spencer et al., 1989). It was found that a child has "more social and geographic knowledge" compared to what is shown in drawing (ibid, pp. 110).

Children in their attempts with three dimensional representation in depicting space, place or larger spatial environment may encounter difficulty in representing three dimensions on two-dimensional paper. From a processual procedure, Willats (1977b) observed various successions of stages from an initial ability to have elements drawn in isolation; elements

drawn in canonical view rather than from actual view for a symbolic representation ; preliminary attempt for perspective; and finally towards adequate perspective as seen in reality (Chapter 2). This differences in graphic representations may also influence children's cognitive representations (Spencer et al., 1989, pp. 115). In relation to the above process, Willats (1977b, pp. 200) suggests for children, drawing is not a mechanical process, but an active, creative, problem solving activity in which concepts are communicated through complex and "abstract rule-systems" created by them. Both advantages and disadvantages using children's drawings as research tool can be summarised in Table 7.1 below.

The Use of Children's Drawings as Research Tool	
Advantages	Disadvantages
<p>Drawing is a valid representation of each child most preferred places (Moore, 1986, pp. 270); what is memorable or positively valued (Moore, 1980a; Siebert and Anooshian, 1993).</p> <p>Through drawing, children are able to portray concepts that related to their lives (Clunies-Ross and Lansdown, 1988). Drawing is valuable research tool for collecting data from children about their knowledge and belief (Oakley et al., 1995, pp. 1032-1033). Children draw both from what they know and what they see. Children's drawings also contain some key information of environmental concepts (Barraza, 1999, pp.64).</p>	<p>Drawings demonstrate a wide range of graphic skills on the part of children (Moore, 1986, pp. 270); difference in graphic representations (Willats, 1977a; Fayol et al., 1995, pp 303).</p> <p>Drawing require graphic motoric competence which is reliable in children age between 7-12 years old (Ziegler and Andrews, 1987); may reflect culture's, gender differences (Hart, 1979).</p>
<p>Drawing is an active, creative, problem solving activity in which concepts were communicated (Willats, 1977; de Bono, 1972); as a tool of enquiry, comprehension and communication (Adams and Ward, 1982); can be used as a quick and effective method to assess children's environment (Moore and Young 1978, pp. 107). There isa universal pattern of development in children's art (Kellog, 1970).</p>	<p>Children possesses more knowledge than is evident from the drawing (Butterworth, 1977; Spencer et al., 1989).</p> <p>Cognitive level is related to children's drawing level (Chappell and Steitz, 1993, pp. 611)</p>
<p>Children can communicate freely, cheap, easy to provide "a wealth of possibilities for interpretation," (Moore and Young, 1978); provide rich source of data and represent preference for environment more comprehensively (Moore, 1978). Through drawings, children can reveal their inner minds (Greig and Taylor, 1999, pp.79)</p>	<p>In drawing, children may employ familiar and streotype images: Images may be directly copied from what children have seen or read (Brown et. al., 1987); limited expression range of cultural-based objects. Using as the primary method for allowing children a voice, leaves for "pre-emption of children ideas by adult interpreters," (Hart, 1997, pp. 162). Children's drawings may be susceptible to false interpretations by a researchers (Greig and Taylor, 1999).</p>
<p>Drawing is fun, familiar communication tool that helps to improve children's participation dramatically (Hart, 1997). Children's drawing is a dynamic representation that can be used to reveal their changing perception on environmental phenomena, and studying their environmental knowledge (Brown et al., 1987, pp. 189).</p>	<p>Children sometimes do not consider drawing as medium to express their ideas seriously, and lack of interest in their drawings (Hart, 1997, pp. 162).</p>
<p>Children are able to recall most detail about places through free-recall drawing (Mathews, 1985): much richer than the verbal data, contained larger variety and greater number of landscape element in the environment (Moore, 1986, pp. 271). Drawings are more than prompting devices but able to convey very powerful messages (Brown et al., 1987). Data collected from drawings are reliable (Blade, 1990).</p>	<p>Individual differences in drawing skills may intefere to make drawings non-comparable; there will be significance differences between gender; facilities or landscape elements with relatively low visibility will not be represented as preferences (Ziegler and Andrews, 1987; Moore and Young, 1978).</p> <p>When analysing children's drawings, important factors like cognitive development and drawing skills need to be considered (Barraza, 1999).</p>

Table 7.1 Summary of Advantages and Disadvantages of Using Children's Drawings as a Research Tool.

Having discussed the strengths and weaknesses of using children's drawings as research tools from various perspectives and approaches, drawing can be appropriately utilised as an effective medium for children to communicate their concepts and preferences of environment. Since one of the important aim of this research is to investigate meanings and concepts of environments children preferred therefore, using drawing as a method allows better understanding of their views through analysis and interpretation of drawings. Qualities of children's environments utilised and meeting their needs can only be understood by giving attention to the "experts" - the children themselves (Perez and Hart, 1980). The approach incorporating children's information is parallel to link between children and the environment especially towards establishing hidden dimension of children's environment as Spencer (1995) puts it:

Children's different needs in and use of the environment perforce leads to a conceptualization of the environment which is distinctive: areas which have high affordances for exploration, play and sociability, areas of exclusion, because the adult world denies children access, areas lacking meaning for the child.

Leading on from this point is the concentration that much research on children's environments has had on the most identifiable and (for the experiments) most accessible elements of the child's world; the school and home.

Future research must thus address the more hidden worlds of childhood.

In doing so, the current wide range of research techniques with children will need further extension, and children will have to join the ranks of research collaborators/informants rather than being seen as the 'subjects' of research. (pp.3-4).

Many public spaces within urban areas are inaccessible to children (Abu Ghazze, 1998, 1999; Spencer, 1995; Hester, 1975), and can be disaster areas for children (Moore, 1989a, pp.84-85). It would appear they are planned and designed by those who either do not know or assume that they know everything about the needs of the children (Spencer et al., 1989). The "wrong" landscape for children can be made or planned in the wrong place at the wrong time (Wilkinson, 1980, pp. 9-20) - a provision which conspicuously fails to demonstrate much understanding of the children's needs and preferences (Spencer et al., 1989, pp. xiv and pp. 219; Spencer, 1995, pp. 8). Perhaps there could be a better and effective mean to promote this understanding by allowing the free expression of children through drawings. It may be possible to incorporate understanding of children's needs into the planning and design of urban open space for the provision of children facilities especially in the city of Johore Bahru, Malaysia.

In relation to the methodological approach, this study aims to find appropriate ways to analyse the children's drawings, then to compare the findings with other data and finally suggest implication of findings for further research and the urban planning system. The research questions that need to be answered may lead to a better understanding of the way children's drawings can be analysed. What can children's drawings tell? and how can the

findings be integrated with the planning for urban landscape environment for children? The fact that in Johore Bahru, very few or hardly any research has been done in this field makes the task difficult and challenging. Several aspects of the method adopted for this study aim to reveal information that can be extended in future research although based on 'Western' concepts. The literature review on children's drawings, their use in an environmental research provides a wider platform for the field research in Johore Bahru.

The overview of the provision and children's use of the environment, provides a better understanding of both how children as users began to receive attention in planned and designated urban spaces. This information is useful in serving two broad purposes. First, as knowledge of the development of attitudes toward children's environmental needs. Second, children's actual interaction with and use of environments provides clues to identify mismatch between planning attempts to cater for or the neglect of children's environmental needs and preference. Many aspects of ethnic or cultural background, gender and different types of environmental settings may influence the end products and will be discussed in later chapter.

This chapter describes the form and methodology utilised in this research. Research design and procedure are regarded as an important part of the research as selected methods for data collection, analysis and interpretation of data will ensure the findings answer research questions. There are six sections in the chapter. It begins by highlighting the scope of the study, stressing literature review, the focus of the research and the point of inquiry. It summarises the research questions raised by this research, thus determining the choice of methodology adopted. The choice of method based on a review of previous methodologies and the nature of research is discussed in the second section. It also seeks to address the research problems established earlier in this research. The research techniques employed in this study are discussed in the third section by highlighting why certain instruments were chosen for the research. The research procedure and the stages involved in the process of data collection are described followed by the conclusion of the chapter.

7.1 THE LITERATURE REVIEW

7.1.0 Aims of the Literature Review

A literature review serves to provide an understanding of a broad field of knowledge on related topics of research. There is a need to be familiar with literature and theoretical frameworks relevant to research as the data interpretation relies on theoretical assumption (Taylor and Bogdan, 1984). The review in this research specifically focuses on theory of children's drawings, the use of children's drawings as research tool in environmental design

and research, and finally the provision for and children's use of urban environments. By reviewing past literature, the researcher becomes familiar with and establishes credibility in the subject of interest, "to decide on the research focus," (Robson, 1995, pp. 23). More important, the literature review serves to create a links to a "developing body of knowledge as a background or context review, " (Neuman, 2000, pp. 446).

Past research reports are important in establishing the significance and relevance of new research questions as they acknowledge and provide a summary of what is known in the related research area. The review helps to pin point the significance of this research: children's drawing as research tool in establishing concepts and preferences, related to current issues and problems, as well as to place this research in a broader context of other research.

This research focuses on theoretical reviews that addressed issues in different ways; historical reviews of provision of children spaces; a methodological review; how past researches or study with children vary in methodology with an emphasis on children's drawings used as research tools. The literature review is also be used as a basis for eliciting and interpreting underlying meanings in the data with reference to the focus and context of this particular study.

7.1.1 Literature on Children's Drawings as Tool in Research

The purpose of the earlier Chapter 2 and Chapter 3 on children's drawings are to highlight the importance of literature reviews on various psychological theories of children's drawings, research and use of children's drawings as a tool and how the this research is placed in a broader context of children's drawings. The understanding of theoretical aspects of drawing justify its use as research tool and serve a basis for analysis and interpretation of drawing data.

As discussed in the earlier chapter, literatures dealing with children's drawings as research tools is broad with a wide range of perspective developed for specific purposes. Within the developmental psychology, most studies have focused on using children's drawings to understand children's development. Psychoanalytic approaches use drawing to understand and promote children's emotional well being. Non-psychological approaches used by geographers, planner and designers, social scientist have interest in children's drawings as a tools for children to communicate their understanding, perception and cognitive ability in relation to certain aspects of the environment.

In Chapter 3, it was found that each study approaches children's drawings differently depending on the aspect(s) of interest or questions they are investigating. The use of drawings is often highly specialised which means it may not be possible to adapt methods for different contexts. Generally, the common task of young children's free drawings involves a single or specific elements of interest (e.g. a house, man, animals, still objects etc.), and is unlikely except for a few (e.g. Lynch, 1977; Barraza, 1999; Chawla, 2001) to include multiple elements or a larger environmental settings (e.g. neighbourhood, or city environment).

7.1.2 Literature on Research Methods with Children and Environment

The literature review on various research methods specifically utilised for data collection and measurement in capturing the quality of children's interaction with their environment serves to increase understanding and awareness of methods of investigating children's relationship with environments (see Chapter 3). The literature on methodologies also highlights specific methods or contexts of research. The literature also acknowledges that most types of methodology are not equally valid or appropriate depending on the age group of the children, and are less influenced by either research questions being addressed or the context of environmental setting being examined (e.g. home, school, street, open spaces etc.).

From a methodological point of view, age group of subjects in this research will determine what methods of investigation for children and their environment are valid and useful. Children of different age groups have different level of cognitive development and awareness that "requires creativity in research design, ingenuity in the development of age appropriate methodologies, and sensitivity in their application," (Ziegler and Andrews, 1987, pp. 329).

Appropriate methods for collecting and analysing information involving children and their environments are normally addressed once the research problem(s), environmental setting, and subject population have been adequately specified. In the case of research investigating children and their environment, there is lack of emphasis given to research strategies designed in a systematic way to assessed alternative research methods *per se* (Betchel et al., 1987; Ziegler and Andrews, 1987). Environmental designers and evaluators tend to neglect gathering data from children as it poses difficulties and differences. Among the many alternative methods of information gathering with children and the environment that have been utilised are: questionnaires; observation and behaviour mapping; verbal description and reports (eg. interview, self-report data using diaries, essay writing); maps

constructed by the children; pictorial sketches and drawings; and modeling environments using toys (see Chapter 3).

Each technique has its own strength and weakness (as discussed in Chapter 3) that varies depending on factors like subject's competence, research questions, and population of subjects. For instance, children aged between eleven to thirteen years have the capability to respond to reasonably straightforward questions from an interviewer, whereas for younger children, direct inquiry through an interview poses difficulty since their language and literary skills are less developed. Instead, structured direct observation of children's activity in the physical environment offers much flexibility in reliability and validity checks compared to interviewing. It is more beneficial to use a combination of strategies in generating relevant questions for the research. "Direct" techniques include pictorial sketches and drawings, maps drawn by children, modelling environments using toys, and verbal descriptions and reports. Verbal description and report are not suitable for young children since they require primarily linguistic modes. As drawing pictures and maps requires graphic skill only they are compatible with children about age seven to twelve years old. The use of drawings as a technique particularly in environmental design and research has been discussed earlier in detail.

The above discussion and discussions in Chapter 3 summarises significant aspects that informed the choice of methods and advantages and disadvantages for this research. It was obvious that children's age group was the most relevant aspect influencing choice of method. Children's drawings offer an edge for a study involving children age 9 to 12 years old despite its disadvantages (see Table 7.1). Many past researches have employed more than one method serving to gauge findings, enhancing analysis and interpretation of data as well as to note the difference between responses. Together with other methods of questionnaires and essay writing to supplement information and serving to check on limitation of findings from drawing. Thus, in this research, the use of children's drawings in conjunction with questionnaires, and essay may help to extend understanding more than if one method alone had been used.

7.1.3 Literature review on provision and children's use of different physical environment settings

Provision and children's use of different physical landscape environment settings such as playgrounds, open spaces, neighbourhood and urban spaces, has been discussed in Chapter 4. Chapter 5 addressed the specific issues of children's environments in the context of open space planning in Johore Bahru, Malaysia. The issues between provision and use of children's environments help to focus significant aspects in the important area of

children's environmental interaction: children's understanding, experience and needs of their surroundings. Understanding provision, children's use and needs in their physical context is an important route into better planning and design of children's environments. Having focused on issues that need further information, the review informs and provides a basis for research questions to address, selection of particular scale and nature of environmental setting for research. Research questions and contextual aspect of this study in turn though to a lesser degree will influence appropriate type of methodology for research with children.

7.2 RESEARCH APPROACH

7.2.0 Qualitative Approach

This research develops qualitative methods which require more effort and time in both data collection and analysis but produce descriptive quality in depth. It is hoped that by adopting this approach, the end-products will make sense in bridging the issues and understanding of children's concept and preference for their environment with the aspects of planning and design of the urban environment as a whole. Quantitative methods offer a larger quantity of input but this research emphasises the development of various analysis techniques for interpreting children's drawings as research tools and establishing what children can or may portray in their drawings using qualitative methods for understand deeper meanings; and how these findings can help authorities and professionals in planning and design of children's outdoor environments. This research applies more than one method for the purpose of data gathering hoping to answer the research questions related to children's drawings and their conception and preference for activity in the landscape environment.

In highlighting qualitative design issues, Neuman (2000) states the contextual approach, forms of data analysis for concept formation, and the strengths of qualitative method as:

... qualitative data are meaningful, not deficient, and central issues are not how to turn them into variables that can be expressed with objective numbers; ... Qualitative data are empirical... Instead of converting ideas or aspects of social world into general variables to form hypotheses, qualitative researchers borrow ideas from the people they study or develop from new ideas as they examine a specific case in its context or particular settings. The theoretical categories that qualitative researchers use to understand and interpret the social world often are in the form of grounded theory. They are motifs, themes, distinctions and ideas that researchers create as part of the process of gathering and analyzing qualitative data. (pp. 144-145)

... qualitative researchers create new concepts and theory blending together empirical evidence and abstract concepts. Instead of testing hypothesis, a qualitative analyst may illustrate or color in evidence showing that a theory, generalization, or interpretation is plausible... a researcher develops explanations or generalizations that are close to concrete data and contexts but are more than simple descriptions... may build new theory to create a realistic picture of social life and stimulate understanding more than to test a causal hypothesis... Explanations

tend to be rich in detail, sensitive to context, and capable of showing the complex processes or sequences of social life. The explanation may be causal, but this is not always the case. The researcher's goal is to organize a large quantity of specific details into coherent pictures, model, or set of interlocked concepts. .. Qualitative researchers sometimes use variables, but more often they use general ideas, themes or concepts as analytic tools for making generalizations. Qualitative analysis often uses nonvariable concepts or simple nominal-level variable. (pp. 418-420)

During the course of the study, as well as making drawings, essays were written by the same children and questionnaires completed. These essays were written in class, under the supervision of the language teacher. The essay entitled: 'Favourite activities I like to do in my ideal home environment.' A content analysis was made of 114 of these essays, to provide a picture of the range of topics discussed, and the frequency with which they were mentioned.

In qualitative research, various research strategies and data collection techniques produce empirical "soft" data in different forms. These can be impressions, words, sentences, photos, symbols, sketch drawings, semiotics (linguistics concerned with signs and symbols), narratives, or even statistics (Denzin and Lincoln, 1994), that require critical interpretation. However, the research report is communicated more effectively perhaps with clear, accurate, and organised writing using simple everyday language, not statistically laden information (Dooley, 1990). Qualitative studies tend to have research questions typically oriented toward "cases" or phenomena, in which unanticipated patterns together with expected relationships are sought (Stake, 1995). In this research, assumptions are made about children's environment based on issues and problems of children's environment. The purpose and aims of the research have clearly influenced the choice of methods utilised.

7.2.1 Data Interpretation in Qualitative Research

Interpretation of data is done through assigning significance or coherent meaning with the help of visual presentations of data in forms of maps, photographs, or diagrams to indicate how ideas or concepts are linked together. Significant data are discussed in the form of words, using supportive evidence from literature, and description, supplemented by numerical informations. Drawings as sources of data are interpreted by aiming to understand children's point of view. With respect to the research interest, the data is interpreted by finding how children form concepts for ideal environment and activity they prefer, and what the environmental types and preferences meant for children.

7.2.2 Significance of adapting text interpretation methods to drawing

Drawings can be interpreted by assigning meanings to them, translating into "words" according to messages they conveyed in order to make them "speak." A drawing's interpretation starts with children's point of view, geared towards finding how children see their environments, define the situations which concern them or identifying the salient, grounded categories of meaning held by children (Neuman, 2000, pp. 148; Marshall et al., 1995, pp. 114; Taylor and Bogdan, 1984, pp. 9). "Word" is smallest element or unit in content analysis technique (Berg, 1989, pp. 112). Through content analysis, the data can be further analysed by "organising words into categories on the basis of themes, concepts or similar features" (Neuman, 2000, pp. 420).

More than than one method was utilised for "complementary strength." The three methods of children's drawings, questionnaire, and essay writing were to be used sequentially; starting first with drawings, followed by essay then finally with questionnaire. This approach is not a triangulation (Stake, 1995, pp. 107; Robson, 1993, pp. 383; Neuman, 2000, pp.124) process in a real sense however, it enables the findings to be reviewed and interpretation to be made from several angles. The research explored diverse measures of children's landscape - their concepts for and activity preference in an ideal residential environment. Concepts, insight and understanding are developing from patterns in the data. The data may also contain contradictions and negative cases and further analysis will deepen understanding as it will provide useful sources of insight (Taylor and Bogdan, 1984, pp. 139).

7.2.3 Drawing's Qualitative Approach

Is a picture worth than thousand words? Pictures or in this case drawings take the place of words or at least convey something that words cannot (Taylor and Bogdan, 1984, pp. 119) and drawing used along side other methods of social investigation (Bryman and Burgess, 1999, pp. xxii). Understanding children's drawing involves process of translating or interpreting into words to make sense or capture the "structure" of environment in question especially aspects of environment that are positively valued and preferred.

The first stage of analysis involves translating and interpreting children's drawing by assigning meaning with words in the form of landscape elements. Then followed with coding of data, examining in various ways as possible to recognise patterns or looking for emerging themes. Environmental typologies or classification scheme are constructed from drawing data to help identification of themes and to develop concepts and theory. Interpretation and

theory is formed through concepts development and theoretical propositions. The framework or concept from literature is borrowed if the concept fits the data (Taylor and Bogdan, 1984, pp. 132).

Drawing data is coded, a process which brings together and analyses all data based on themes, ideas, concepts, interpretation, and proposition. By listing possible themes, concepts, interpretations, and propositions, coding categories are developed. Coding categories are then further analysed and refined through sorting to compare data that relates to each theme, concept and proposition (ibid. pp. 136).

7.3 THE RESEARCH METHODS ADOPTED FOR THIS STUDY

7.3.0 Drawing, Questionnaire and Essay Methods

The primary method used to gather information for this research is children's drawings. Close-ended questionnaires, and children's essays were also utilised (see Appendix III and Appendix IV for questionnaire and essay formats). Several reasons justified the choice of employing these three methods. Previous sections have outlined briefly some of the problems associated with the employment of different methods. As mentioned earlier (see Chapter 3), free drawing presentation or "graphic unstructured" (Matthews, 1995), or "visual presentation method" (Ball and Smith, 1992) offered the most appropriate means by which the research questions (see Chapter 6) could be answered. The drawing technique may stimulate and influence children's response on their environmental knowing. Perhaps, in describing imaginative preferred home landscape "unstructured stimuli" of free-drawing, children would be able to achieve good results. The task may involve in representing frequented areas within preferred environment, and children are found able to recall most details by free-drawing (Matthews, 1995, pp. 103). Other reason for this perhaps, is that drawing as visual mode play an important role in children's life. This is parallel to a view that social world is in part a seen world and visual representation have meanings that can be analysed (Ball and Smith, 1992, pp. 3-5 and pp. 28-31). The use of questionnaires allowed the research to gain pre-constructed input from children which may not have been possible by using other methods for reason that will be discussed later. Essay writing or "linguistic unstructured" techniques allowed children to express their feelings, desires or wishes, thus "convey irrepressible liveness" (Hole, 1967). These two latter methods would serve to help interpretation of drawings.

Had this research been more focused on establishing children's concepts and activity preference in their landscape environment within a specific neighbourhood or a housing estate in the city of Johore Bahru, a more elaborate method (ie. an interview, observation, behavioural mapping, and focus group) might have been used. In drawing's task, by asking children to portray their ideal home environment and activities was to evaluate children's concepts, their expectations and preferences for the future environment. Similarly, Barraza (1999, pp. 53) used time frame of fifty years by asking children to draw how planet Earth may look after so long for the purpose: 'to evaluate children's perceptions about the present and their expectations and concerns for the future.' However, the intention of this research was to examine the planning and design implications of children's environment at the larger urban scale, and as such required a different approach. It is believed that apart from answering questions that are crucial to the objective of providing the best possible outdoor environments for children in the urban context, this research also addresses to some extent the lack of research in this area in Johore Bahru. Future research projects could use the platform provided by this research. The data gathered, inevitably can help in the formulation of a wide range of study by other researchers into the environmental needs and preferences of children's environment.

7.3.1 Analysis of Drawings

The analysis of drawing starts with coding of landscape categories on the basis of landscape themes, or similar landscape features or elements. For this purpose, aspects of new landscape definitions or environmental concepts are developed and formulated. The relationship between landscape environmental concepts will be further examined to possibly linked to each other in term of sequence as "oppositional sets," or as "set of similar categories" interwoven into theoretical statement. It is necessary in this research to explain how drawing data is analysed explicitly step-by-step and is open for inspection. This approach in analysing children's drawings qualitatively may be acceptable and appropriate in answering research questions to serve the aims of research.

7.3.2 Analysis of Essays

Children's essays of "my design of ideal home environment" and "my favourite activities I like to do in ideal home environment," were analysed with content analysis. The reason for this approach is to gain a deeper understanding that enables comparisons and generalizations to be made. Secondly, the sorts, the meanings of ideal home environment content-analysed as these enable shared conceptualisations and activity preferences to emerge.

In content analysis, first the large written text is reduced to data of more manageable content categories. This procedure involved in transcribing the essays and extracting key statements which are grouped together on the basis of conceptual similarity from resulting categories with collective titles. During the procedure, care was taken to ensure that key themes, concepts were identified within the context of the task guided by themes concepts developed earlier from children's drawings. Any idiosyncratic statements expressing common themes and meanings were allocated to their appropriate categories. In assigning themes from data, the attempt was to keep written data in as pure a form as possible. This is done in anticipation that content analysis has its own limitation for instance, the researcher may impose their own interpretational framework on the written data and in doing so, increasing the likelihood of loss of meaningful data.

The approach in keeping written data as original as possible may help to maintain themes or categories so that the interpretations may not be detached from what conceptually perceived. Reducing information to a form (eg. frequency, percentage) that can be analysed using simple statistical analysis and to make intersubjective check of findings from drawing and questionnaires may allow cross-checking on the replicability of themes and categories. Any irrelevant and non-comparable concepts and themes from drawings, questionnaires, and essays when grouped together were not considered for further analysis and interpretation.

7.3.3 Analysis of Questionnaires

Data from questionnaire was coded, analysed and enter into a SPSS, cross-tabulated to summarise numbers that represent numerical data in simple descriptive statistics: to describe the numerical data of one aspect ("variable") with frequency distribution (percentage). This analysis represents value of aspects which measure ethnic and gender characteristics of children's environment - home landscape.

The finding which is "a condensed picture" of the questionnaire data were compared, presented in form of charts or tables to clarify the data. The data were also summarised significant environmental features based on findings from drawings. Further interpretation, categorising, formation of themes and gave meaning to the findings were necessary especially for answers from open-ended questions. Any irrelevant and non-comparable data were not considered for further analysis and interpretation, and were not reported in this research.

7.3.4 Relevance of Children Residential Environmental Study

As one of the objectives of this research is towards formulating planning and design guidelines and policy for future provision of children facilities in urban environment. A study of children's ideas of their "ideal home environment" thus, provide a relevant contextual approach to understanding issues and response to actual residential and broader urban environment. This approach is parallel to Bronfenbrenner's ecological system theory (see Section 1.0.4, Chapter 1) that "views the child as developing with a complex system of relationships affected by multiple levels of the surrounding environment," (Berk, 1997, pp. 24).

Children's environments have to be viewed in broader - unlimited events and conditions that go beyond child immediate space of home. Children's environment is made of a "series of nested structures that includes but extends beyond home, school and neighbourhood settings," (ibid, pp. 24) influence children development and their everyday lives. Residential environments provides a basis for connection among other environmental systems such as play spaces, street, school and wider rural or urban environmental settings. Ideal home environment is usefully relevant especially to children as it may offer better access to local resources, contribute to supportive neighbourhood needs for the child to live in a safe, clean and healthy environment and to engage in free play, leisure and recreation (Malone, 2001).

7.3.5 Factors Affecting Methods Adopted for this Study

The drawing method selected for this research was very much governed by social and psychological factors touched upon in Chapter 1. The community of Johore Bahru, Malaysia's most Southern City is very distinct society in the Western Peninsular of Malaysia. There are three main races in West Malaysia, the Malays, Chinese, and Indians. In spite of being closely assimilated and linked in everyday life, the separate cultures of Malaysia's many population groups remain largely intact. While maintaining their beliefs and culture, Malays are muslim, the majority of Chinese are Buddhist, and Indians are mainly Hindu. The children of this multi-racial society mix freely in schools and at public or neighbourhood facilities such as park and playground, or at commercial, recreational and leisure facilities.

Although Malay is the official language, children are free to speak in their mother tongue whenever they wish. The multi-racial character of Johore Bahru's population has contributed to a certain amount of cultural diffusion. Due to its geographical location and the relationship

it has with other parts of the region (ie. being a commercial port and acting as southern gateway), the many cultures and inter-mixing of people, Johore Bahru's society tend to be much more open in actions and belief. However, despite this moderation, the society still remain "suspicious" of new ideas and is "withdrawn" on some issues such as child upbringing and maintains an authoritative relationship between the adult and children. In the case of researching into children's social-behavioural aspects this fact is an obstacle. This kind of work has never been regarded as necessary or important. This situation has lead to random sampling methods from schools with the permission of school authorities as gate keepers. It is important that schools supported and were willing to cooperate in this research work.

7.3.6 Reliability and Validity of Research

In research, both reliability and validity are important aspects that concerns relationship between measurement and construct. Good research findings must aim for reliable and valid measurement as much as possible. "Reliability means dependability or consistency," suggesting "that the same thing is repeated or recurs under the identical or very similar conditions." Validity suggests truthfulness and refers to the match between a construct or the way the idea in a conceptual definition and a measure is conceptualised. In other words, validity concerns how truthful the reality of phenomena measured by research fits with the construct described to understand it (Neuman, 2000, pp. 164).

Consistency over time of various method used (e.g. in this research: children's drawings, questionnaires, and essay) is important to achieve reliability. However, the interactive process of data collection evolving setting and context (different schools and locations), some measure cannot be repeated. As for this research, the variety of approaches has benefit of opportunity to cover key aspect of cultural diversity that exist in children's environment. In this qualitative research, validity means authenticity: attempting to give an honest account of children's phenomenal landscape. The core principle of validity is truthfulness, i.e. avoid false or distorted accounts. Neuman suggests that it can be achieved by creating a tight fit between the understanding of ideas and statements about the subject's spatial environment and what is actually occurring in it. In order to be valid, a measure has to be reliable and match the definition of the construct. A measure can be reliable but not valid and the close relationship between reliability and validity can be explained further. As Neuman (2000) puts it:

Realibility is necessary for validity and is easier to achieve than validity. Although realibility is necessary in order to have a valid measure of a concept, it does not guarantee that a measure will be valid. It is not a sufficient condition for validity.... Validity and realibility are usually complementary concepts, but in some special situations they conflict with each other. Sometimes, as validity increases, realibility is more difficult to attain, and vice versa. This occurs when the construct has a highly abstract and not easily observable definition. Realibility is easier to achieve when the measure is precise and observable. Thus, there is a strain between the true essence of the highly abstract construct and measuring it in a concrete manner... measurement issues ultimately return to assumptions about how to conduct research and how the concepts are defined. (pp. 172)

The realibility and validity of the findings from research can be ascertained provided bias is avoided. Drawing method would have been slightly better alternative to questionnaires, interview or essay writing as children's linguistic or verbal competence may not be equal among the children within the same range of age group. Drawing which only require graphic motoric competence, is however appropriate for the age range of children respondent with a minimum degree of difference in competence variable.

Despite only a small sample size of 114 involved, represented each of ethnic groups and genders (Table 7.2), it allows a rigorous qualitative analysis and interpretation for a reliable findings and conclusion and the sample need not be representative to the population of children as a whole. What is important in sampling "is their relevance to the research topic rather than their representativeness which determines the way in which the people to be studied are selected" (Flick, 1998, pp. 41). The important aspect of sampling in qualitative research is to focus on specific issue, i.e. in this case is children and their environmental concepts and preferences. Neuman (2000) explains about sample representativeness in qualitative research:

Qualitative researchers focus less on a sample's representativeness or on detailed techniques for drawing a probability sample. Instead, they focus on how the sample or small collection of cases, units, or activities illuminates social life. The primary purpose of sampling is to collect specific cases, events, or actions that can clarify and deepen understanding. Qualitative researchers' concern is to find cases that will enhance what other researchers learn about the processes of social life in a specific context. For this reason, qualitative researchers tend to collect a second type of sampling: non probability sampling. (pp. 196)

In this research, "nonprobability" or "nonrandom" samples means that the sample size is not determined in advance but based on quota sample, predetermined by ethnic groups, gender and age group categories to reflect the diversity of children population in Johore Bahru. The purpose of sampling is to get possible cases that fit children's specific criteria, i.e. selected from various urban schools who would, otherwise be difficult-to-reach. The research is also based on theoretical sample as the cases chosen will help reveal features that are theoretically of interest and important that provide new insight about children's

environmental settings. It is acknowledged that the research endeavour is carried out within limited time and financial resources.

GENDER	ETHNIC GROUPS						TOTAL	
	Malay		Chinese		Indian		SAMPLE	
	No	%	No	%	No	%	No	%
Boy	16	14	15	13	15	13	46	40
Girl	22	19	23	20	23	20	68	60
TOTAL	38	33	38	33	38	33	114	100

Table 7.2 Distribution of children sample in research. A total of 114 children are equally distributed across ethnic groups.

7.4 RESEARCH DESIGN

The research started with a series of research questions and sub-research questions, developed during data collection process, together with rough definition of the phenomenon (see Chapter 6). The data collected would help to build or develop a theory through the interpretation of data, making comparisons in a flexible manner that may change the focus of research, research questions by being readily open to accept unexpected results. The theory develops "without any particular commitment to specific kinds of data, line of research, or theoretical interest," (Strauss, 1993, pp. 5). This is an inductive method or process (Fielding and Fielding, 1986, pp. 44; Taylor and Bogdan, 1984, pp. 5; Berg, 1989, pp. 110-111; Patton, 1990, pp. 425; Strauss, 1993, pp. 10-12; Neuman, 2000, pp. 145) in which the theory is developed from data or grounded in the data. The aim of grounded theory is to develop a theory. It is a method for discovering new theory that is honest to the evidence (Taylor and Bogdan, 1984, pp. 146). In grounded theory, data and theory interact making qualitative research flexible as Bryman and Burgess (1999) put it:

Grounded theory is meant to be an iterative process in which the research begin to collect data grounded by a rather general view of the research issue, theorises about his or her data..., examines these initial theoretical reflections by carrying out further data collection, theorises further, collects more data and so on. The idea is progressively to elaborate a more general theoretical statement about the data. What is crucial is that the theory is grounded in and a product of the data. (pp. xxv)

The research depends on interpretation (Stake, 1995, pp. 41). The interpretation of data plays an important role in this research as the findings are discussed in the qualitative children's social-environmental context. In interpretation, Patton (1990) describes various processes:

Interpretation by definition, involves going beyond the descriptive data. Interpretation means attaching significance to what was found, offering explanations, drawing conclusions, extrapolating lessons, making inferences, building linkages, attaching meanings, imposing order, and dealing with rival explanations, disconfirming cases, and data irregularities as part of testing the viability of an interpretation. All of this is expected - and appropriate - as long as the researcher owns the interpretation and makes clear the difference between description and interpretation... The emphasis (interpretive explanation of qualitative analysis) is on illumination, understanding, and extrapolation rather than causal determination, prediction, and generalization. (pp. 423-424)

In relation to this research, the process of interpretation eventually illuminates the concepts formed and activity preferences in ideal landscape environment settings. Qualitative design is appropriate to explain how children portray concepts and enables the researcher to see the phenomena from various perspectives. Qualitative methodology also emphasizes validity in research (Taylor and Bogdan, 1984, pp. 7). Aspect of ethnic background and gender difference will only be discussed and highlighted if significantly different. Both children, their settings, and phenomena are viewed or treated holistically (Stake, 1995, pp. 43). Holistic characteristic of qualitative study means "its contextuality is well developed; it is case oriented; it resists reductionism and elementalism; and it is relatively noncomparative, seeking to understand its object more than to understand how it differs from others," (Ibid, pp. 47).

Another approach in this research could have been to convert all the children's concepts of environment into variables that can be precisely measured and assigned with objective numbers such as frequency. However, the aspect of environmental concepts primarily need to be viewed as being intrinsically qualitative. The data from drawings are expected to produce information about meanings that children are trying to express through their artful visual images expressing their feelings. Through drawing, children are able to express meaningfulness and feeling about environment related to them (Lowenfeld, 1987, pp. 319), thus "drawing comes to satisfy a need for expression," (Read, 1969, pp. 113). These can be considered as tangible aspects of children's environment. Some researchers have used children's sketch drawings to examine how children experience (Hart, 1979; Cooper-Marcus, 1978), interact with environment (Moore, 1986), evaluate their environment (Moore, 1974a, 1974b, 1980b, 1981, 1989a). These in turn are able to measure children's perception, attitude, preference, and their cognitive ability.

The analysis of drawing was carried out qualitatively more rigorously using several appropriate approaches selected from vast literature, predominantly a combination of an artistic approach and clinical-projective approach (refer Chapter 2). Artistic approaches concern individual emotional expression and perceptual and cognitive-development of children. Clinical-projective approaches are based on emotions and motives children project

in drawing. The questionnaires were analysed using a simple statistical analysis of SPSS for both cross-tabulation and frequency count whenever appropriate. Content analysis was used to analyse the essay contents. The drawing, essays and questionnaires undoubtedly probed some of the many research questions that were identified in Chapter 6.

7.4.0 Research Context

It is important to acknowledge the context in studying children's environmental settings. Context will influence the children's thought and action. There could be many aspects that exist surrounding the focus of study, within different ethnic, cultural background, similar cases may have different meanings. Here, the research has recognised the important of children's home environment in relation to larger environments of neighbourhood setting and urban environment. Each environmental setting gives meaning and, has tremendous influence on children's development. Thus, children's environment should not be viewed narrowly as a limited environment surrounding the child (Berk, 1997). It is important to place the small part of children's environmental context into a larger whole in order to acquire a clear meaning of the part. Each individual component or element in children's environment gives meaning to each other part, and element and without the whole these have little meaning.

7.4.1 Research Procedure

The method used in the research is concerned with gathering of information with regards to children's environmental concepts, preferences, and activities in outdoor residential environments and beyond in Johore Bahru. As explain earlier the sample is not fully representative of the whole population. The sample used consisted of three different ethnic groups of children with different genders aged from 9 to 12 years-old (year 3 to year 6 in primary school). No effort was made to diversify the sample in terms of social economic status, and residential types. However, the selection of types of school and location that participated in this research program helped to ensure that findings are relatively reliable in relation to recognising the cultural diversity of the city and gender differentiation and similarity. Therefore, the findings should accurately reflect some of the present environmental issues facing the planning and design professions who need to decide on provision of facilities and needs for the whole population of children.

The selection of schools was based on certain criteria. Firstly, they had to be urban. Second, the willingness of headteacher or headmistress to allow school children to participate was necessary. Thirdly, to ensure a sufficient sample of children from different ethnic backgrounds participating, a number of Malay, Chinese and Indian schools within Johore

Bahru district were approached. Finally, seven schools agreed to participate in the research program.

7.4.2. Drawings

The drawing task was conducted during the art class with the help of art teachers. Children were asked to complete two drawings each. For the first drawing, children were asked to design their "ideal external home environment. "For the second drawing the children were asked to draw: "My favourite activities in an ideal external home environment."

In pilot work, these two tasks together seem too tedious and repetitive and were not treated significantly differently by the children. After experiencing this with the first school, the researcher decided to combine the two tasks into one: "My design of ideal external home environment and my favourite outdoor activities."

Each child was given about 45 minutes to complete the drawing task. No paper and colouring materials were provided unless requested by the children. If they requested material, they were given a white cartridge paper size 15 in X 11in and a set of 6 coloured pencils or a crayon and a black felt tip pen size 0.4. The reason for this approach being, some children are more familiar with the type and size of paper and colouring materials they have usually used in art class. Reasonable care was taken to be more flexible for choice of materials and resources, not to imposed on any children restriction from using their familiar or favourite media as it will placed them in state of reluctance to cooperate. What is more important than a standardised materials is an assurance that children have fun and enjoy their drawing like any other learning task to yield an enjoyable but serious result. The same instruction and procedure for each school was strictly maintained throughout.

7.4.3 Essay Writing

Once the drawing task was completed and collected, the essay exercise followed soon afterward either the same day or the next day depending on the immediate availability of language class in their time table slots. The length of time lapse between the drawing and essay exercise was not controlled as it was difficult to do so because of class time table and school's activity. This aspect was not taken into consideration in the research and it was not known whether this has affected on the content of the essays.

The essays were obtained from all children who had completed a drawing task ealier. Each child was asked to write two essays on a standardised format A4 paper in class during language session under the supervision of language class teachers. The essays were

entitled "my design of an ideal home environment" and "my favourite activities in my ideal home environment." The scope of subjects varied, depending on the introduction of the subject by the language teacher and the way children understood the particular task and context of environment (likely to be different from drawing task). The purpose of the essays was to gain further insight into children's concepts, needs and preferences for activities.

In all, 114 children participated. All 228 essays were analysed using content analysis. They provide a picture of the range of topics discussed, categories of concepts, themes, and activity by frequency with which they were mentioned. Content analysis produced broad mentioned range of topics mentioned by children which were analysed by frequency and grouped into general categories. A selection of items which were less frequently mentioned are also looked into. All findings were analysed for differences between the ethnic groups and genders.

The essay exercise "went smoothly" without much problem as it was a straight forward and familiar task for all the children. The only exception was the variation of context and expressive language terms used across different genders and ethnic groups of children. Chinese and Indian children may have had more restricted literary expression due to limited language vocabulary as the essay needed to be written in "*Bahasa Malaysia*" (Malay language). It is expected that essays of this nature can also indicate conscious or unconscious wishes for natural features associated with parks, open spaces, village or countryside, flowers, trees, grass, animals, forest, rivers and other waterbodies. This essay study may provide information about context or locations for activities according to children preferences as they recount imaginatively and creatively designed environments and their favourite activities. However, as Hole (1967, pp. 30) reminds us, "any qualitative analysis cannot convey the irreplaceable liveness of the essays."

7.4.4 Questionnaires

Questionnaires were designed to provide information that may or may not appear in children's drawings. They were designed to gather information on children's environmental settings, imaginary concepts of home environment, experience and desires in spatial configuration and activity preferences. Before the distribution of the final form of questionnaire, a pilot survey was carried out on small sample of school children to ascertain the children's understanding of the questions especially the terminology used and issues involved in the questionnaires. The result was children especially amongst Chinese and Indian children found it quite difficult to understand even the simplest terms used without prompting or being given translation into more common terms or equivalents to the children's own language. The first draft was also found to be too time consuming and

tedious as most children found it like sitting for examination. Chinese and Indian children were assisted by their language teachers and two research assistants that volunteered in this research program assisted in helping understanding the questionnaire by translating to the nearest equivalent to Mandarin and Tamil languages. With this help, children managed to complete all the questionnaires successfully.

The questionnaire was conducted after both drawing and essay exercises. It consisted of two parts. The first part dealt with conception of outdoor environment and the second part was related to activity preference. The questionnaire was completed with the help of teachers during a 45 minute language class. In some cases, normally with Chinese and Indian children, the task took more than one class period. This was inevitable as because of language differences, the children needed further explanation to fully understand the terms used in the questions. Occasionally, the teachers helped in translating questionnaires into Mandarin or Tamil languages.

7.5 QUALITATIVE MEASUREMENT OF DATA

7.5.0 Purpose of Measurement

In this research, it is necessary to use a wide variety of technique to measure the data. Children's drawings become prime visual data supported by written text from essays and questionnaires. Measurement of data employed various flexible processes (e.g. formation of themes, categories and frequency of elements etc.) to allow the rich data to be interpreted into various forms, formats, and shapes. The analysis involved the use of ideas and data to empirically represent concept, and "measurement is a process that links data to concept," (Neuman, 2000, pp. 158). Literature review provides ideas on many broad concepts that help during data collection activities. Both method of measuring and data collection is a continuous and interactive process.

The purpose of data measurement is to help is to help in placing the "hidden" aspect of children's drawings to make sense of the otherwise unknown. The interest is on children's concepts of environment and activities using various approaches to measuring aspects of the children's ideal landscape environment. The measurement process has to rely on the use of a wide variety of techniques to measure (as developed in different disciplines), as well as creating new measuring technique. The process in measuring has to be flexible to allow the information in the data as empirical representations of concepts seen in different ways.

7.5.1 Qualitative Measurement Process

Qualitative data measurement involves a process of using concept, idea, or construct, to develop a measure (a technique, a process, a procedure, etc.) in order to observe data empirically. Qualitative measurement follows an inductive process: started with data, then abstract ideas, then relating ideas with data and finally combine ideas and data. The above process can be defined as "conceptualization and operationalization in measurement," (Neuman, 2000, pp. 158). Conceptualization is the process of taking a construct and refining it by giving it a conceptual or theoretical definition. A conceptual definition is a definition in abstract, theoretical terms. Conceptualization is organisation and make sense of data. Data is analysed by organising it into categories on the basis of themes, concepts, or similar features. New concepts are developed, conceptual definition are formulated, and the relationship among concepts are examined. Eventually each concept is linked in terms of sequence, as oppositional sets, or similar categories interwoven into a theoretical statement. Operationalization is a detail description of how a researcher collected and thought about the specific data that become the basis for concepts.

7.5.2 Level of measurement and analysis of questionnaires data

The level of measurement explains the way the construct is measured. The measurement is an important idea and widely used although abstract in nature. The construct is assumed to have or conceptualised having particular characteristics. The two important aspects i.e ethnic background and gender difference influence the use of level of measurement. The lowest level of measurement is nominal that measure a difference among ethnic categories or background: Malay, Chinese, and Indian. In the questionnaire, it included the ordinal measure that indicate a difference, together with categories can be ranked or ordered in term of children's opinion. Other levels of measurement include a ratio or a proportion (e.g. parent's household income).

Two important factors were considered in constructing the questionnaires. The time taken for children to answer the questions, and a need for clear concise format for a simple construction of the questionnaire to allow children that hadn't any experience in answering questionnaires before. Therefore the most important aspect in constructing questionnaire for children respondents is to ensure 'childlike' format which is simple and that allows them to answer quickly. Simple levels of measurement have to be employed in order to achieve simplicity in the questionnaires.

The nominal level of measurement was used in the questionnaire of the research, ie. to classify an aspect (variable) into pre-established categories. This level of measurement allowed an easy understanding by type of respondent's aspect (variable) and gives a relatively short period of time to answer the questions. There will also disadvantages with this approach as more complex methods of analysis cannot be utilised with the nominal level of measurement. However the interest of this research is to consider the many issues that are involved in the topic and provide a basis for future research, then the nominal levels of measurements and the method of analysis that can be employed thereafter will serve the aims of the research well. Apart from nominal levels of measurement used in the questions, a ranking order of answers was used to allow a more definite means of tapping into the answers children gave compared to the simplicity of the nominal method where there can be only one distinct answer to a question.

The results from the drawing, questionnaire and essay exercise were overwhelming. Initially, thousand of drawings, questionnaire and essays generated from the research project have to be sorted out prior to analysis. However, only those who successfully completed the task were selected for further analysis. Missing and incomplete tasks were not included in the analysis. It is worth noting that although with clear repeated instruction in the procedure, both the teacher and children sometimes misunderstood or misinterpreted them all together. Sometimes, some children that have completed the first task, were unfortunately not available for the next two task for unforseen circumstances. The selection were done only to find 114 children manage to complete all the three tasks successfully.

7.5.3 Sampling

Despite a relatively large "sample" of children who produced 114 drawings, 228 sets of questionnaires, and 228 essays, it needs to be emphasised that this was not a statistically represented sample (see Section 7.3.6). Johore Bahru, with a population growth of 2.2% per annum, has a population of 2,731,000 by the year of 2000 with 909,423, on average 33.3% of total population of children are less than 15 years old (Director General EPU, Prime Minister Department: Seventh Malaysia Plan, 1996). No substantiated planning and design decisions can be taken from this unrepresentable sample. However, with qualitative approaches it is hope to compensate this weakness for by the richness of material and depth of study.

7.5.4 Aspects Of Socio-economic Status (SES)

The children in this study come from different socio-economic groups. Most of their parents have completed primary and up to secondary education (Malay: 66%; Chinese: 82%; and Indian: 81%) and the remaining have either completed college or university education (Malay: 33%; Chinese: 18%; and Indian: 20%) (Table 7.3). The above figures are mutually exclusive representing children in this study. It is expected that those from less educated background will earn less as they belong to unskilled or semi-skilled worker of lower and moderate "middle class" society. However, their parents educational background is not truly reflected in the household income bands. For instance, 74% of Indian parents are working class people with income some of them well below the national median, earning between less than RM500 (£89) to RM1,000 (£178); 79% of Malay parents are earning between RM500 (£89) to RM2,000 (£357) and majority of them known to work as a government employees; and 60% of Chinese parents have a higher income level between RM1,000 (£178) to RM3,500 (£623) as they are likely to be involved in business (Table 7.4).

PARENT EDUCATION LEVEL	ETHNIC GROUPS (%)			GENDER		TOTAL SAMPLE
	Malay	Chinese	Indian	Boy	Girl	
Primary school	20	29	39	31	29	30
Secondary school	46	53	42	47	48	47
Polytechnic/ College	16	10	10	14	10	12
University	17	8	10	9	13	12

Table 7.3 Education levels of children's parents in the study.

HOUSEHOLD INCOME (In RM)	ETHNIC GROUPS (%)			GENDER		TOTAL SAMPLE
	Malay	Chinese	Indian	Boy	Girl	
< 500	0	3	42	12	16	14
501-1000	58	5	32	28	33	31
1001-2000	21	26	16	22	19	20
2001-3500	8	34	5	14	16	15
3501-5000	3	16	3	12	5	7
5001-7500	8	13	0	10	9	9
7501-10000	3	3	3	2	3	3
> 10000	0	3	0	2	0	1

Table 7.4 Distribution of children's parents household income.

It is clear that the Chinese children are slightly better off in term of financial status and their way of life in material terms is substantially higher than that of the Malay and Indian Children generally. The financial status of parents is not wholly reflected in the types of residence they live in. Children's residences are scattered within the inner-city location and the

amorphous portion of the western and eastern suburb of the city location. The inner city residential areas are mainly either high class low density at the central area or a high density neighbourhood at the western part of the city. The northern and eastern areas are part of existing housing and new developments of large housing settlements outside city growth areas for future expansion.

The majority of the children in this study live in terraced houses in various "housing schemes" (Malay: 61%; Chinese: 66%; and Indian: 40%). Other residential types like bungalow (6%), semi-detached house (9%), village house (10%), and low-cost house (5%). A higher percentage (29%) of Indian children live in highrise flats (Table 7.5). Flats are built to cater for the needs of housing for lower income groups. Village houses are typical single unit traditional or vernacular houses normally built on stilt using natural materials such as timber. This traditional village house has a form which is rich and symbolic meaning associated with social-cultural life and natural surrounding area in rural settings. A low cost house is a typical terrace house in a housing scheme built within minimum cost of RM25,000 (around £5000). This type of house provides minimum and basic requirement in term of floor space and facilities, and is mainly built to cater the needs for working class people of lower income group.

RESIDENTIAL TYPES	ETHNIC GROUPS			GENDER		TOTAL SAMPLE
	Malay	Chinese	Indian	Boy	Girl	
Bungalow	11	5	3	7	6	6
Semi-detached	11	13	3	11	7	9
Terraced House	61	66	40	48	60	55
Village	8	3	18	9	10	10
Low cost house	0	5	8	9	1	5
Condominium	3	0	3	0	3	2
3-5 Storeys Flat	8	8	21	13	12	12
> 5 Storeys Flat	0	0	5	2	0	1

Table 7.5 Children's residential types (all figures are in percentage).

Household income does not necessarily determine the types of residence but does influence the location and the living environment whether of higher or low class or poor living environment. Both the types of residence and locations reflect the advantages and disadvantages to children as the surrounding environments may differ in other ways. Different parts of the city vary in landscape quality (Figure 5.3 and Figure 5.4 in Chapter 5). A new urban housing schemes of various density are often built with minimum outdoor facilities particularly for children. Low density high class residential areas within the inner city have "rich" open spaces and vegetation and seafront views. High density flat have basic amenities fulfilling standard planning requirements for living environment of low and medium

income groups. This standard requirements include provision for basic internal spaces (living, kitchen, bed, and bath spaces), and external facilities such as playground for children, small open spaces for park and garden, parking facilities for residents. Other facilities may also include community centre, religious building and a day care centre.

7.6 QUALITATIVE DATA ANALYSIS AND INTERPRETATION

7.6.0 Analytical Approach: Identification of Categories, Themes, and Developing Concepts.

In qualitative studies, research approaches are inductive, creating meaning and making sense of data by either applying existing analytical schemes or systems, or by creating new schemes based on literature review (Ely et al., 1994). As Fielding and Fielding (1986) put it:

Qualitative work is inductive rather than deductive. One does not start with hypothesis, but rather generates hypotheses from the data. "Analytic induction" reverses the procedure of hypothetico-deduction, which works from the "top" down. Instead of beginning with theoretical premises, predicting a pattern of results, and examining the data to test the deduction, one starts with data, then develops theoretical categories, concepts, and propositions (Glaser and Strauss 1967). (pp. 44)

In this particular research, qualitative data is in the form of children's drawings representing ideal residential landscape, and in their written essays. The drawings were analysed and interpreted qualitatively. Interpreting drawing data implies qualitative analysis. Since there is lack of precedent in analysing drawing data qualitatively. Thus, "given the lack of previous research with analysis of drawing" (Blades, 2000), this research will be used what ever best way to interpret the drawing to gain the maximum amount of information from them (Section 7.2.2 and Section 7.2.3 for detailed discussion on drawing methods interpretation). The essays were analysed using content analysis- a process for identifying or classifying, coding, and categorising the important patterns and relevant information in the data. In content analysis, a set of procedures will be used in order to make valid inferences from text data through data-reduction process into content categories (Patton, 1990; Weber, 1990).

The constructs from drawings, essays and questionnaire were compared analytically using basis statistics of frequency and percentage. It can be assumed that qualitative analysis of drawings is reliable and valid as various stages of procedure for interpretation is systematically followed. This approach helps in gaining deeper insights and meanings. Drawings, perhaps like photographs can provide an excellent source of data for qualitative analysis as they can lend insight into what is important to children in how they portray their environment.

Qualitative analysis involves inference - passing judgement, and using reasoning, to reach a conclusion based on evidence. The central process to data analysis is comparison, looking for patterns, categories, themes, aspects either similar or different (Neuman, 2000; Ely et al., 1994; Taylor and Bogdan, 1984; Marshall et al., 1995). The findings from the interpretation of data help to develop explanations or generalisations which are 'rich in detail, sensitive to context, and capable of showing complex processes or sequences of social life,' (Neuman, 2000, pp. 419). The goal of qualitative analysis is to organise a large quantity of specific details into a coherent picture, model, or set of interlocked concepts. The explanation may either be highly unlikely or plausible. A "case" may be built or conclusions suggested with supportive evidence but without "proof." "Proof is elusive in qualitative research. Qualitative research can probably demonstrate plausible support for conclusion and interpretation, but never truly prove them," Taylor and Bogdan (1984, pp. 139-140).

Conclusion are built through a sequence of events or steps of a process in which less plausible explanations are eliminated. Sometimes it is difficult to see generalisations in qualitative findings because of the descriptive analysis approach and a potential lack of theoretical analysis. The finding in this research is provided and supported by quasi-simple statistical evidence in form of frequencies or percentages for the conclusion.

Whilst studying data, concepts are refined or new concepts are formed. The formation of concepts or themes is part of the process of data collection and analysis. Therefore, conceptualisation or thematic formation are a basis for both organising and giving meaning to data (Neuman, 2000, pp. 420). Data analysis can be approached by organising it into categories in the form of themes, concepts, or similar features. It is possible to develop new concepts, formulate conceptual definitions, and examine the relationship among concepts. Concepts can eventually be linked to each other in sequences, or as oppositional sets, or as sets of similar categories intervoven into a theoretical statement. Conceptualisation or formation of concepts develops through studying and asking critical questions of data, developing a story-line to answer the question "what is this a study of?" (Taylor and Bogdan, 1984).

7.6.1 Analysis and Interpretation Techniques for Drawing

The procedure for qualitative analysis of drawing starts with content analysis, thematically coded through successive stages of open, axial and selective coding using a tentative set of categories developed earlier from theoretical and review of past researches. It is also analysed with the aim of making cross-cultural or ethnic and gender comparison and tabulated with computer. Thus, aspects of ethnic and gender become a guiding categorical framework in both analysis and interpretation of drawing data throughout. The significance

of data is acknowledged through discussion. Drawing analysis is administered through a comparison process allowing for patterns, categories, themes and aspects to emerge if either they are similar or different.

During initial stages of analysis, categories or patterns, themes and aspects emerge (e.g. physical landscape elements: paths or linkages, climatic aspects, attachment to people and animals and wildlife; qualitative aspects of environment: type of setting, scale, exploration and adventurous quest; use of colour in environment: colour preference; environmental concepts: character or value, outdoor facilities, and activity preference; expressive qualities: main themes portrayed by drawings, meaningful context, presence of figures, emotional content and spatial matters) through cross-referencing with existing analytical schemes available (e.g. Barbey, 1974; Moore, 1986; Moore and Young, 1978; Hart, 1979; Spencer et al., 1989; Titman, 1994; Barraza, 1999 etc.). The theory is built by making comparisons emphasising the critical context of children's environment, placing part of children's social environment into the larger whole of urban environment. For each part or element of children's environment, meaning is given through interpretation, facilitating understanding through translation, and each part or component without the whole has less meaning. In analysing data from drawing, missing patterns or concepts and themes are also considered to provide different insight, open to the unexpected for children's environment.

7.6.2 Data Coding in Qualitative Research

Qualitative data can be organised into conceptual categories and possible lists of themes or concepts. Coding is an integral part of data analysis, guided by research questions and geared toward theory and generalisations. Strauss (1993) defines coding as "representing the operations by which data is broken down, conceptualised and put back together in new ways. It is a central process by which theories are built from data. Thematic coding is based on an effort to capture the qualitative richness of (in this case) the content of children's drawings. Four approaches to the development of themes through studying drawings can be used. First of these is to recognise patterns in the data; the second is to think in terms of systems and concepts. Third, having broad understanding and in-depth knowledge (e.g., it helps to know psychology of children's drawings and research using drawing as a method to understand children's drawing). Finally, having relevant information about children and environment settings helps to code themes about children's concepts and environmental preferences.

There are three types of qualitative data coding involved in analysis or interpretation of data: open coding, axial coding, and selective coding (Ibid). In early phases of data analysis, open coding is used as it involves categorising the data into possible themes with initial codes or

labels assigned to the collected data. At this stage the formation of concepts and themes are tentative and flexible in manner. The preliminary themes that surface from the data are very much subjective in nature, guided by the initial research questions, concepts in literature or ideas prompted by the data.

Axial coding involves reviewing and examining the initial codes as well as a new ideas followed by organisation of ideas or themes into the axis of key concepts in analysis. Many questions will be asked during axial coding to determine the possible causes and consequences, conditions and interactions, strategies and process, and categories and concepts that group together, e.g., several related concept can be combined into more general categories. Axial coding serves specific purposes in the process of consolidating factual evidence as Neuman(2000) puts it:

Axial coding not only stimulates thinking about linkages between concepts or themes but it also raises new questions. It can suggest dropping some themes or examining others in more depth. In addition, it reinforces the connection between evidence and concepts. As a researcher consolidates codes and locates evidence, he or she finds evidence in many places for core themes and builds a dense web of support in the qualitative data for them. This is analogous to the idea of multiple indicators described with regard to reliability and measuring variables. The connection between a theme and data is strengthened by multiple instances of empirical evidence. (pp. 423)

Finally, selective coding evolves important and significant themes from the data and codes. The selective process involves choosing cases that define themes, data comparison for similarities and contrasts. This is carried out once concepts are fully developed and overall analysis is then centred around several core generalisations of ideas. The final analysis and search is guided by more elaborate major themes or concepts, that help to refine and tighten up ideas.

7.6.3 Missing and "Negative" Evidence

Qualitative analysis and interpretation is concerned as much with what is absent as it is with what present in data. Missing patterns or absent concepts (Neuman, 2000) and "disconforming" evidence (Ely et al., 1994) can be important for analysis as they can reveal a great deal and provide valuable and fruitful sources of insight. With respect to this research, various kind of negative evidence were considered including: missing components or elements of landscape, or that of expected activities which where not drawn and "the small-scale, loose-part relationships" (Moore, 1980a, pp. 72), or low visibility elements that are not represented in drawing. Analysis of negative instances will deepen understanding, i.e., the purpose of negative case is to disprove then to reformulate the phenomenon towards establishing a 'universal relationship within a broad range of cases' (Taylor and Bogdan,

1984). Perhaps, having the relationships of ideas represented visually through diagram (Riley, 1990), for instance with the "mind maps" helps in finding missing evidence.

7.6.4 Content Analysis

Content analysis is a qualitative method used to deduce facts or statements from text (in this case essays) using certain procedures involving various process of measurement, indication, representation, and interpretation (Weber, 1990, pp.80). The objective is to code open-ended, non-structural written text, and in the case of this research is the children's written essays. Free witten essay is non-structured technique of stimulus as children can reposit their ideas freely. The writing can only be influenced by knowledge and literary skills and not by the procedure itself.

In order to gain deeper understanding and to enable comparisons among different ethnic and gender groups of children, generalisations need to be made. Children's essays on ideal home environment and activities were analysed through content analysis. Secondly, the patterns, and meanings of ideal landscape were content-analysed, This enable shared conceptualisations of environment to emerge, both in terms of concepts and activities.

Following Weber (1990), content analysis was applied to essays to reduce the large volume of writing texts to more manageable content categories. This procedure involved transcribing the texts in children's essays and extracting key statements separately from both descriptions and sorts. These were grouped together on the basis of conceptual similarity and the resulting categories were given collective headings. Key concepts were identified through careful analysis within the context of task: concept of home environment and activity preferences. Thus, many idiosyncratic statements by children expressing common concepts or meaning were allocated to their appropriate categories or themes. It was crucial to avoid the loss of meaningful data, i.e. not to impose the researcher's interpretational framework on the data. In the analysis, attempt were made to maintain data in original form of children's words as much as possible, while maintaining concepts and collapsing categories or themes to a form possible for simple statistical analysis i.e., frequency and percentage. To avoid overly subjective category schemes, an intersubjective check of finding from other methods of drawings and questionnaires was made which highlighted the replicability of the analysis whenever appropriate and necessary. The key statements and lists of category headings were used for descriptions and a sorting process of collapsing to more refine and reliable categories and themes was carried out.

7.7 CONCLUSION

The methodological approach adopted in this research adapts approaches used to analyse text. Investigating children's concepts of ideal landscapes in particular involved a process of searching for authenticity within the context of study. The processes involved throughout are inseparable. Importantly the qualitative approach is flexible, and involves a learning process through study of the data. Another important justification is this research is more incline towards pragmatic recommendation for change. Change can be an outcome of better understanding of children's as the users of outdoor urban environments in form of planning policies, and design guidelines. It has to be action oriented. Therefore, a more purposive and applicative approach may be suitable for appropriate change and may contribute a greater impact compared to statistic-laden research data (Cooper-Marcus and Moore, 1976). However, some analysis was presented in simple statistics format to identify some broad issues and problems. In doing so perhaps, it provides a better platform to assist further research in the near future. More realistic knowledge from research has an applied purposes that can fill the informations or theoretical knowledges "gap" between practitioners like planners, designers, policy makers, environmental managers etc.

There are approaches and methods in analysing qualitative data that demand more effort to analyse and reanalyse the data, abstracting to develop themes or concepts and make 'comparison based on logic and judgement,' (Neuman, 2000, pp. 441). In qualitative analysis, the data need to be analysed several times, rigorously and thinking seriously about the data, immersing oneself in data. Several stages or steps are involved in methods of analysis or interpretation of the data. Two primary forms of analysis were carried out- simple qualitative work done to establish common and uncommon themes and ideas in the children's drawings. In parallel qualitative analysis using coding of categories, a thematic structure explored common themes in greater depth. There is also a need to incorporate negative evidence and events that are not present in the data. The findings and discussion of this process will be addressed in Chapter 8.

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FINDINGS AND DISCUSSION

8.0 INTRODUCTION

This research has been conducted to investigate children-environment concepts and preferences by studying visual representations of their ideal residential landscape and activities within these places. The investigation included children from three different ethnic/cultural groups - Malay, Chinese, and Indian and different genders aged between nine and twelve year olds. The children came from a range of urban neighbourhood environment in Johore Bahru, Malaysia. The main aims of the study were to investigate what children's drawings may represent of concepts of and preferences for environments. The issues are viewed from three different cultural perspectives and gender differences and similarities (see Chapter 3). The effectiveness of children's drawings as a research tool and as media for communicating to represent environmental concepts and activity preferences is also a primary point of this study.

This chapter presents the findings based on a thorough analysis of drawings using primarily qualitative methods with some simple quantitative approaches. The data was collected and analysed, employing the methods described in Chapter 7. Two primary forms of analysis were carried out - simple quantitative work was done to establish common and uncommon themes and ideas in the children drawings. In parallel, qualitative analysis using coding of categories, a thematic structure explored common themes in greater depth. The findings and discussion are primarily based on analysis and interpretation of children's drawings. Findings from questionnaires and essays are presented together with drawing interpretation and analysis, used in conjunction either to support or contradict the findings from drawings. The findings can be seen as indicative of some issues and problems that exist in urban environments for children - residential neighbourhood areas, parks, playgrounds, streets, and other larger environments. The findings hopefully can be further utilised and will assist future research on children and environment in Johore Bahru.

There are six sections in this chapter, each deals with a separate theme : physical landscape elements; climatic aspects; relationships of children with animals and wildlife; the broader landscape context, the house and its relationship to landscape; spatial dynamics or spatial relationships, and individual-social relationships in landscape settings; and finally an outdoor activities preferences. The findings are presented along with discussion to enable a better understanding of the phenomenon. Across the presentation and the discussion of the findings, an attempt is made to search for plausible explanations for any "negative instances" (disprove inference or contradict statements of fact illustrating a general truth about children's and their environment for which an assertion is valid), or unexpected findings and apparent patterns found in data. In particular difference and similarities between ethnic and gender groups are explored. Problems that have been identified in the method for this research and a more general comment and conclusion of the findings and the research as a whole will be addressed and discussed in Chapter 9. Other researchers may find the findings useful in guiding a new direction in their investigations.

8.1 INFLUENCES ON CHILDREN'S DRAWINGS

While portraying images in communicating ideas, there are various possible sources of influence on children's drawings. The most obvious ones include the existing residential and broader urban environment, the mass-media such as television, PCs or computer games machines, books, magazines, comics, peers and parental influences. As children's drawings rely on "cultural graphic model," images may be borrowed and passed on to children by adults and other children (Wilson, 1985). Within a small cultural environment such as school and neighbourhood, both peers and media (such as textbook art, comic books) may influence and provide graphic models from which children draw their inspiration (Wilson and Wilson, 1987).

Children in this study lived in different residential types within urban neighbourhood environment of Johore Bahru (see Table 7.5 in Chapter 7). These difference residential environments may influence the types of environments children depict. The similarities in cases indicate the possibility of some human constants in the way children use their environment. Eng (1954) reported that children from good and poor crowded residential neighbourhoods and urban environments displayed the influence of environment upon drawing they produced. This influence was in form of quantity and the range of colours used in their drawings. However, there was no essential difference in quality of drawing produced by different groups of children from both environments. Thus, it was suggested that the children's drawings were determined by "inner factors" of social, cultural, independent of their environment (Eng, 1954, pp. 187). In this study, it can be argued that various neighbourhood environments may not influence on drawings products (e.g. different

preference for physical landscape elements) but experience and familiarity may affect ideas represented in drawings.

8.1.0 Influence of Media

For some children, television has an impact on their knowledge, beliefs and attitudes, mind and behaviour (Clifford, 1995; Gunter et al., 1997) as well as influencing children's cognitive and perception (Berry et al., 1993). The knowledge and source of information that provides various kinds of learning from watching television (Gunter et al., 1997), promote children's skills from pictorial messages or images (Wober, 1988). Thus, television could be major source of ideas influencing what is depicted in drawings. Watching television is an activity which "provides benefits in the form of relaxation, an outlet for imagination and creativity," through a graphic capability (Sanger et al., 1997, pp. 8-9). Children are concern with television as it occupies most of children's time and are enjoy watching television while indoors (Howard, 1998; Murray, 1976; Wilkinson, 1980b; M.o.H.L.G., 1970). Although outdoor activities and settings were shown or suggested in drawings, some children (15%) presented an indoor environment with the presence of television, or external features associated with watching television such as external antennae and parabolic discs. It seems to be though that children preferred playing outdoors than indoor (Moore, 1986). In questionnaires and essays there are also mentions of watching television (10%). The data is too scarce for making comparison but their depictions in drawings and mentions in questionnaires and essays indicate that children find it attractive.

Watching television may effect experiences, and social or physical spheres which are crucial to cognitive and mental development (Sobaihi, 1995). Certain television programmes like cartoons and children's stories are used by children as an aid in social, recognition and belonging when they learn and discuss with peers (Von Feilitzen, 1976). Information, entertainment, socialization, understanding of social events and practices learned from television may have an effects on children (Dembo and McCron, 1976; Von Feilitzen, 1976). It may also capture an unleashes the child imagination (Kniveton, 1976). What has been "consumed" by children through television may have an influence upon their drawings as part of learning process - transmitting what it is learned and informed. In one instance a dominant character in children's television programme was copied from memory.

Other mass media such as prints in form of comics, magazines, books that are very specialised in content and functions may have possible effects on children's attitudes, behaviours and minds. Ideas from books may influenced and adopted or copied (Brown et al., 1995) by children while representing their perceptions or concepts of environment in

drawings. This however, may be true to some children especially amongst Chinese children as supported by findings from their essays:

"I have a wish to build a house like 'Garfield' with one big swimming pool. I also like to rear a few colourful fish in a big beautiful fish pond. My house would be made of sugar because I have seen one story book entitled 'Sugar House.' My house would be painted red, black, blue, purple, orange and gold. I would like to plant hisbiscus, bougainvilla, roses and colourful flowers around the house. I would like to rear a few animals like dog, cat, bird and tortoise. I would also like to have a fruit orchard, a vegetable garden to grow various fruit trees and vegetables for my family. I wish my dream home of my design will one day become a reality." (Chinese boy, age 11)

8.1.1 Influence of Geography Education

The teaching of geography is through the subject called "Man and Environment" covering general aspects of health, science, geography, history, and civics or cultural studies in primary school currilum under the New Primary School Curriculum (*Kurikulum Baru Sekolah Rendah* or *KBSR*) have started in 1983. The teaching of this integrated curriculum may influence children's cognitive mental development as the aim is to "produce intelectually, emotionally, spiritually and physically well-rounded students," (Keong, 1990, pp. 98). Knowledges and skills learned in class too could possibly transfered to other form of task whenever appropriate.

8.1.2 Influence of Art Education

Through the activity of art, children will be able 'to heighten their awareness of, and to express their thoughts and feelings about people, objects and event of significance in their lives (Willig, 1990) using visual symbols as a medium. Through a visual form, children's art offers another glimpse of their conceptions of the world, expressed not in verbal but in visual form. Through art too, children have the opportunities to experience "*making*" and "*designing*." Art may involve inventiveness and direct observational copying (Lancaster, 1990).

In Malaysia, art education although commonly part of curriculum areas in school, however, is not regarded as an important subject as compared to other subjects like mathematics and sciences. This is judged by the ranking for art subject in the selection purpose for streaming and school's allocation in the *New Curriculum for Primary School* (KBSR) examinations. As comparison, in the US too, art is lowest on the list of subjects that the public consider important, and the public attitude towards arts is marked by ambivalence (Herberholz and Hanson, 1990). This low priority for art education is probably due to public ignorance about the new developments that have evolved in art education. In Malaysia, though, the Ministry of Education is concerned with art education with the establishment of art as an examinable

subject in the school curriculum (Sabapathy and Piyadasa, 1983). However, children are not given sufficient guidance towards understanding and mastering the use of appropriate techniques. Thus, children are left more than often to develop, pursue skills, interests, and talents on their own unguided in creating quality art works. From observation, art education in primary schools in Malaysia has not been given priority and is not taken seriously in developing a continuous interest among children. The lack of guidance for children towards understanding and appreciation of art as an integral part of education of young children in primary school, may mean children conclude they have no naturalistic talent in art and begin to abandon it. Only a few children talented or gifted in art may be able to pursue their learning about art formally and seriously at the higher level, in college or school of art.

With the formulation of National Culture Policy and National Education Policy in 1971, there was an effort to develop and promote cultural education in Malaysia through active involvement in school curriculum including arts. 'Work of art which are based on the local culture have also been encouraged as part of the effort to create national solidarity,' (Deraman, 1984/1985, pp. 21) and this direction is significant resolution influencing the development of art in general. For example, the arts and culture centre in Johore is an 'ideal' art centre where facilities are provided for various activities and creative works in the field of the children arts and painting (ibid. pp. 32). Malay language and culture values became the basic foundation for a new cultural vision. Many artists, searching for Malay themes and influences to project this new culture have utilised diversified approaches including Malay-Islamic revivalism.

Through art education, the activity of art in art classes may influence the way children express their thoughts and feelings about people, object and events of significance to them. The school may also influence children's skills through a richer intellectual environment, increasing experiences and through training to widen their mental capability (Eng, 1957, pp. 10). In art, what is important to children is included and their concepts of environment around them will be expressed in visual form (Willig, 1990) based on general principles of what they know or being taught in class. Thus, their thoughts on ideal home environment may have been exposed to influences of ideas, beliefs and actions from informal learning of art in school, peers and adults or their own creativity. In the questionnaires, children acknowledged sources of idea they have used in their drawings (Table 8.1).

8.1.3 Influence of Adult's Arts

Art works produced by adult artists may be found in art galleries, museums, offices or produced in full-colour reproduction in books, magazines or children's art books. These include the past and contemporary art works and they may have direct or indirect influence upon people's perception who view them. For instance, a picture on the wall of one's home is supposed *'to bring some kind of elevating spirit into life,'* (Lowenfeld, 1987).

SOURCE OF IDEAS FOR DRAWINGS	ETHNIC GROUPS (%)			GENDERS (%)		ALL CHILDREN
	Malay	Chinese	Indian	Boys	Girls	Total (%)
Own creavity	32	5	27	23	18	20
Television	13	25	24	20	21	21
Reading	20	36	26	24	31	29
Experience	18	10	17	17	13	14
Other people	17	24	6	16	17	16

Table 8.1 Possible source or influence on ideas for drawings based on findings from questionnaires.

In relation to children, some of them may have the opportunity to see the works by adult artists and perhaps offer a stimulus and idea that enrich the children's aesthetic learning. Children may concern about the technique, form, media or compositional structure of any particular associated work of adult art that interest them. Through the process of drawing or painting, it is a media by which child, like adult, communicates ideas and feeling about their world around that concern or interest them. Looking at the development of art in Malaysia, may helps to understand its importance, in the context of this research is a vital part of themes, elements, or compositional structure in general. The attempted focus, though difficult is to look for the possibility of dominant form, character, style or perhaps conventions of art that all may offer a link to influence upon children's drawing. Thus, for brevity purpose, the following discussion will focus on possible influences of adult's arts on children's drawings while highlighting distinct artistic approaches throughout historical developments of Malaysian art in general.

During the colonial times, there was lack interest in art at all as it had served limited function or purpose therefore, was not developed. In the early 1930s, exposure towards the naturalistic and realistic have brought change in the perception of reality and environment of local arts scene. As a result there was growing interest in natural local landscape with water colour as prime medium (Piyadasa, 1981 c.f in Piyadasa 1993; Sabapathy and Piyadasa, 1983). Another approach was influenced by an artistic-fusion between Western and Far Eastern called the '*Nangyang*' approach. In this approach, the representational works

based on various subject of interest were produced mainly derived from local surrounding landscape themes, genre scene and still lifes (Leng, 1988). A variety of landscape settings such as fishing and rural villages, riverfront scene, cityscapes and religious buildings were the focus of art works in effort to reflect a "cultural identity," (Sabapathy and Piyadasa, 1983). In giving an example to highlight this approach, Piyadasa (1993) explains:

The brilliance of the Nanyang artist' syncretic approach is best epitomised by Cheong Soo-Pieng's "Tropical Life", 1959 which reveals an admixture of Chinese ink and gouache techniques, the use of rice-paper as a ground and the rendering of stylized figure-types that are rendered in a cubist manner. The figure have been isolated into groups by the vertical tree trunks and the picture format which is derived from the handscroll allows for a left-to-right or a right-to-left reading. (pp. 172)

In this study, some children drawings have displayed local nature of "tropical environment" settings as a important theme while depicting home landscape (Figure 8.2a). However, it is inconclusive to suggest children's interests on natural local landscape was connected to the above type of adult's early art works either seen else where or being taught in art class. Another important development in art during the 1950s was the concept of local culture or ethnicity which underlay themes using a wide range of individualistic styles to project a self-conscious notion of *"Malay-ness"*. Their representational arts borrowed ideas from everyday lifes, traditional culture, and regional myths as portrayed for example in Patrick Ng's 1959 *"Spirit of the Earth, Sky and Water."* The use of natural elements in the painting was highly culturally influenced and equally interesting as the influence of natural elements in compositional structure of the art work and this is further analysed by Piyadasa (1993) as he writes:

The further demarcation of the natural landscape into three zones (i.e. the sky, the earth and the water realm) derives from cosmologies traceable to the tribal cultures of Southeast Asia. The work exudes a natural regional predilection for surface decoration and tight spatial organization. The earth mother to whom the nature spirits have come to pay homage appears twice in this painting which is, perhaps, one of the finest works ever produced by a Malaysian artist. (pp. 173)

With respect to the above art style, children in this study utilised many ideas using natural landscape elements in compositional structure of their drawing: earth, grass, vegetation and water. Those natural elements become part of their representational drawings portraying ideal home environments. In the mid-1960s onwards the Malaysian art dynamically grew and more significant into post-colonial developments. The agenda had shifted that art became a 'means in projecting an image of national pride and identity,' aspects of local culture played more dominant role in shaping and influencing the art. The reason why culture as a core component in art development in Malaysia can be fully understood as a result of multi-ethnic society that allows both conflict and assimilation, and according to Piyadasa (1993):

The subsequent growth of modern art in Malaysia has revealed essentially pluralistic tendencies, as might be expected of a multi-racial and multi-cultural milieu lacking a homogenous cultural ideology. Further, the freedom of expression allowed in the visual arts and the easy exposure to contemporary international frames of reference have resulted in developments peculiar to the Malaysian context. The polyglot situation has meant that Malaysian artists have been able to borrow from diverse cultural sources for their artistic influences - a tendencies that persists unabated. (pp. 170)

Further development of Malaysian art in the 1960s and the 1970s was the adaptation of the abstract expressionist idiom formed through individual gesture, feeling or expression in the integration of local elements in art-making process. For example the integration between elements from Islamic and Chinese calligraphic traditions (Jamal, 1988), the use of shapes and colours borrowed from the rich tropical flora and fauna was an innovation and assimilation conceptually based on idiom but with a local adaptation. Later with the aim of re-discovering Malay cultural values, forms, and aesthetic principles, art developed dimensionally through incorporating various influences from traditional Malay architecture, traditional crafts, and folk art forms.

On a similar tone, an aspect of cultural awareness amongst children may have been built consciously or unconsciously and projected onto their drawings as part of interest on local flora and fauna and traditional architecture form (Figure 8.2c). Children however, may not fully understand and be capable of employing the approach or techniques used by adults but they may have the ability to integrate all the local landscape resources or elements in depicting ideal home landscape. They may also be aware of all the possible elements available for use in drawings only limited by drawing skills. In the early 1980s, Malaysian art development extended its boundary to include more regionalist perspective within Southeast Asian identity. Many factors have shaped and influenced the interest and concern of the artists including rapid development, urbanization in the city however the cultural and ethnicity remain the focus of their main themes. This is well discussed by Piyadasa (1993):

On one level, the rapid modernization and industrialization process have resulted in the dislocation of an earlier way of life and numbers of artists have turned to the country's immediate past and history for their subject matter. A nostalgia for the "vanishing scene" has brought with it a new consciousness of the inherent beauty and uniqueness of the Malaysian situation and several artists have chosen to project images linked to the country's different peoples, its unique way of life and its rich and diverse heritage of cultural forms. The approach of the artists may be either idealized or confrontational, but the works produced are always representational, employing diverse stylistic approaches. The artists involved in the neo-regionalist development are drawn from all the ethnic groups. They act as a counterpoint to the strictly ethnocentric Malay/Islamic impulses. The search for cultural identity and a sense of cultural continuity within a multi-racial context need not be restricted to one vision of reality alone. (pp. 178)

The review of art development from historical point of view has cast light how the surrounding environment, perception and cultural forms have had shaped the focus of interest and laid the basic philosophical foundation that encourage thought about the art. Similarly, some children in this study have expanded their perspectives into incorporating not only local environment, culture but at the same time "Western culture" that influences their art forms. "Western" influences, for instance were manifested through houses in forms of "burger," "balloon," and "pineapple" (Figure 8.5e, Figure 8.6g, Figure 8.6l) - a worldwide stock-in-trade that becomes a child's new vocabulary mediated through media in highly urbanised commercial children's living environments.

Art work may have influence the society in many ways. It can influence children's drawings as children are able to copy of the work of others including of adults in the style that local culture prefer and perpetuate (Kellog, 1979). In this way, adults have children feel the influence in their art works either indirectly in the home or directly later in the school through art education. Children in school are exposed to various past and contemporary art works and these artistic encounters that compare and contrast art may influence their expression and imagination in images they create. However, it is difficult to measure to what extent the adult's art can and/ or have influenced upon children's drawings. The review of Malaysian art development had highlighted among other thing, peculiarity and distinguishable styles, interests , approaches and influences that may possibly have shaped the products of children in general.

8.1.4 Influence of Culture

For Malay children, the teaching of Qur'an may be another source of influence on their thinking about concept of home environment as a heaven. As for the Malays, Islamic teaching believes in the Garden of Paradise, a beautiful garden with flowing river and abundance of fruit trees as described in the Holy Qur'an:

But those who believe
And do deeds of rightenousness
We shall soon admit to Gardens
With rivers flowing beneath
Their eternal home:
Therein shall they have
Companions pure and holy:
We shall admit them
To shades, cool and ever deepening.

(Surah Nisaa, or The Women 4: 57)

And the shades of the (Garden) will come low over them
and the bunches (of fruits)
There, will hang low
In humility.

(Sura Dahr, Time or Insan or Man 76: 14)

Source: Ali, Abdullah Yusuf (1968) The Holy Qur'an: Text, Translation and Commentary.

The above extract from Qur'an is an attempt to explain small part of what Islam is in relation to the true meaning and purpose of life: to live by natural universal values for those who believe as a Muslim. Although adults are able to fully understand the broader meaning and thinking behind the teaching, e.g., in ever expanding circles of neighbourhood, community, the environment however, children (Malay) may be influenced as member of a family and community. Influence upon children's understanding is perhaps reflected in their attempts or wishes to represent literally a house as a heaven with garden, river, and fruit trees. The mention of "a house is my heaven" in essay for instant may be an attempt to interpret the above belief literally.

Among the Chinese culture, some believe and practice the art of "*Feng Shui*" that surrounding environments can either further the aim in life or work in a opposing manner. The fundamental principle is everything in the world can be seen in terms of two kinds of energy (*chi*): passive and active, or "*Yin*" and "*Yang*". With relation to this concept, in landscape "*Yin*" and "*Yang*" dimension: a peaceful areas such as forest or woodland close to a slow-moving river or shaded green meadows - have more "*Yin*" influence on "*chi*" (energy) (Brown, 1997). It was not known, and very unlikely Chinese children understand or are aware and relate their preferences similar to adult's way of looking and associate themselves with the surrounding world. Nevertheless, it may influence children's attitudes and behaviours in relationship with other people and surrounding environments unconsciously as they live in and are part of adult's world.

For many Indians, Hinduism is a way of life, a large and rich culture, an environment that envelops a Hindu from before birth to after death. Hinduism is a culture, a religion to provide followers with notions of human perfection and ideals of life (Klostermaier, 2000). The *Rgveda* is one of the oldest Hindu teaching books; one could say that in general, one of the characteristics of the *Rgveda* is mysticism. Such mysticism is used for rites of passage in reciting *Vedic* hymns (religious 'knowledge' or scriptures of Hinduism) for instance Vedic sacrifice 'To Earth':

Earth, you bear the heavy mountains.
You quicken, with your many streams, the soil.
Our songs of praise are celebrating you,
Expansive, bringing forth the clouds.

You are bright, and you hold fast
The forest trees in the ground,
When rain pours down from the skies,
Lightning rending your clouds.

Rgveda V, 84
Source: Klostermaier (2000), pp. 24

Lord *Visnu* is associated with the sun and its movement across the sky. 'Descents' of *Visnu* can take many different bodily forms including animals such as fish (*Matsya*), tortoise (*Kurma*), boar (*Varaha*), and man-lion (*Narasinha*) intimately connected with images and in the ritual of image-worship (Klostermaier, 2000, pp. 60; Chaudhuri, 1979, pp. 46 and 51). It is very unlikely that children's representations of landscape elements, the sun, clouds, mountains, forests, trees, in their drawings come from the influence of religious beliefs. Children's attachment to animals as depicted in drawings may result from their interest and strong affection for animals, especially pets rather than religious fulfilment.

However, much of Hinduism, apart from anthropomorphic figures used in all worship in a temple, Hindu people consider the *tulasi-plant* (sacred basil) as embodiments of *Visnu* and Indian families normally keep in their homes *tulasi* plant in a pot for ritual purposes (Klostermaier, 2000, pp. 63) (see also Table 8.2). Some Indian children in the study have mentioned planting of plants in home compound for flowers to be used in ritual activities.

There is also an aspect of hygiene as part of religious requirement; an example of this is the 'ecological' prevention of water pollution. Taking a bath in a river for instance is considered a special ritual called *tarpana* which is still widely practised so as to please deities and deceased ancestors. Representations of rivers in drawings are not for ritual purposes but are for adventurous pursuit like fishing and depicting rural or village settings.

The above brief discussion on Hinduism as part of Indian culture has highlighted various aspects of practice and belief in everyday life that may or may not cast influence either directly or indirectly on children. Religion as a way of life is relevant in Indian families as the practice involves children at certain stages of their life. However, it is not known and it is difficult to estimate the extent of religion as a cultural influence on children's formation of concepts and ideas about their environments.

ILLUSTRATIONS



a. A big house with parabolic satellite discs suggest type of indoor activity.



b. Highly decorative and painstaking details of pond and planting.



c. The needs for streets, cars, play fields, rivers and hills as part of home setting. Watching television is a favorite activity too.



d. Some drawing shows preference for a flat earthy ground.



e. Gate and fencing are for security and the street is only for cars.



f. Play on street-skating.

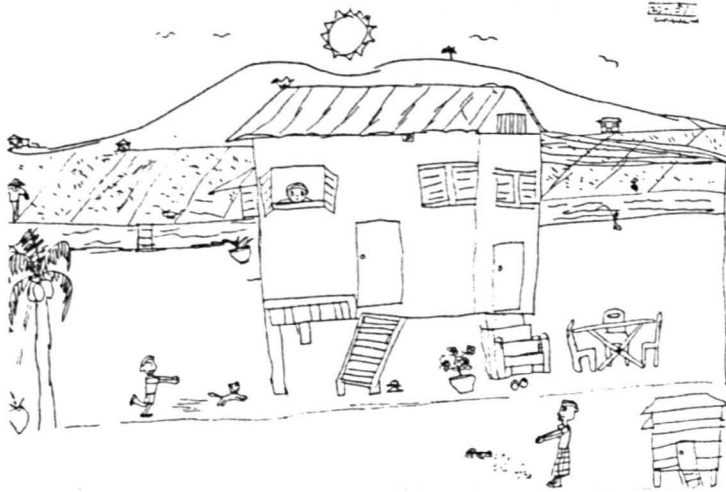


g. A highly equipped house with many facilities including tree house, pond and swimming pool.

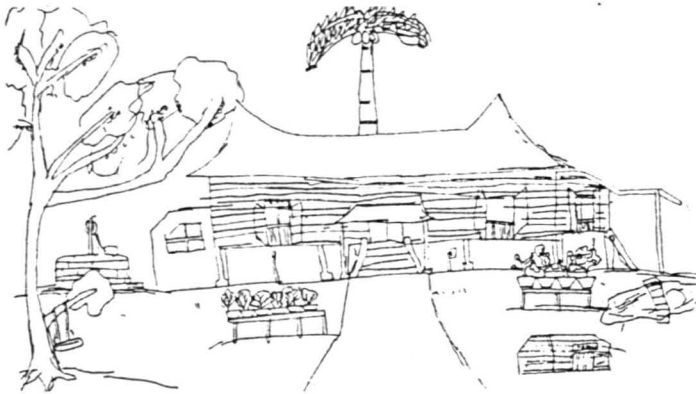


h. House is set in vast boundary-less open field in a rural or village setting.

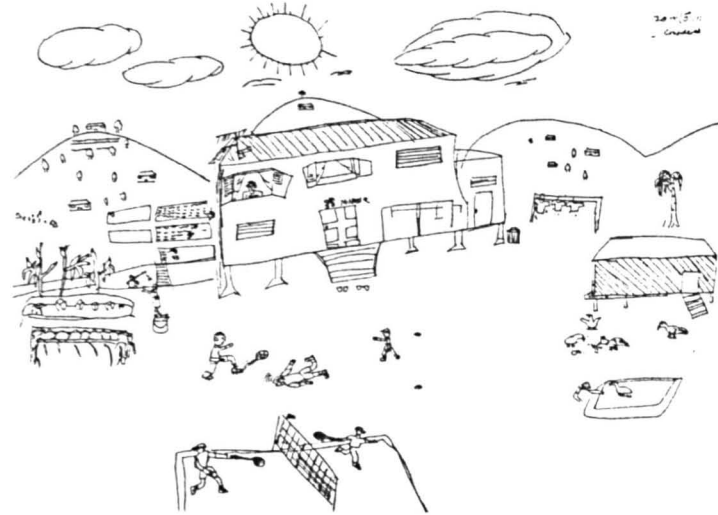
Figure 8.1 Drawings of an ideal home environment by eight Malay children (boys) depicting various settings and environmental themes. Note the presence and use of paths and streets.



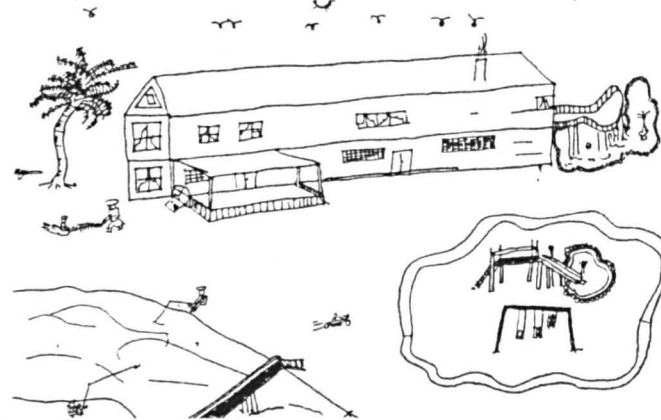
a. House is surrounded by vast open space with river and agricultural plantation in the background. Animals are present as pets.



c. An example of cultural influence on traditional architecture, a "Minangkabau roof" form for a house.

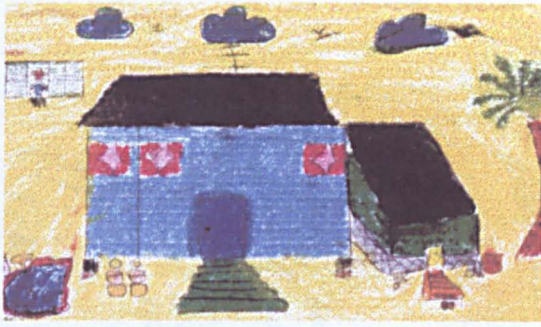


b. Home environment is portrayed with spaces for ball games. Hills and river serve as a background.

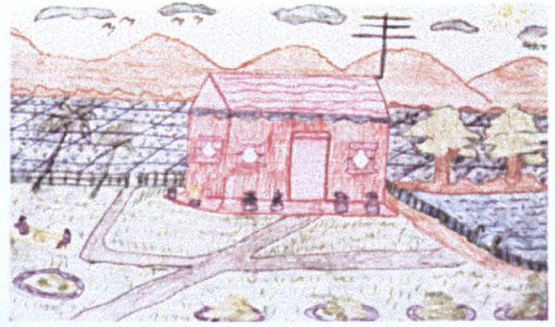


d. A mixture of preferred activities including fishing, cycling, playing with play equipments, and pulling betel nut palm sheath.

Figure 8.2 Malay children's (boys) drawings of a rural or village setting surrounded by natural environment in the background. Note the boundary-less surrounding and houses on stilts.



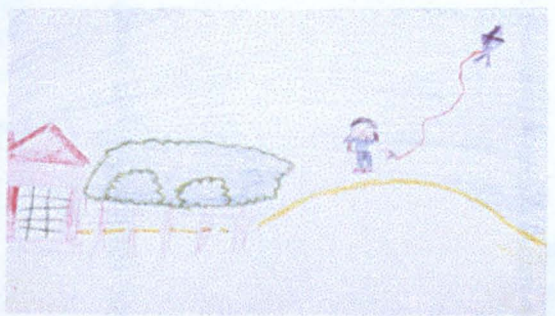
a. Palm tree and pond as physical landscape feature close to a house.



b. The importance of pedestrian paths linking various spaces including play equipment (see-saw) within compound.



c. Gardening activity in home compound.



d. A change of level suggested by hills or mounds, an ideal place for kite flying.



e. An orderly, clean compound as reflection of adult's social traditions that imply rule and regulation shared by many children.



f. Cycling on right-hand side of a street is possible and safe when there is no traffic.

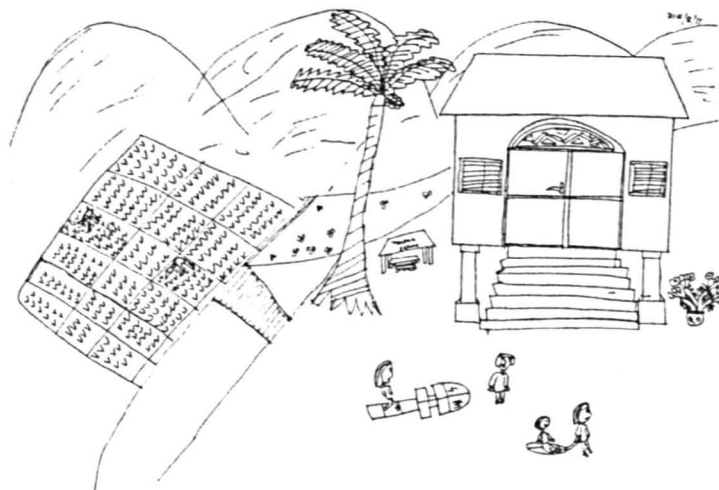


g. Typical village setting clearly demonstrates common shared spaces with no obvious demarcation between public and private outdoor domains

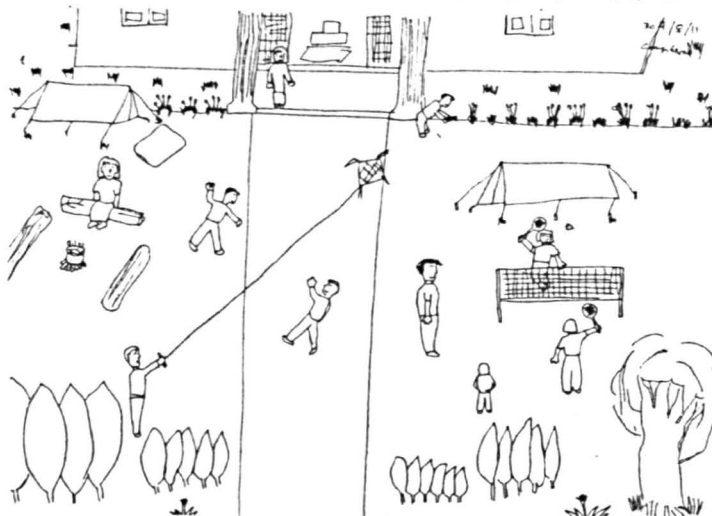


h. An ideal home environment with low fencing, path, pond and pedestrian bridge over, swing, and rabbit hutch. Lawn, shrubs and trees are also part of important feature for home site.

Figure 8.3 Drawings of an ideal home environment by Malay children (girls). Note the emphasis on immediate space of homesite or compounds.



a. Use of betel nut palm sheath as a play object (Malay girl).



c. Favourite activities within immediate home environment including camping, kite flying, badminton and gardening. Watching and resting are also important general outdoor activity.



b. Childhood memory: playing with betel nut palm sheath. (Source: Lat, 1993, Kampong boy, yesterday and today).

Figure 8.4 Drawings representing activities preferred in home environment (Malay girls). Note most of the spaces for activities are flat.



a. Drawing of indoors with activities including watching television, computer games with the presence of pets (dog, and fish in aquarium).



b. Gates and high wall for secured environment while playing with pet animals.



c. Playing hide-and-seek in house compound.



d. Playing in home compound with highly decorative pond and colourful Japanese Brocaded carp fish.



e. A fancy pineapple shaped house and a swimming pool.



f. Playing hop-scotch and playing with a spinning top by river side.

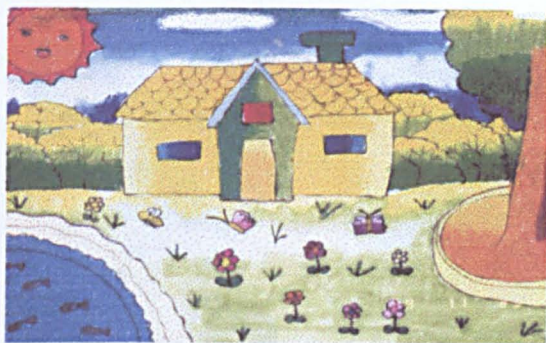


g. Fishing as favourite activity along the river bank.



h. Play in front house. A house compound is shown with slight change of level.

Figure 8.5 Ideal home environment as represented in Chinese children's drawings (boys).



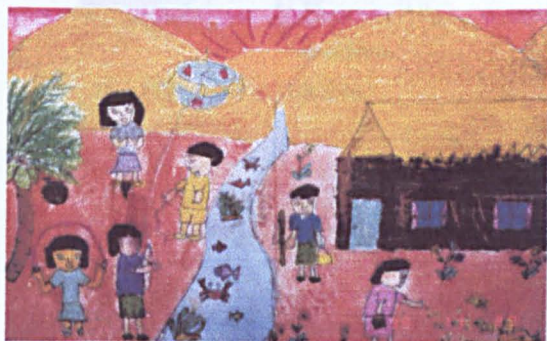
a. Green compound (lawn) with the presence of flowers and insects.



b. House on top of a hill, ideally represented with pond and its habitat.



c. A need for sense of security represented by chain link fencing and gates for a big bungalow.



d. A house by river side ideal for play, rich flora and fauna afford "adventurous" fishing activity.



e. A house by the beach front.



f. Fence, pond, dog house, path, swing and planting pots are part of important elements in home environment



g. An example of a "fancy house" accompanied highly decorative elements



h. Home compound filled up by facilities for play with friends.



l. Tree affords climbing.



j. An example of pond drawn with details to include fishes, aquatic plants and water fall. All are linked by path to a house and other facilities.



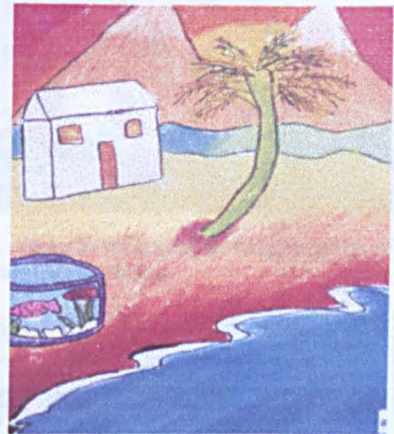
k. The presence of animal while playing may suggest an affectionate bond between children and pet.



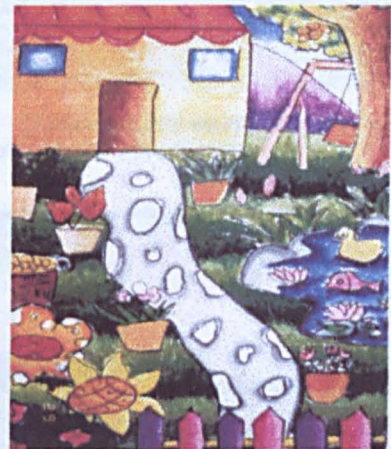
l. A highly decorative "breed" house with cup and flowers, clouds and sun with human facial expressions.



m. Play under a fruit tree.



n. A house by the beach with an aquarium placed outdoor close to sea side.



o. A highly decorated compound with path, pond, planting pot, flowers, swing and fruit tree.

Figure 8.6 An ideal home environment as represented by Chinese (girls). Note unusual house forms in shape of "burger", and "bread". Note also drawings of highly decorative features such as butterfly and cup.



a. A house with dominant pathway for access.



b. Favourite activity of ball games and play with traditional paly equipment.



c. The presence of swing and seat as important features in home landscape.



d. Pond is indicated by the presence of fish and fruit tree by fruits.



e. "Big house" and large compound connected by path or street to "island" of facilities (swimming pool, pond, game courts)



f. Traditional paly equipments paly an Important role in home environment.



g. Swimming pool suggests "adventure" activity. The presence of palm trees may indicate their significant function in home landscape.



h. Path or street is always depicted leading straight to house doors. Winding path, river, lake suggest undulating landform in natural landscape setting.

Figure 8.7 Drawing of Indian children (boys). Note paths the lead straight to house doors and the use stick figures in drawings.



a. Gardening is apart of household activity.



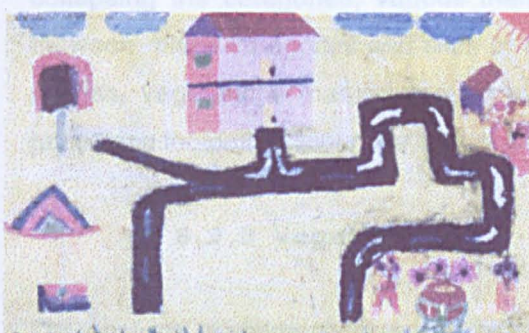
b. Play with traditional play equipment such as swing, slide and see-saw is important and may suggest playground.



c. Home compound with earthy floor finish. Play space is represented with grass and sand pit.



d. Street is for cars. It presence marked to limit home range for some children.



e. Street is represented as a linkage element to link house to various facilities.



f. Pedestrian path is to link house to features such as play equipment within home landscape.



g. House set in vast open field with hills as a background may suggest natural landscape setting.



h. House by the river for adventurous activity.

Figure 8.8 Drawings of an ideal home environment by Indian children (girls). Note ubiquitous presence of traditional play equipment in some drawings.

8.2 PHYSICAL LANDSCAPE ELEMENTS IN DRAWINGS

Assuming that the children's drawings represented positive and most preferred settings, experiences and activities, five broad categories of physical landscape elements were identified: "vegetation," "waterbody," "topography," "landscape structure," and "climate." Each category is further divided into sub-categories: single trees, flowers, lawns, open fields, ponds, flat compounds, suns, skies, clouds, and houses that were represented in more than half all the children's drawings are the most important physical landscape elements or places. A further ten elements were represented in a quarter of the drawings: planting pots, shrubs, fruit trees, swimming pools, hills, play equipments, pedestrian paths, fencing, birds, and fishes. A picture of "habitual range" which is contiguous and with highly accessible spaces or places (Hart, 1979; Parkinson, 1987; Moore, 1986) emerges, with preferred activities revolving around children's imagined houses, playgrounds, water bodies, pedestrian paths and vegetations.

Other types of physical landscape elements or place elements diminish in significance, without pronounce breaks among all children of different culture and genders. By collapsing the categories, various themes emerged and a more general comparison between place categories and sites or areas was made. Homesite or compounds, open spaces, vegetations, natural ground surfaces, and pathways (streets, pavement and pedestrian footpath) account for almost three-quarters of all representation in drawings.

8.2.0 Vegetation

The analysis of children's drawings has shown among other thing that children generally have ties to natural elements like trees, grass or lawn and to the land and nature, and suggest stronger emotional attachment than any other physical elements. The connection to flowers, trees, fruit trees, grass, and the landscape permits children to seek solace in nature and continuously enriches children's life (Cooper-Marcus, 1995). This appear to be the case for children who participated in this study.

In the drawings, children depicted vegetation in various combination of forms. These forms can be categorised generally into 'individual trees' including 'fruit trees'; 'plants in a pot'; 'trees grouped into forest'; group of trees planted at equal distance representing crops in 'plantation'; 'shrubs'; 'meadow or lawn'; 'flowers'; 'aquatic plants'; and 'vegetables,' (Figure 8.9). All these form of vegetation are common and affordable either within the neighbourhood environments or larger urban environment in Johore Bahru. Some of them exist ubiquitously and children become acquainted and familiar with plants within their range of environment and everyday activities.

Other vegetation elements like fruit trees, plant in pot, shrubs, flowers as well as aquatic plants are evenly presented ranging between 8% to 58% accross the ethnic groups and genders. These findings support findings in a study by Maurer and Baxter (1972) that in children's drawing of a map of their neighbourhood, of the place they live, vegetative elements such as grass, trees, and flower were highly ranked and emphasised. Lukashok and Lynch (1956) in their study too found that natural elements like lawn, ground surface, trees and water were remembered frequently in the childhood memories of adults living in the urban areas.

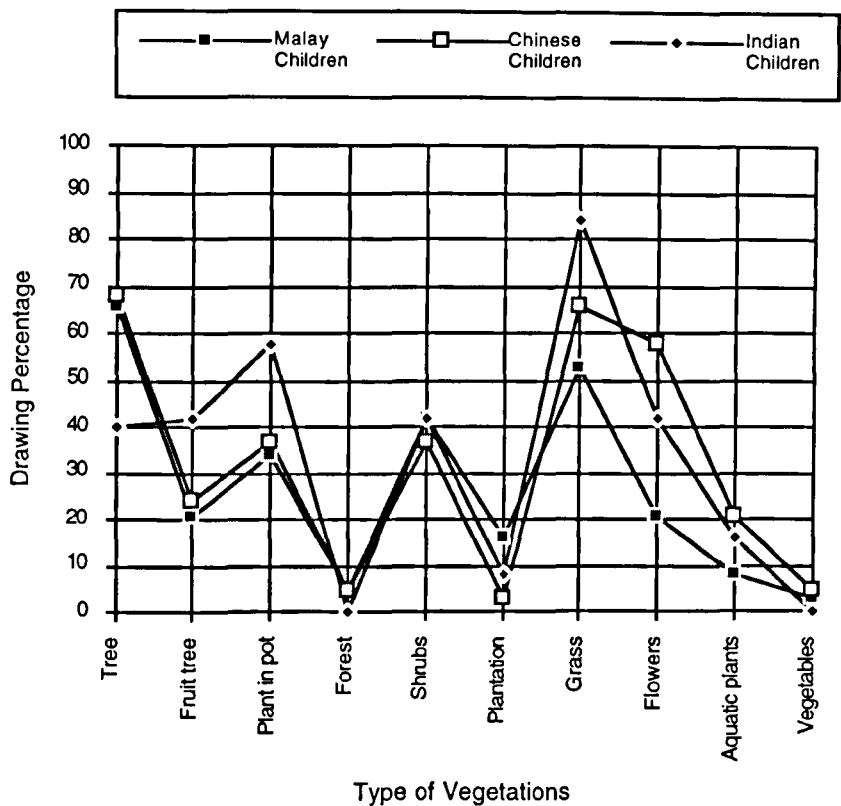


Figure 8.9 Children's representation of vegetation types in drawings according to ethnic groups.

8.2.0.0 Lawn

In children's drawings the floorscape was furnished with a combination of grass, hard surfaces, and earth with 'mention rates' range from 47%, 37% and 15% respectively without much distinction across different cultures and genders (Figure 8.9). The presence of lawn as floor cover was most common in the drawings. Boys showed lawn 59%, but girls were marked by the higher percentage of 74% (Figure 8.10). This finding shows a high positive correlation between boys and girls. Girls tended to give higher preference to certain environment in residential areas with smooth, green lawned surface. This inclination can perhaps be attributed to girls' exposure to activities in remaining closer to home sites on

mowed lawns compound. In this way, girls may have developed affective preference for lawn that supports social activities. Depictions of 'home sweet home' and 'a house is my heaven' among girls in drawings and mentions essay partly reflect their closenesses to home. Whether this reflects real desire/ preference or simply reflects current social practice and girls experience is difficult to answer.

That green lawn are drawn most frequently as the preferred floor finish especially among girls may be explained either by the larger sense of security and freedom, or their larger need for games e.g. hide and seek, skipping, kite flying, netball, badminton, and ball games. The individual significance of lawns may also be related to non specific activities for girls such as sitting, watching and playing in the small patches of grass around home compound. In contrast, boys' activities in reality tend to be more active and they may be constantly on the move and less likely to be concerned with the presence of lawn. Experience with reality suggests familiarity may be positively related to preference. An environmental influence may be, that any earth surface left open will be colonised rapidly by 'greenery' made of cow-grass (*Axonopus compressus*) or even Lalang (*Imperata cylindrica*), a fast growing 'weed' with long leaf blades and rhizome roots. Some of green space in drawings may represent this rough-ground state of unmanaged areas within the neighbourhood which are quite common due to lack of maintenance and poor management by the local authority.

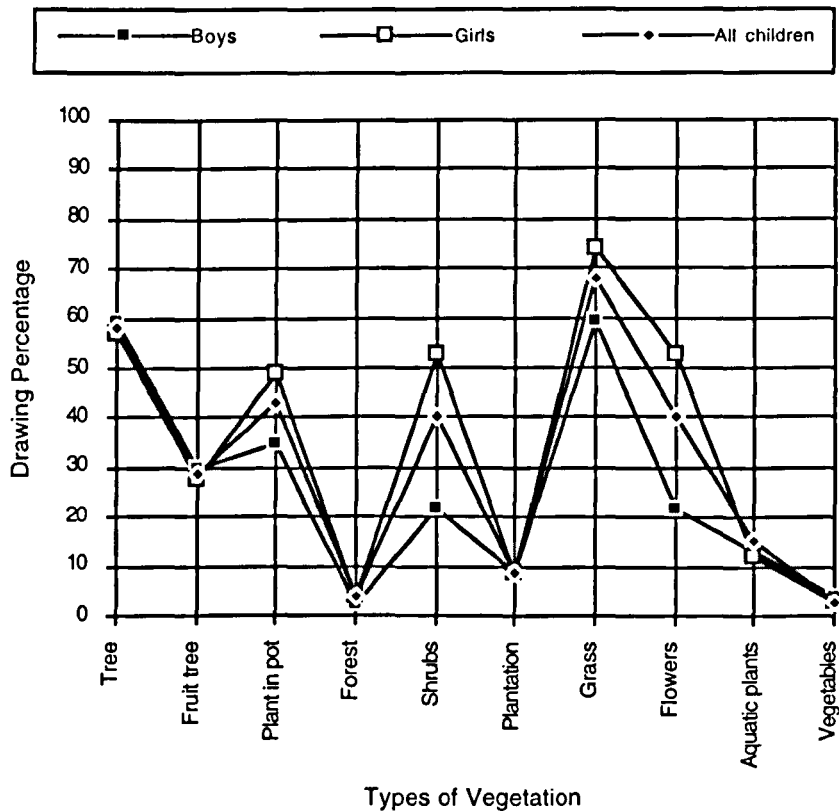


Figure 8.10 Children's representation of vegetation types in drawings according to gender.

Children's drawings with a green floor surface represent naturally green soft textured surface with 'aesthetic value' in favour of an otherwise hard tarmac or concrete floor finish. This grass texture which is soft, velvet spongy is an ideal play surface for ball play. Some preferred their lawn to be surrounded by fence or shrub hedges giving a sense of privacy and enclosure. Sloping lawns were rarely presented. Mounds or hills with lawn occasionally appeared in drawings as an alternative to flat land. The large flat appearance of open areas of mown grass known as 'fields' indicated the need for team ball games especially among boys. The terms 'fields' surely originated from present standard housing development in Johore Bahru, categorised as 'open spaces', 'green fields' 'playgrounds' or 'parks' by the planning authorities. Children may not discriminate grass areas featured in drawings into those categories but perhaps more in term of intrinsic attractions as a rich source of play objects, and meaning of wildlife: butterflies, bees (in drawings) and worms, milipedes, tortoise, snakes and monitor lizards (in essays). Perhaps to many children, green areas basically represented space with grass that offers various opportunities for play and affords a range of other activity which requires unspecified space. In actual environment, traditional play equipments can be any where either in open space, green field, playground or in a park, not necessarily designated into specific area.

A study of children's drawings of "favourite places children go after school or at weekends - around home in the neighbourhood they live" by Moore (1986, pp. 41 and pp. 273) also registered similar finding where lawns represented the highest (0.71 mention rates, which is number of mentions divided by number of drawings or subjects in the survey, i.e. 68 mentions divided by 96 children. All together in this study, there are 723 number of mentions for all 60 different place elements from children's drawings) of individually memorable experience among the subjects. In Western culture, it is suggested (Titman, 1994) that children express elements as signifiers of the general external environment and lawn is a common element of actual environments as she writes:

Grass was symbolic of gentle game space - grass doesn't hurt as much when you fall on it. For the children, ideally, grass is for sitting and lying on, rolling on, touching and feeling, rather than just looking at....Furthermore, grass enabled a different range of games and activities, particularly those which involve body contact. Girls seemed to be more aware of this difference than boys....Visually, grass was much favoured because the alternative children knew - tarmac - was always described as boring. Whilst flat grass was almost always preferred to flat tarmac or concrete, hills and changes in level generally, were highly favoured....Grass was essentially symbolic of natural things which the children valued....Grass also presented opportunities for finding things and held greater intrinsic value because of the potential diversity it offered. (pp.35)

The two above finding and suggestion may suggest universally common attitudes and values (Tuan, 1990) in preferences held by children in general as well as differences governed by aspect of cultural factors and gender. Children in this study may not subscribe to adult's terms while explaining the environment. However their depictions in drawings borrowed ideas that come from other cultures seen or learned through various form of media, or through peers (Wilson and Wilson, 1987). The above universally common attitudes may have stemmed from some kind of strong innate preference for a 'open grassland' areas that developed through evolutionary adaptation process between man and landscape (Bourassa, 1991, pp. 68-69).

8.2.0.1 Forest

Areas of natural forest in drawings were represented either with the presence of dense clusters of large trees with multi-layer canopies which rise above vegetation or groups of trees with multi-stemmed and branches, or green mountainous range representing forest. The term 'forest' in this context is a large tract covered with trees and undergrowth representing a luxuriant tropical rainforest, and is equivalent to "woodland" in a 'Western' context. The natural tropical rain forest is characteristically evergreen with 8000 species are trees, 300 species are palms and 60 species of bamboo (D.o.I, 1990). Forest was rarely included or prominent in children's drawings. For children, forest or wilderness seem to have dominant negative image that is associated with dangerous animals, inaccessible, and perhaps because one can easily get lost in a forest, but on other hand, wilderness may also serve for their adventurous quests.

Forest was shown in a significantly low percentage of the children's drawings and was totally missing in Indian children's drawings. Low indication of forest can be explained in what Moore and Young (1978) termed as "habitual" or "territorial range." They proposed three broad concepts in describing children's landscapes including territorial range that "defines the collective spatial realm of experiential breadth and diversity." Elements of forest clearly indicates that it is neither part of the spatial extent and experiential variety of external environments inhabited by children nor part of children's space-time domain of familiar place close to home nor of their imagination. In a study of habitat affinities of urban plants highly used in the Federal Territory of Kuala Lumpur areas have shown that forest vegetation is only made up of 45 species which contributed to 15% of total plant species diversity (Rieley et al., 1990). The scarcity of forest species may be similar to Johore Bahru city, which make it less conspicuous i.e., less important compared to other vegetations.

A forest may be drawn as accompanying element, dangerous, mysterious, frightening and gloomy, but not as preferred place to be in. Forest canopy is normally dark and in deep shadow, mysterious, with a dense and thick undergrowth concealing the view and part of the scene's information behind, offering risk and uncertainty. To many children, forest is associated with fears. Perhaps, these are emotions that would be undesirable for children within residential context. Landscape preference is influenced to a certain extent by the risk and uncertainty factor (Bernaldez et al., 1995, pp. 16). In the experience of landscape, aesthetic quality is found to be affected by the fear and insecurity (Appelton, 1996) as for instance some plant forms of the forest were perceived as hostile or aggressive.

A study by Balling and Falk (1982), although it involved 'Western' children, however found there was an innate, inborn or natural preference among children for an open grass or park like landscape or savannah landscape areas compared to dense tropical rainforest landscape type either for visits or to live. Thus, as an element in landscape, forest may carry in cultural attitudes which can have significant impact on preferences (Bourassa, 1991). It is possible to link the above preference in relation to the Malaysian urban context. Teh (1989), used "urban savannah" category in an inventory study to classify urban green spaces in the Federal Territory of Kuala Lumpur. This category was represented by public and recreational areas, golf courses, Malay cemeteries, and large traffic circles. Both public and recreational areas like playgrounds, open spaces, and green areas for informal play and exploration are part children's preferred places in their residential neighbourhood environments (Malone, 2001; Chawla, 2001).

The children that included forest elements may have done so to conceptualise and expand the boundary of unfamiliar and adventure in new environments: the exosystem (Bronfenbrenner, 1979). Another plausible explanation, but one that contradicts earlier statements that suggest children are less familiar with forest perhaps, children's concepts towards forest carry the embedded cultural message that common, everyday elements tend to be devalued, taken for granted and less important. It can be argued that many children are aware of and knowledgeable about the existence of forest in the larger environment. Forests are common features especially in natural undeveloped and reserved land, but beyond the frequented territory of most children and they have no access without adult's companion. Recreational forest for instance is accessible through family outings. The informal, natural landscapes offer children outdoor environments for relaxation or recreational activities (Raymund, 1995). Mentions of jungle tracking, rock climbing and camping in essays are closely associated with forest environment for instance: "I will organised camping activity with my family and best friends in the tropical rain forest," (Chinese girl, age 11). Overall forests appear to be places to visit rather than live amongst (Hammit, 2000).

8.2.0.2 Agricultural Plantations

Overall in children's drawings, mention rates of agricultural plantation is significantly low (9%), except in Malay children's drawings (16%) who portrayed agricultural plantations, pastoral or arable land surrounding the home environment. The land is either flat or natural terrain planted with agricultural crops such as rubber (*Hevea brasiliensis*), oil palm (*Elaeis guineensis*), paddy (*Oryza sativa*) in paddy fields, or perhaps various fruits trees in orchards such as *durian* (*Durio zibethinus*) and *rambutan* (*Nephelium lappaceum*). Rubber plantations

were developed on "a large scale in plantations by 'Western' interests and also by the Malays and Chinese as a smallholding crop," (Keong and Hock, 1986). Agricultural tree crops can be easily identified in children's drawings as they are planted in rows at equal distance which appear to have great accuracy based on real agricultural environments (Figure 8.2b, and Figure 8.3e).

Elements of agricultural plantations have a significantly low percentage of occurrence in Chinese and Indian children's drawings. Inclination toward village or rural settings may suggest depiction of agricultural plantations which is more familiar among Malay children especially with paddy fields. In reality, agricultural plantations have remained a distinctive component of rural or "countryside" landscape and constitute environmental types and place settings in the country's scene. From an historical and cultural point of views, natural agricultural landscape are formally inhabited by earlier generations of Malays before the urbanization process. Thus, Malay children may conceptually have affective preference for living in rural village or *kampong* and may have been influenced by adult's/ parents "rootedness" in rural villages or agricultural landscape for instance from childhood contact with nature (Kong, 2000, pp. 266). In essays for instance, preference for village was mainly due to the peaceful and quiet environment which is contrasted to urban life: "I like village setting because it is quiet and I can have peace of mind. My house is situated by the riverfront," (Malay girl, age 10). Preferences for rural areas shown in drawings may also suggest children's attempts to "reveal sense of harmony with nature... Children often associate rural areas with adventure and fun.. representation of rural settings, where the lack of buildings and cars was notorious," (Barraza, 1999, pp. 63-64). Through personal attachment to certain environmental settings or places, it provides a sense of belonging, and serves to give meaning to life (Proshanky et al., 1995). In general, children's preference and appreciation of forest for wilderness, agricultural plantation for rural or countryside perhaps may be 'a response to the real and imagined failing of city life.' (Tuan, 1974, pp. 111).

8.2.0.3 Vegetables

Vegetables were significant in having a relatively low occurrence in children's drawings. This may be because planting vegetables is an adult preserve, an activity that may give adults most profound personal experience and nurturance (Cooper-Marcus, 1995). In family life children normally participate and are encouraged to share with adults connection with earth and nature. However, vegetable growing in urban neighbourhoods is not common among Malay, Chinese and Indian due to limited space available. If spaces are available, priority is given to ornamental planting with occasional vegetable planted in pots rather than on planting beds. Children who included vegetables as element in their drawings perhaps visualised gardening as a highly valued activity (Titman, 1994) suggesting that harvesting the products would be an exciting experience when shared with others. Gardening may also suggest children want more opportunity to involve themselves in managing the environment (Hart, 1997) through planting vegetables although it unlikely children do plant vegetables independently of adults.

The activity of gardening normally involves all members of the family and edible plants such as fruit trees, vegetables are part of physical elements in the garden or planting areas (Francis, 1995) portrayed by children in their drawings that suggest gardening activity. Among the limited favourite vegetables identifiable in drawing are red chillies (*Capsicum longum*), carrot (*Daucus carota*), spinach (*Spinaca oleracea*), green cabbages (*Brassica oleracea*), and pumpkin (*Cucurbita spp.*). In some drawings, certain areas suggest vegetable plots associated with a kitchen garden. However, mention of vegetables is more pronounced in essays with variety of vegetable types: lady's finger, french bean, four-angled bean, long bean, brinjal, sweet potato (*Ipomea batatas*), cucumber, snake gourd, bitter gourd, and water convulvulus. In reality, people buy and eat vegetables but do not generally cultivate them.

Edible landscape "concepts" are depicted through the presence of fruits and vegetables as a function of planting element in children's environment. It links with sense of taste which is very important for children (see also Section 8.2.2, Fruit trees and orchards).

8.2.0.4 Flowers

Flowers were present in both boys and girls drawings. However, slightly more than half (53%) of drawings which showed flowers were girls as compared to only 22% of boys. This may suggest girls spent more time at home site and that their activities may be closer to the ground e.g. sitting, making them aware and sensitive to detail. Tuan (1990) suggests: '... as children, not only were noses more sensitive but they were closer to the earth, to flower

beds, tall grass, and the damp soil that give odors.' (pp. 10). More Chinese children (58%) include flowers in their drawings compared to 42% and 21% in Indian and Malay children's drawings respectively. Although the preference for grass, trees, plants in pot (usually for decoration purposes) marked higher percentages as compared to flowers. However the painstaking details in presenting flowers suggested more positive feeling and strong affective relationship between them. The affective values as shown by the range of very colourful flowers was very significant that can be interpreted as beautiful, peaceful, caring and fun, equivalents to other types of vegetation (Figure 8.1b, Figure 8.6a, 8.6j, 8.6l and 8.6o).

The findings suggest that children placed high value upon flowers which have range of sensory responses and stimulation (sense of smell) together with the aesthetic values in terms of colour and shape. This is particularly true for the Chinese who appear to use flowers and insects as decorative patterns and devices within their drawings. It can be argued that these drawings are art works (creation of "artistic material") however, at the same time they are representation of ideal home landscape. For Chinese children in this case, they manipulate symbols of flowers and insects to give expression to certain meaning and themes - ideal home environment. The question of how much the drawings are art works or representation of ideal environment is difficult to measure with no clear demarcation between them. The plausible explanation perhaps for children with highly developed skills in drawing may opted for displaying drawings as art work as well as depicting ideal environment. Children may also want to present both, imaginative art work and representation of preferred environment. This is in parallel to view toward children's artistic production as one can chose "to interpret children's artistic productions not as a mirror of the world they perceive, but as attempts to express and represent aspects of both the world of reality and of their imagination in symbolic terms," (Wohwill, 1985, pp. 2).

Most of the flowers are planted within the surrounding compound of houses associated with lawn, garden, in or near waterbodies, or in planting pots. Bright colours of red, pink, blue, purple, orange, yellow were chosen for flowers but only certain species such as lotus and water lilies can be easily identified in drawings. Flowers were depicted in a range of shapes, sizes and forms, and generally represented a vast diversity of flower available in the real environment (Figure 8.5f, Figure 8.6o, and Figure 8.8d). The excitements of sensory stimulation from smell of flowers were also frequently mentioned in questionnaires and essays.

8.2.0.5 Trees

Many children included features of trees or planting in their drawings in describing ideal landscapes to live in as though their houses would be incomplete without trees. Trees appeared in more than 65% among Malay and Chinese children's drawings, but in Indian children's drawings registered as low as 40%. The lower percentage perhaps suggest their less priority for trees compared to needs for open spaces and play facilities. For some Indian children (29%) who live in multi-storey flats, there are less trees to be found and this may be reflect in their drawings. Looking at gender across culture, there is no significant difference in preference for trees which appeared in more than half in both boys and girls drawings.

Compared to man-made elements, children appeared never to get bored with "nature" as represented by trees. "Nature" can generate action such as trees can be *"essentially symbolic of climbing"* (Titman, 1994). In describing children's activity of climbing trees, Tuan (1978) writes:

They like to swing and to be swung around. The tree provides ample opportunity for the active child to engage in postural acrobatics, to use his muscles and feel the thrill of temporarily disorientation. Climbing a tree also means bodily contact; it requires one to hug the tree's limb....To the young child, moreover, the tree offers the excitement, the vastly expanded horizon, and the status of height. On top of the branch he is no longer a dwarf among giants; he is a giant himself and commands a world. (pp.19-20)

Drawings of trees with different shape, form, and colours of leaves, flowers or fruits can be interpreted as representing a constant source of stimulus much desired by the children. The affordances of children's environments are mainly from what Kytta (2001) termed as a "field of free action." For instance the opportunity to view scenery from the top of tree and from tree houses. Apart from trees that afford climbing e.g. sitting on a "lookout branch" (see Figure 8.6i), trees allow shade and shelter for certain activities to take place under the tree like reading, playing hide and seek, building a tree house on top of it (see Figure 8.1g), and hanging a swing on it's branches (see Figure 8.1d, Figure 8.2c, Figure 8.7f). Trees support many children's activities and this awareness is well expressed in essays:

"My dream house has trees for reading and resting underneath, a playground complete with swings which many children like. It also has a badminton court, a green field for football and a garden or park for resting. The garden has various types of flowers and an area for playing 'congkak.' A fish pond with many fishes is located beside the house with a fruit orchard and colourful long fencing." (Indian girl, age 12)

Trees too were source of play objects for some children (see Section 8.2.4). As a living things that grow, needs care and protection, children may be fully aware of the symbiotic and ecological significance of trees. The depiction of butterflies, bees and birds that nest on

the branches acknowledged this association and the awareness of the importance of trees as part in their environment that need to be preserved. For the Malays, this is parallel to ecology and Islamic values that demand in taking care, living in harmony with nature as Hamid (1989) states:

On land and sea and air, there is vast variety of plant and animal species and organisms. Each organism has its place and its role to play in the intricate and interdependent network of ecosystems. As "nations" like ourselves, each species that make up creation enjoys certain rights. For man this creation, or what is often called nature, are signs of God's power and wisdom. To gain knowledge of this creation is to increase our faith in God and acquire a love and a respect for nature. The world is also a gift to man which he is to use for his benefit. Man has been given the authority but also the moral responsibility to work in harmony with the natural environment. This is God's trust or *amaanah* to man. (pp. 159-160)

8.2.1 Plants Types and Cultural Relationships

Various species of trees and shrubs that bear flowers can be associated with ethnic identity for preference to serve certain purpose in the context of culture, religion or utility. For the Malays, Islamic teaching encourage planting trees and fruit trees for the purpose of creating a greener and beautiful environment. There are many verses in the Qur'an that encourage people to participate in agricultural production according to Hamid (1989):

Agricultural is essential and should be given priority attention in any community. God, according to Qur'an, has spread out the earth and made it suitable and fertile for cultivation. He sends the "fertilizing winds" to drive the clouds and scatter the seeds and He sends down rain to bring forth vegetation of all kind. ... There are many saying of the Prophet which commend agricultural production. He has said: "When a Muslim plants a tree or cultivates a crop, no bird or human being eats from it without its being accounted as a (rewardable) charity for him." (pp. 60)

Flowers in the drawings, and more pronounce in the essays, though difficult to identify the species may carry symbolic meanings across different ethnic groups. Malay children may portray certain flower to serve utilitarian needs, as well as religious demand, "even if you live in towns and built-up areas you should seek to plant fruit and other trees wherever possible or grow some of your own vegetables and flowers. This was also help to create a beautiful environment" (Hamid, 1989, pp. 60). For Chinese children it could possibly be a belief to bring good luck or *feng shui*, and to Indian children flower relates to use for religious purpose. However, those concepts and purposes may have derived from adults' attitudes and influence, rather than children themselves. Children may utilise flowers for different purpose other than adult cultural and religion function. Flowers for colour, smell, beauty or even as play objects (Moore, 1986), as natural growing material that signify a place (Titman, 1994) are part to children's world. Types of plant species with flowers associated with ethnic preference in everyday life are summarised in Table 8.2.

8.2.2 Fruit trees and orchards

For children, the trees illustrated in their drawings were often special trees - "edible landscape," trees. For instance, either coconut tree (*Cocos nucifera*), rambutan (*Nephelium lappaceum*), durian (*Durio zibethinus*), mango (*Mangifera indica*), banana (*Musea sp.*), guava (*Psidium guajava*) or jackfruit (*Artocarpus heterophylla*) were frequently shown. Those species of fruit trees associated with habitation are common to urban housing estates in Malaysia (Rieley et al., 1990). Such trees may enable children to feel linked to the familiar environmental settings. In urban neighbourhood environment of Johore Bahru, various species of fruit trees are quite common especially in front or back yards of people's homes. Ornamental tree species however, are more common in the city centre or in public parks and gardens for practical purposes (such as structural planting, roadside planting, for shade or shape). Trees with fruits appeared in 29% of all children's drawings and suggest a knowledge about the vegetation in their environment that serves certain purposes, i.e. for food but also possibly as part of cultural heritage.

TYPES OF FLOWER PLANT SPECIES	PURPOSE	CULTURAL IDENTIFICATION
Bunga Cina (<i>Gardenia jasmoides</i>) Delima (<i>Punica granatum</i>) Puding/ Croton (<i>Codium variegatum</i>) Melor (<i>Jasminum sambac</i>) Kesidang (<i>Torenia polygonoides</i>) Seroja (<i>Mirabilis jalapa</i>) Kecubung (<i>Datura metel</i>) Betel nut palm (<i>Areca catechu</i>)	Decoration Decoration and cosmetic Decoration and cosmetic (flower is used as an ingredient for nosegay) Betel nut chewing	Malay
Kemuning (<i>Murraya pasiculatum</i>) Kemboja (<i>Pisonia alba</i>) Delima (<i>Punica granatum</i>) Fortune plant (<i>Adenium obsum</i>) Sundal malam (<i>Wrightia religiosa</i>) Tulang jin (<i>Euphoria Millii</i>) Lotus (<i>Nymphaea lotus</i>) Water lilies (<i>Nelumbo nucifera</i> and <i>Nelumbo stellata</i>) Artemisia vulgaris (type of weed)	As ritual plant, bring prosperity to the residents For decoration (its flowers blossom at night) For ritual as Buddhist Chinese believe it brings fortune to the household Related to belief in Buddhism Cultivated and used in Chinese medicine	Chinese
Kacang kelor (<i>Moringa Ptygosperma</i>) Selasih India or sacred basil (<i>Krisna Thulasi</i> or <i>Ocinum sanctum</i>) Melor (<i>Jasminum sambac</i>) Lotus (<i>Nymphaea lotus</i>) Betel nut palm (<i>Areca catechu</i>)	Food Religious ritual in Hindu temple, and worship (<i>puja</i>) at home to atone deities. Decoration and cosmetic Related to belief in Hinduism Betel nut chewing	Indian

Table 8.2 Plant species in relation to ethnic groups preference according to beliefs and uses.
 Source: Adapted from Biro Inovasi dan Perundangan UTM (1999). Cadangan Pelan dan Garispanduan Lanskap untuk Zon Bandar Johor Bahru and others.

Trees drawn but without fruits may suggest fruit trees too as some species do not fruit all year round. However, fruit trees were frequently drawn with remarkable detail (Figure 8.6d, Figure 8.6m and Figure 8.7d). An indication of different types of edible fruits that may also prove their knowledge about the importance of trees economically (in term of money saved instead of buying fruits at the fruit stalls), and familiarity with the ecology of preferred landscapes as written in the essay:

"I would like to have a house with a big compound, so that I can grow a lot of plants according to my own design. The plants and flowers of various types provide beautiful views, that make the compound resplendent. I would keep fish in a pond and the right side of the house would be full of orchids, alternately planted with roses. At the left hand side, there would be fruit trees like papaya, mango, citrus, guava and rambutan which help in saving expenditure from buying fruits else where. I look forward to a harmonious living environment." (Malay boy, age 9)

This finding supports evident from a study by Lynch (1977) that *"the hunger for trees is outspoken and seemingly universal"* among children of all environments. Thus, housings area with trees and open space can be considered a much preferred place to live in by many of the children.

Other socio-cultural aspects relating to fruit trees could, perhaps support crucial evidence of the significant role played by fruit trees or fruit orchard in village or rural settings. In villages, the fruit season is important in everyday life of village dwellers as it serves as a traditional communal gathering of families, relatives, friends and neighbours to harvest and collect fruits from orchards. The fruit orchard is a common feature in villages and become a setting for gathering and interaction, creating a sense of belonging among the community members. Some drawings have shown children socialising near fruit trees like playing (Figure 8.5c, Figure 8.5e, Figure 8.5h, Figure 8.6i, Figure 8.6m) and in this study as members of the community, children may also have a positive inclination towards this either voluntarily or having being influenced by the attitude of adults toward fruit trees. The role of an orchard perhaps is similar to an open space in an urban neighbourhood. Said (1998) explains the concept of planting of various fruit tree species within the house compound:

A villager in Malaysia sees orchard as a piece of land in which his house is sited and where a variety of fruit and foliage trees including palms are planted. Most of the fruit trees are planted. Most of the fruit trees are planted at the back whereas foliage trees which consumed as spice, relish or medicine, are located at the front and the side of the house. The fruit trees are considered as subsistence crop in which the products are consumed by the household.

Generally, the size of a village house compound range from 0.25 to 1.0 acres. Only the species of seasonal and continuous fruiting species are commonly planted in the orchard. The seasonal species may include families of *Durio*, *Lansium*, *Nephelium*, *Gan Mangifera*, *Artocarpus*, *Archas* and *Diospyros*. The favourite species include *Durio zebithnus*, *Lansium domesticum*, *Nephelium lappaceum*, *Garcinia mangostana*, *Mangifera indica*, *Artocarpus integrated* *Archas zapota*. The

fruiting period is usually once a year with a slight variation from region to region. The period may last 3 to 5 weeks in which species ripens at different times than the others. On the other hand, continuous (fruiting) species including *Carica papaya*, *Artocarpus heterophyllus*, variety of citrus and *Musa* and palms such as *Cocos nucifera* supply fruits throughout the year. (pp. 24)

The social aspect of orchards in creating cohesiveness and a sense of belonging among rural dwellers is in obvious contrast with a more fragmented society in urban neighbourhood housing that lacks in communal gathering spaces except in form of open recreational spaces. Children whose drawing depicted fruit trees or who mentioned trees in their essays may have perceived fruits trees in terms of economic, social, physiological and perceptual advantages.

8.2.3 Socio-economic Value of Fruit Trees

Economic benefit is related to "edible landscape" as discussed earlier (see Section 8.2.2), i.e. trees that bear edible fruits provide a cost saving from buying fruits elsewhere as frequently mentioned (e.g. Malay boy, quoted on pp. 279) in children's essays. Some trees produce leaves used for relish and traditional medicine. These trees are common though difficult to identify in drawings however, quite number of children have mentioned these in essays. For instance, *Premna cordifolia* and *Evodia integrifolia* are common relish species. Medicinal trees including *Morinda elliptica*, *Tamarindus indica* and *Averrhoa blimbii* as the values may either come from barks, roots, flowers, and the leaves are believed to cure common illness. These types of tree species were mentioned frequently in essays but their presence can not be identified in drawings.

The depiction of coconut palm trees may conjure various utilitarian uses: midribs of coconut leaves can be used in making brooms; water from in the fruits for drinking, and coconut milk for cooking etc. In drawings the representation of palm trees were distinguishable because of their distinctive forms. Both Malay (24%) and Indian (16%) children depicted palm trees in their drawings, whilst fewer were represented by Chinese children (5%). Among all palm trees represented, one particular palm tree species in drawings carried strong cultural message either consciously or unconsciously. That particular palm tree is betel nut palm (*Areca catechu* L., *Arecaceae*). The mentions of betel nut palm in drawings and essays are of worthy discussion. The plant is used quite extensively by the Malays living in rural or in village and among Indians as a masticatory, stimulant, condiment, and medicine (Schafer and Wallacker, 1958, cf. Bulman, 1988). "Numerous unsubstantiated medicinal benefits are attributed to betel nut chewing, and the plant has acquired a degree of social and religious significance." (Bulman, 1988, pp. 11).

The betel nut chewing is an adult's preoccupation, however the presence of the betel nut palm in landscape drawings is significant. Children's familiarity with this palm in landscape may be due to two reasons. Firstly, the plant has been planted and thrived abundantly in areas of heavy rainfall and high humidity as Bulman notes: "As consequence, this shade-loving tree is often grown with plantains, banana, mangoes, or guava trees which provide a cool, moist atmosphere," (ibid, pp. 11). Children, although preferred fruit trees, but the presence of betel nut palms normally planted together, increased their awareness of this palm. The palm is also common in urban open spaces like parks and gardens and normally used as boundary or street plantings. Secondly, the form of betel nut palm is a slender, unarmed, unbranched tree with spirally arranged leaves crowded at the top of the trunk. The inflorescences are on the stem beneath the leaves with each inflorescence being fragrant small white flowers. Some children associated themselves in drawings with the fallen leaves which are 1 to 2 metres long, because the spathe or palm-sheath is a play object for a ride (see Figure 8.2d, and Figure 8.4a). Riding on a betel nut spathe perhaps is equivalent to a ride on a toboggan or sledge over snow or steep sloping grass bank for "Western" children (Moore, 1986, pp. 155). Perhaps, the joy or excitement of riding on betel nut palm-sheath for some children (in this case portrayed by two children, a Malay boy together with illustration of traditional play equipment and a girl without the presence of traditional play equipment at all) was exciting than playing with traditional play equipments. Play with natural material is interactive offering more freedom for manipulation and excitements. This activity is well illustrated by cartoonist Lat (1993) as part of his childhood memories as a village boy (Figure 8.4b).

8.2.4 The Landscape of Fruit Trees

Fruit orchards with mature trees of various species could provide shade and ameliorate the micro-climates in urban areas. This is exceptionally important for a tropical climate which is hot and humid. The presence of tree foliage filter the direct heat from the sun to reduce the mid-day temperature between 2 °C to 4 °C (Bruch et al., 1976 as cited in Said, 1998). In drawings, children conciously portrayed preference of place for certain activity such as reading, resting and play to take place under the tree for shade. Of equal validity in essays were frequently mentioned shady areas as places for activities. Big trees in drawings could suggest shady areas underneath even though no shadow were drawn on ground in relation to trees and sun light. However, these children have yet to develop graphic skills in order to be able to draw shadow cast on ground.

Trees afford multi-activities for children including resting and playing: a support for tree house, play structure for swing and climbing, camping, and hide and seek etc. (see discussion on activities in Sections 8.7). With the present of trees, children suggest a

refuge, a safe and conducive place for social activities. Many natural materials, loose parts (Moore, 1980b) are easily available from trees for use in imaginative and social play for children. Dense foliage canopy, tree trunks, and occasionally bright colours from flowers or leaves provoke positive feelings, affection and elation (Smardon, 1988) among children. Perceptual values can be described in term of visual and sensory stimulus. Mature trees sometimes signified as landmark within the neighbourhood; flowers and fruits produce scent of smell as Said (1998) explains:

The perceptual functions of trees in the orchard are primarily visual and sensory. As the trees and palms matured they composed a landscape with array of form, colour and texture. Tall canopied trees and palms, more than 20m high, towering over the houses can become landmarks of the neighbourhood to the visitor. A cluster of coconut palms along the entrance road signifies as a gateway to the neighbourhood. Some seasonal fruiting trees such as *Mangifera odorata* and *Mangifera foelida* bloom profusely once a year. Almost the entire canopy turns to scarlet. This vivid effect breaks the monotony of the green landscape character for which residents can look forward for a change. Some fruit trees exude scents through their flowers and fruits that are appealing and stimulating (Gibbon, 1986). Fruits of *Mangifera odorata* and *Durio zebthinus* are strong scented and adored by many Malaysians. They can conjure up vivid memories of experience being in the orchard harvesting fruits and socializing with neighbours. (pp. 25)

8.2.5 Missing Vegetations

Forms of vegetation which either hardly appeared or were totally missing in the children's drawings may be considered unimportant or positively disliked by the children. It can be suggested that children did not draw or were absent in drawings disliked and least preferred vegetation items (Seibert and Anooshian, 1993). Plants in the wild, weeds, bushes and dens appear to hold little visual or aesthetic value for children as they were missing in the drawings. Plant such as weeds, e.g. *Borreria latifolia*, 'Lalang' - *Imperata cylindrica*, a woody low growing shrub of sensitive plant *Mimosa pudica*, a pest plant occurs in many water bodies normally float in colonies - water hyacinth - *Eichhornia crassipes* as imposed by cultural messages appears to have little, or no value in the environments. There are many other common weedy species and plants that are very localised in Malaysian urban habitat. These species include *Cardiospermum halicacabum*, *Cleome rutidasperma*, *Phyllanthus niruri*, *Sida acuta*, *Tridax procumbens*, *Veronica cinerea*; ubiquitous shrub such as *Melastoma malabathrium* and small growing scrub trees of *Dillenia suffruticosa* (Rieley et al., 1990). Although those species are commonly found in urban neighbourhood areas and are important in "succession process of vegetation", children are very unlikely concern to include them in drawings for their negative values. In Malaysia, bushes and dens are normally prohibited place and parents exert control over children's access to such environments because of the danger from poisonous snakes, insect bites etc. Thus, for children in the study, bushes and dens have appear to totally negative value as compared to the most highly valued features placed by "Western" children (Titman, 1994), as hiding,

play spaces wanted by children (Moore, 1986), and regarded as special places of childhood (Cooper-Marcus,1978,1995).

8.2.6 Waterbodies

For many children, waterbodies hold a great attraction especially related to other activities. Children's design of their home landscape presented numerous water elements in various forms. In order to promote a comparative analysis of water elements, drawing samples from different ethnic groups and gender were studied. Elements that appeared frequently were identified as: 'fountain', 'aquarium', 'pond', 'swimming pool', 'river', 'waterfall', 'sea', 'lake' and 'well.' In this context, fountains were featured as jets of water made to spout and normally accompanied with structure such as container or pedestal provided for it. Some children represented waterbodies as moving water e.g., waterfall and jets of water as regular features portrayed in drawings.

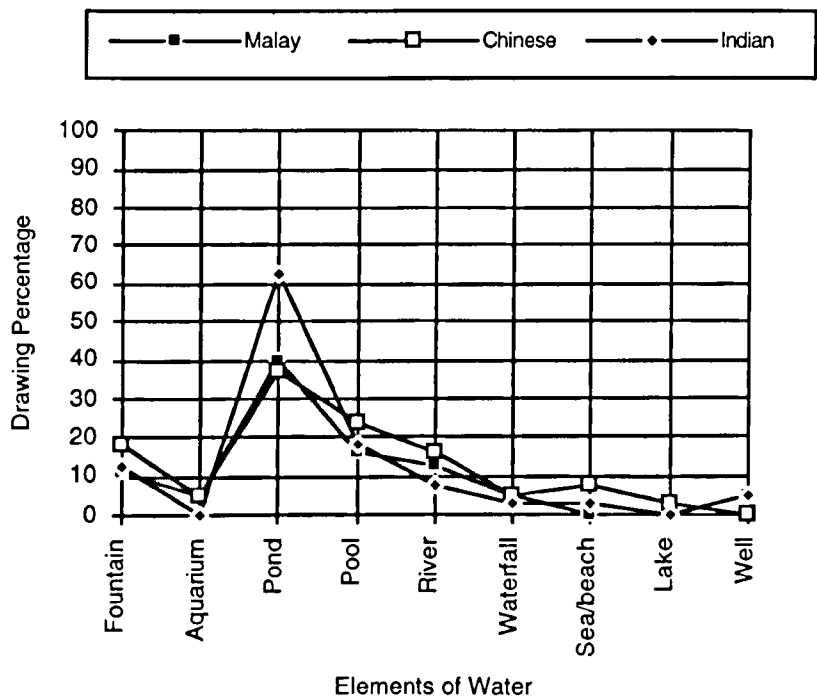


Figure 8.11 Elements of water represented in drawings according to different ethnic groups.

Aquariums were represented as an artificial tank with transparent sides for viewing fish kept inside. In real life, aquariums are placed indoors however, one Chinese girl portrayed it outdoors in her drawings. A large majority of children represented waterbodies in the form of ponds; fairly small bodies of still water formed naturally or by hollowing or embanking.

Some were decorated with rocks or boulders, foot bridges, and often aquatic plants and fishes (Figure 8.1b, Figure 8.1g, Figure 8.3h, Figure 8.5d, Figure 8.6j). In choosing the shape of a garden pond, most children have chosen organic, round or curved shapes. Living things such as fish, frog, aquatic plants suggest a way to help maintain a good ecological balance in the pond and keep the water fresh and clean and avoid stagnation. Perhaps children represent clean, fresh and unpolluted water through the presence of aquatic flora and fauna.

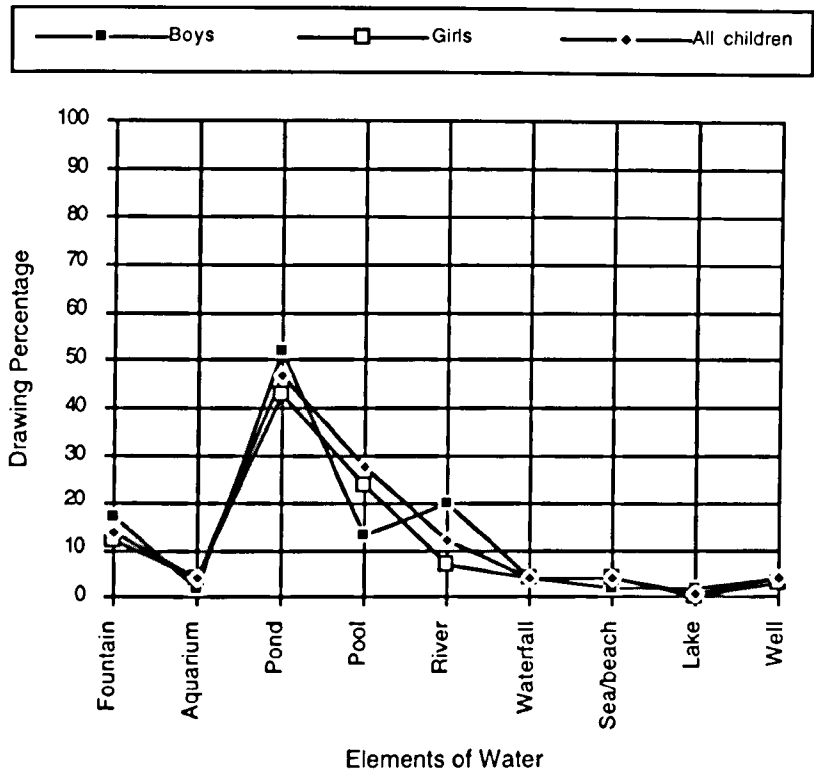


Figure 8.12 Elements of water represented in drawings by different genders.

Swimming pool as depicted in drawings were normally artificial pool for swimming and can be easily recognised with children swimming in it (Figure 8.1a, Figure 8.1g, Figure 8.5e, Figure 8.6h, Figure 8.7e, Figure 8.7g). Rivers in drawings were featured as copious streams of water naturally winding and free flowing with ground along the bank. Foot bridges, aquatic plants and wildlife which inhabit rivers such as fish, crab, and prawn were also featured in drawings. Foot bridges as linkage element suggest both a need and a desire to cross or be over water. Plants and wildlife suggest natural water environments affording fishing or even swimming (Figure 8.2d, Figure 8.5g, Figure 8.6d).

Occasionally, waterfalls (stream falling over precipice or down rockside) were associated with rivers or ponds. Sea was rare but represented by a vast expanse of water together with a sandy beach. Most rivers presented in drawings suggest a slow-moving stream that meanders through gentle curves. Perhaps a more peaceful flow of *chi* energy in Chinese belief. Sea is considered more yang, whereas water from lakes, river and stream is more *yin*. Almost all children drawings (except 3%) did not favour living near the sea, although it can be considered more invigorating compared to more peaceful living near lake or river which is much preferred by all children in the sample.

Lakes in drawings were identified as similar to ponds but significantly larger in size with a large body of water surrounded by earth, either be natural or man made. As for wells, they are literally a shaft sunk in ground, and in drawings they are represented with circular lined stone or concrete for obtaining underground water; traditionally a common feature in a village setting. Natural waterbodies such as river, lake and sea were closely related and required vast natural environmental settings compared to man-made ponds which can be constructed within a small space of home compounds.

There was no significant difference between ethnic background and gender in relation to preference of water elements (Figure 8.11). Ponds appeared most preferred (47%), followed by swimming pools (28%), fountains (14%) and rivers (12%) as shown by drawings of all children in the study (Figure 8.12). There is a similarity across the ethnic groups on preference for pond and swimming pool. The only variations in waterbody preference are based on gender - as indicated by the boys preference for river after the pond and pool compared to girls who favoured fountain as third choice instead of river. Fountains were normally featured around or closed to home site, as a small outdoor landscape feature. Girls home range may be limited to immediate home range environment, thus their preferences for fountains may justify their presence at the selected locations. The high percentage of water elements that appear in all children's drawings of different ethnic backgrounds and gender indicate universal attraction or affection of children for water as 'Western' research also suggests (Moore, 1986; Titman, 1992, 1994). Their preference for water interaction to be close to home is clearly depicted by ponds, swimming pools and fountains.

From a socio-cultural point of view, Chinese people believed that one of key element in Feng Shui is water as it has a special significance to the human body. A fresh *chi* energy for health and destiny can be brought by adding a water feature to the home garden preferably placed either east or south-east from the centre of home. However this recommended location can not be ascertained in children's drawing with reference to location of waterbody to position of house. It is very unlikely children understand this principle to incorporate it into their designs of home environment. More often, the waterbody was drawn either on right or

leftsides of the house at slight oblique position to represent free flowing water. Children may encounter graphic difficulty in positioning waterbody as most of the houses were located at one side of drawing.

In Chinese culture , water's Feng Shui has special significance for vital ingredient for life. For the adults, Feng Shui water represents money because money flows through a community in a similar way to the movement of water in landscape. Water near home affects its chi energy, as favourable water enhances the *chi* energy of home, thereby increasing wealth and vitality. Among the important factors include the quality of water, the way it flows, and its direction. Chinese children may or may not be aware the adult's attitudes toward water elements in home landscape but its presence influenced their familiarity.

8.2.6.0 Water and activity

Many children in the sample presented water in its various forms as an important feature for their activities at ponds, rivers or lakes. The drawn waterbodies often contained fishes, crabs, fresh water shrimps, and are ecologically rich with aquatic plants and animals. Children depicted themselves fishing, perhaps as a pretext to venture away from home with friends in natural setting. As Moore (1986, pp. 154) recognised they (children) "enjoy the microcosmic fishing activity immensely." Beside fishing, playing hide and seek and traditional games near water related places were illustrated e.g., on beautifully decorated foot bridge crossing the ponds (Figure 8.1g, Figure 8.3h), with waterfall, rock-out-crops or jets of water and a colourful carp (Figure 8.5d).

Aquatic plants like water lilies, lotus flowers and other semi-aquatic plants were often depicted in the drawings. Apart from fish, other animals such as frogs, crabs, fresh water shrimps (*Leander serratus*) were favourite creatures associated with water. Insects like bees and butterflies were included as decorative rather than ecological elements particularly in a small number of Chinese girls's drawings.

The presence of swimming pools in children's drawings (28%) suggested a desire for water-related play activities, especially swimming. One particular drawing of a Chinese girl shows eight children swimming, floating and playing ball happily in a small swimming pool, set comfortably in front of a pineapple shape house within the green compound with ten other children playing nearby (Figure 8.5e).

As children associate themselves with a different place or setting utilising waterbody such as pond, swimming pool, fountain, river and lake, It can be assumed generally that with a high percentage of waterbody elements present as signifiers in their drawings, may suggest what

children most prefer but are not often readily available or accessible within their existing external landscape. In reality, both swimming pools and ponds are rare or luxury features in people's garden because of limited space available, or even if the space is available it is costly to build and maintain pools compared to aquariums which are cheap and common in a house.

Water also could have been used symbolically to carry cultural meaning with associations and analogies as water is *yin*, female, and passive as explained by Tuan (1990):

Water is an image of the unconscious; it is formless but fertilizing, a source of potential power. Water symbolizes the feminine side of human personality. Immersion in water means the extinction of fire and of consciousness. It means death. Perhaps this explains why the emotion associated with water in the Chinese system is fear. As the feminine principle, water also signifies wisdom and regeneration; it is feared but the striving conscious self must accept the immersion and death if he is to be revitalized and achieve wholeness. (pp. 23-24)

8.2.6.1 Absent Water Elements

Water elements that were absent in drawings of Malay children included sea and lake. In Indian children's drawings: aquarium and lake. Other waterbody resources like river, waterfall, sea or beach, lake and well were not common and appeared only in occasional drawings especially the boys (20% for river). If river is one of "activity nodes" within children's environment, it may suggest boys have wider home range than girls (Gaster, 1995; Anderson and Tindall, 1972). Certain water elements may not have appeared in drawings because of different settings chosen, and not because of familiarity or lack of preference and interest.

Other reasons for the low preference for river (12%), waterfall (4%), sea or beach (4%), and lake (1%) to be part of the environment may be due to the reality that parents fear of physical hazards like drowning means they prohibit children from water activities at these places and deny accessibility for exploration (Hart, 1979). Aquariums (4%) appeared indoor rather than in the external environment. Wells (4%) can be considered adult features and associated with its uses in a village or rural environment settings for a source of clean water. Wells however, appeared insignificant in all children's drawings.

8.2.7 Topography

Topographical land form has a dramatic effect on Western children's behaviour outdoors (Moore, 1986). Topography can be in forms of slopes, change in level, flights of steps, mounds, or hills. However, within the immediate home environment, most children in this study represented a flat surrounding area for practical usage of building a house and

supporting outdoor activities. For the majority of children in this study, flat green grass surface may make the space intrinsically more interesting, offers play opportunity (such as ball games, and play on equipments) than undulating or steep slope surfaces.

Slopes were normally represented in drawings depicting natural, pastoral or agricultural plantation settings as paddy fields or crops plantations in the background. Hills and mountains were normally drawn as background or as 'borrowed landscape.' This may suggests a typical or common "pictorial convention" for having topographical forms and crop plantations drawn as a background for foreground and middleground environments. On the other hand, it may also represents children's negative perception of city environment which is inaccessible, unsafe and distant or detached from the home environment. Perhaps street environments may be perceived closely associated with city environments (e.g. shopping complexes, shop lots, tower blocks, bill boards, streets with cars etc.) rather than home environment. Only in more extensive landscapes, beyond residential areas, topographic differentiation was obvious. A few drawings used hills or mounds integrating with building the house, dramatic and stimulating a variety of behaviours; (Figure 8.4a, Figure 8.6b, Figure 8.7h) having a pond at the sloping site or playing kite on top of the hills (Figure 8.3d).

Change in level in forms of flight of steps, foot bridges over ponds made possible a limited variety of behaviours within immediate home environment. Drawings rarely showed topography for activities such as "sliding," "rolling" or other various play activities requiring sloping ground.

8.2.8 Landscape Structures

8.2.8.0 Play Equipments

Children's preferences for play equipment were often portrayed in their drawings. Conventional playground equipments, whether static or moving such as climbing frames, slides, swings, or see-saw were the most common elements. The presence of play equipment suggested play activities, play spaces like playground, park and open spaces. Small spaces immediate to home with limited play equipments may suggests private play areas, and public playgrounds occupy larger areas with more play elements that attract bigger number of children. Play was manifested with the presence of other children as part of their needs for socialization with peers. Within home spaces, children's may suggest different types of areas : personal, shared, public, controlled, and areas for activities (Sebba and Churchman, 1983) although they are hard to identify through drawings.

Conventional playground equipment was most popular especially with Indian children of all genders, but least preferred among Malay children. This preference may be influenced by actual experience since the use of conventional play equipment is common as the only types of play facilities provided and accessible to Indian children within neighbourhood environments. They have no where else to go except playgrounds especially for those who live in flats. Since playground were one of the most frequent element in Indian children's drawings and were very often shown located within the homesite or compound, with play equipment part of it. In drawings, children may not show a "playground" but draw individual piece of apparatus that most interested them. Group of trees may represent forest, on similar account a piece of equipment may symbolise playground. Play equipments and playgrounds are synonymously interchangeable. Homesite compounds with the presence of play equipment was shown in drawings as favourite place to meet other children for the cooperative social interaction. Swings appeared as the most popular piece of play equipment, most favourite meeting place located in sheltered area, at strategic meeting places, for instance under the tree, tied up to tree branches, or close to other play equipments within the immediate homesite. There is no significant different in preference for swings, which were equally favoured between genders (15%).

8.2.8.1 Sculpture and Furniture as Features

Sculpture pieces such as animal figures, fish, fountain jets, and decorative pots. were not depicted as play feature but as fittings or decorative elements to enhance the composition in the landscape environment. Certain items of outdoor furniture and structures were presented frequently as part of play environment setting by children in their drawings that suggest activities. Of all activities, 8% was suggested with the present of outdoor furnitures: *wakaf* or huts, seats, tables and bins. Outdoor furnitures suggests social activities and also may be related to adult or as a symbol that outside is "home." These furnitures support general outdoor play such as watching, resting, reading, play chess and draught, or talking and other general social interaction.

8.2.8.2 Barriers: Walls, Fences and Gates

Walls in children's drawings were normally represented as security or boundary wall for the house. This is common in reality suggesting they were not used for creative interaction (e.g. walls for climbing). The presence of a wall surrounding a house perhaps indicates the need for security, offering protection from intruders, marking owned home territory rather than as play object. Both high or low walls around houses defined outside and inside area.

Children certainly regard walls purely as structure with no play value at all, reflecting perhaps adult's attitudes towards personal property that need to be demarcated, secured for protection and defense system against unfavourable elements. From the drawings, it was obvious that Chinese children chose to represent boundary walls more often than other children. Their present living environments are in compact urban housing. This may mean that they are more familiar and aware of wall as important adult's structure they have to share. They may also like them because the walls are familiar features of their environment. Walls, either concrete or brick are an urban feature. Natural wall in landscape environments are made of stones, earth banks or planting materials such as bamboo (*Bambusa vulgaris*) and Siamese Acalypha (*Acalypha siamensis*) is rarely used or found except in rural or village setting.

In drawings, children represented their houses and compounds surrounded by either timber fence, chain link fencing with entrances and gateways at the front of the house. They may be representations of children's territory within which children's territorial behaviour or activities took place. As part of children's sense of territory ownership, entrances and gateways may symbolise as sense of hospitality, inviting or wellcoming environment (Sebba and Churchman, 1983). Having their own play spaces defined, children may feel that they can gain control (Altman, 1975) and reflect own identity (Cooper-Marcus, 1995; Rapoport, 1969).

Fences allow continuous views from inside and outside house compound and at the same time facilitate cool air passing through for ventilation purpose. Timber fencings were related to village house settings with a large surrounding compound. The above facts may suggest children's understanding and sensitivity in design and contextual aspects of home environments they prefer (Figure 8.1e, Figure 8.3g, Figure 8.5b, Figure 8.5c, Figure 8.5d, Figure 8.5e, Figure 8.6f, Figure 8.8b, Figure 8.8f).

Like walls, the high appearance of fences and gates in children's drawings may be subject to various interpretations. Visually, they served the purpose as an enclosing element, a defensive feature and psychologically afford privacy and sense of security. As a barrier, walls, fences and gates they restrict children's access for wider home range and more diverse facilities and opportunities. It is very unlikely children placed negative values on these barriers as the preference for both sense of security and protection with restriction of accessibility, but as part of their desire for basic ambivalence in spatial configuration which reflect the need for opposing concept (Barbey, 1974). Thus, as Moore (1986) suggested, walls, fences and gates that appeared in drawings can be interpreted as highly positive values of enclosing elements or barrier instead of negative restrictive elements.

8.2.8.3 Pathways and Linkages

It is likely the high number of 'pathways' in drawings reflects children's needs for network of both formal and informal routes connecting one facilities or space to another. Pathways (footpaths, pavements and streets) can be closely associated with children's "mobile play," which include "jogging," "roller skating," "cycling" where those activities took place. It can be argued that these activities are difficult to draw (Brown et al., 1995), although the presence of skate boards, and bicycles may suggest mobile play. These activities were rarely represented in drawings. Indeed, the essays finding strongly counteracted drawing data by many mentions of "mobile play" especially cycling. The high mentions for cycling perhaps bicycles helps children to get around and their home range can be extended far beyond home.

Possible reason why cycling was not portrayed more often except in two drawings is that it requires a larger home range. Children's actual experience of neighbourhood environments which lack safe, functionally adequate places to cycle, together with parental restriction on cycling in streets immediately around the home due to danger posed by street traffic has left children with potentially less opportunity for cycling.

Some drawings represented pedestrian paths in a formal way indicated in drawing by a change of floor finish for paved areas in immediate home environment. More often these paths leading straight from gates or central in drawings to door of houses. These suggest provision of proper pedestrian or vehicular access into home environment. To some children, village or rural settings may suggest network of informal pedestrian paths - a route that traversed the whole landscape depicted that need not necessarily be indicated in drawings. They perhaps imagined pedestrian networks helped to extend their home range or territory to a more diverse landscape. It is understandable why the streets and traffic were not represented so frequently as this would in reality severely limit their ability to move extensively around environments they prefer.

Another significant linking element was foot bridges usually depicted for crossing rivers and ponds. Foot bridges for ponds were more decorative as ornamental feature in landscapes. Some depicted as effective piece of outdoor feature supporting play activity e.g. playing hide and seek (Figure 8.5d).

8.2.8.4 Absent Pathway and Linkage Elements

It can be argued that children viewed street as barriers rather than as linking elements. The negative image posed by streets make them less frequently portrayed or absent (9%) in majority of children's drawings. Children's everyday encounters with streets are less hospitable in accomodating their play, i.e. streets are a barrier rather than social resource. The occasional apperance of streets in Malay and Indian children's drawings may be interpreted as a desire to expand their range to a more diversed landscape and facilities that one accessible and connected by streets. When depicted, some streets had no cars but bicycles and skating activity (Figure 8.1f) or safe cycling (Figure 8.3f).

8.3 CLIMATIC ASPECTS

Johore Bahru lies near the equator and has an equatorial monsoon climate characterised by heavy rainfall, uniform temperature throughout the year between 21 °C to 31 °C, and relatively high humidity (mean humidity is more than 85%). Children may be aware and sensitive to climatic changes however In drawings their design mainly illustrated two climatic elements, ie the sun and clouds, represented in more than 60% of children's drawings. There was no significant difference across ethnic background and gender in term of preference for certain climatic elements in representing weather conditions. It was observed that among the Chinese children, the climatic elements are more varied with the scenes of snow, lightening, rainbows, and moon represented in drawings (refer Table 8.3). Although each element represented only 1% from all of children's drawings, however, their awareness and sensitivity towards a different kind of weather condition make their landscapes much richer.

Chinese children seem to use climatic symbols more as decoration and pictorial devices, similar to what adults may have presented in many children's story books or television programmes. They may have copied the use of pictorial devices for their drawings. The inclusion of these climatic elements is perhaps influenced by exposure to television, magazines, books, comics as source of ideas for drawings. Chinese children perhaps spend more of their time watching television and reading than other activities during free time compared to Malay and Indian children that may be involved with other social and household obligations. In general, parental controls may dictate and regulate children's overall activities both outdoors and indoors.

CLIMATIC ELEMENTS REPRESENTED IN DRAWINGS	ETHNIC GROUPS (DRAWING %)			GENDERS (DRAWING %)		ALL CHILDREN
	Malay	Chinese	Indian	Boys	Girls	
Sun	84	53	87	70	57	62
Cloud	74	55	22	61	59	60
Wind	5	16	11	11	10	11
Snow		3			2	1
Lightening		3		2		1
Rainbow		3				1
Moon (Night)		3				1

Table 8.3 Percentage of children's drawings that include climatic elements according to ethnics and genders differences based on drawing analysis.

According to Piaget, (cf. Tuan, 1990, pp. 55): 'a young child may regard the clouds, sun, and moon as alive and able to follow him when he walks.' The presence of sun with smiling face, sometimes wearing sun glasses (Figure 8.5e, Figure 8.6c), rainbows, flowers are what Golomb (1992) termed as a "stock-in-trade character" to present expressive quality of the environment. She writes:

.....external events represent the emotions quite literally. The images are culture-specific with rainbows and monsters derived from cartoon and commercial items. Suns, rainbows, goblins, ghosts, and gold are all stock-in-trade characters that represent happiness or fear. However, a rainbow is not of the same concrete order as candy, and a pot of gold stands for what one can buy with it, suggesting that these images, while conventional, function more like metaphors in that they are also symbolic and representative of a general mood state. Thus, on the one hand these findings reveal the child's restricted vocabulary of expressive forms, while on the other hand some ability to render the meaning of an emotionally charged theme can be detected. Such competence in the depiction of a theme is most likely the case when the child, intent on portraying a personally relevant theme, uses simple figures and arranges them symmetrically. (pp. 144)

Environmental scenes with snow perhaps comes from experience or influence by reading materials. Lightening with thunder and rainbows are natural phenomenon that occurred occasionally in tropical climate of Malaysia. Moon means night time, and perhaps limits activities into indoors. The limited reference made to climatic factors should not be interpreted as a lack of interest or awareness about the weather condition. There is not such dramatic weather or seasonal changes as tropical climate offers through out the month of the year round a hot-humid, sunny or rainy-wet, monsoon seasons. Most children recognised the impossibility of having good weather everyday.

As clearly seen, the climatic elements were normally represented in positive terms: sunny and bright, cloudy, sun-set or sun-rise, and windy. Other element was the wind (9%), relatively important in association with kite flying activity. The negative aspects of weather are totally missing: dark and gloomy, raining, thunderstorm and lightening, strong wind or gust,

and dark night (Table 8.4). However, it was difficult to interpret from drawings children's sensory experiences in relation to climatic factors whether comfortable, hot, or cold.

Whilst, in general the response to climatic elements was positive in term of favourable weather condition, most children indicated daytime either in the morning, afternoon or in the evening. This perhaps associated with time of day when play or outdoor activities occurred - mostly daytime after school between 4.00 pm. to sun-set. With the tropical hot-humid climate in Johore Bahru, the children's response to the time for outdoor activities probably reflected in the preference for good weather conditions - day time and sunny in the drawings.

POSITIVE CLIMATIC ELEMENTS (appeared in the drawings)	NEGATIVE CLIMATIC ELEMENTS (missing in the drawings)
Sun	Dark, gloomy
Clouds	Rain
Wind	Strong wind, storm or gust
Rainbows	Thunderstorm
Moon	Dark night
Lightening	Lightening
Sun-sets, sun-rise	Sky without sun
Blue sky	White sky
Dry season	Wet Monsoon season

Table 8.4 Positive and negative terms of climatic elements.

On a 'macro' level, children presented the intrinsic value of climatic elements that influence the environment and are important for all living things in general terms. The majority of children were concerned about towards environmental protection and the need for comfortable, safe, clean, conducive and beautiful home environment. Sun may be regarded as source of all life. Thus, good weather conditions were inevitably preferred as shown consistently by positive climatic elements in the drawings. Other than that, some drawings with the provision for shady area with the presence of big shady trees, the present of shelters for protection from hostile climate - rain and hot sun can be regarded as a need for an adaptation of the physical space by the children. Those evidences indicate children's awareness of micro-climate that can be modified to certain extent through physical intervention to suit their needs.

8.4 CHILDREN'S RELATIONSHIP WITH ANIMALS AND WILDLIFE

The is a lack of study on children's relationship with animals and wildlife other than 'Western' research contexts of human perception of animals. Therefore, the interpretation of children's relationship with animals and wildlife as depicted in their drawings were based on 'Western' experiences. Aspects of culture and gender will both be highlighted throughout the discussion. As Kellert (1983, pp. 242) suggests, in considering relationships with animals, perceptions can be based on three components of human thought and feeling: affective, cognitive, and evaluative perceptions. The affective component refers primarily to the feeling and emotions that people attach to animals; the cognitive aspect, refers to knowledge and factual understanding of animals; the evaluative, refers to beliefs and values associated with animals. These three aspects of human perception of animals will be variously related to four areas of concern: basic attitudes toward animals; attitudes toward specific animals-related issues; knowledge and awareness of animals, and finally symbolic perceptions of animals.

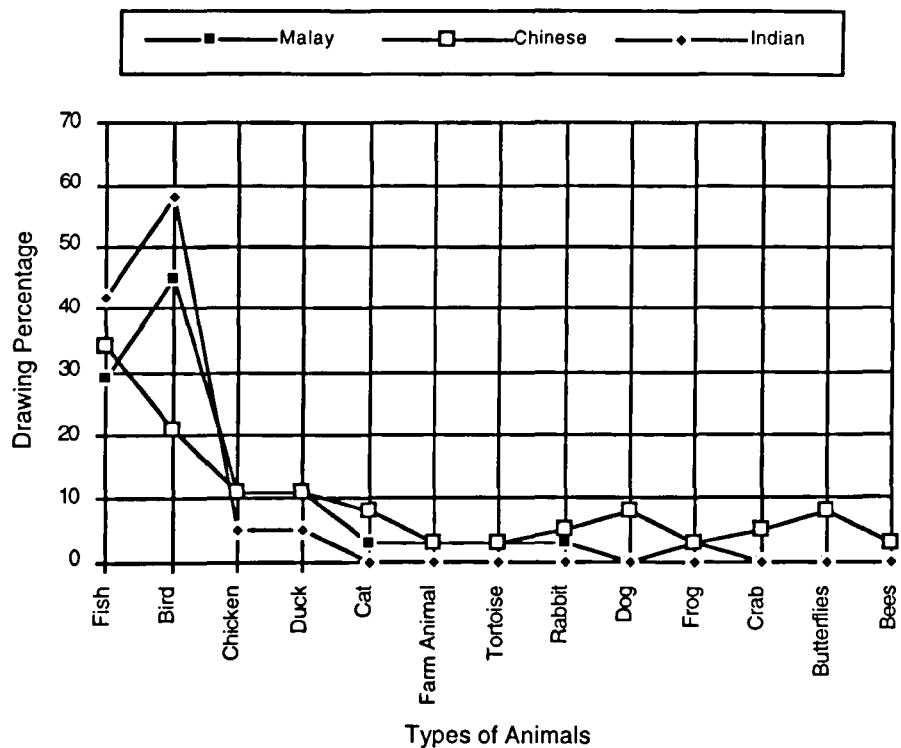


Figure 8.13 Various types of animal represented in drawings according to different ethnic groups.

Children's perception of animals is relevant to an understanding of broader relationships between children and the natural environment. In this regard, animals may represent a metaphorical device for children to express perceptions and feelings about the non-human

world. As the most sentient and evident part of the natural world, animals often function as a symbolic measurement of children's fundamental beliefs and valuations of nature (Kellert, 1983). There could also be some considerable tension and conflicting attitudes toward animals in children. To a certain extent beliefs and attitudes held by children will be depicted in their drawings. Through interpretation and attaching meanings to animals and wildlife represented in drawings it may be possible to evaluate affective bonds which relate children to animals and wildlife.

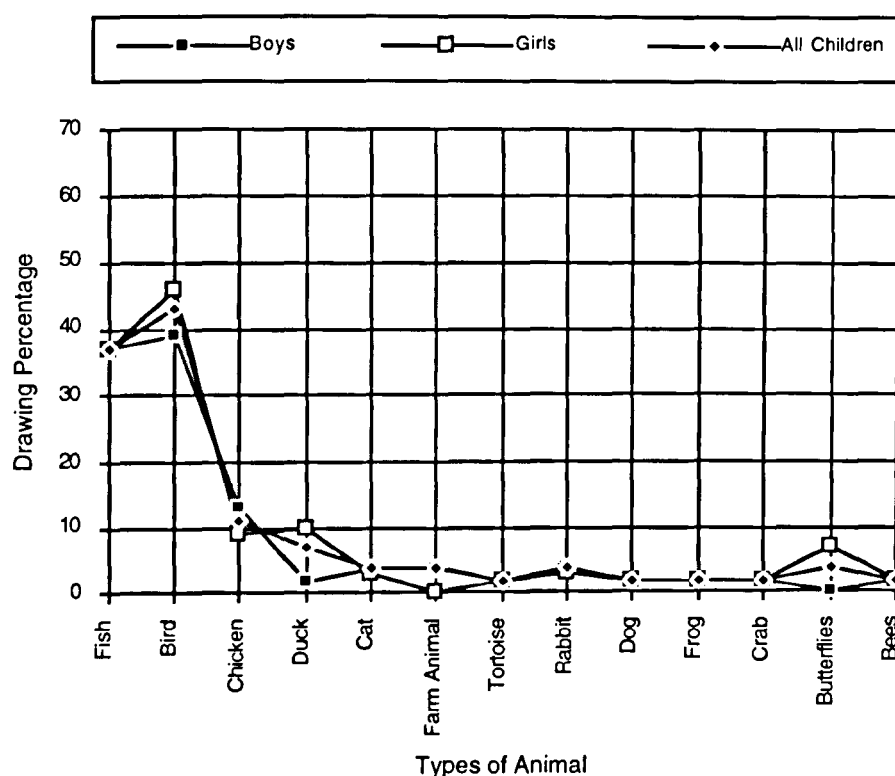


Figure 8.14 Various types of animal represented in drawings by different genders.

The majority of children's drawings had fauna depicted within the environments illustrated. The illustrations tended to show only certain species that are familiar, harmless, and commonly found. Thus, children portrayed animals universally "as symbolic of care and oneness with the living world," (Titman, 1994). They can express their willingness to share the environment, feeling of love, caring, or for taking responsible to feed and nurture or even play with animals as a pets. A distinction must be made between pet as an animal tamed and kept as favourite or treated with fondness whereas wildlife includes animals not domesticated collectively. Children's humanistic attitudes could be said to be manifest in drawings with strong emotional attachment to individual animals when they appeared close to figures drawn. With respect to the concept of having an opportunity to be in an environment shared with animals, it was obvious that, the wild, dangerous, poisonous or difficult to look after animals were excluded (Figure 8.13). This negativistic aspect can be interpreted as attitudes

towards certain animals due to feeling of alienation, indifference, and dislike of non-human world (Kellert, 1983).

Specifically, animals included in drawings included birds (43%), fish (37%), chickens (11%), ducks (10%), cats, dogs, and rabbits (each 4%) (Figure 8.14). These species were most preferred across different ethnic groups and gender as compared to wild animals. It is suggested that having those animals in their environment symbolically helped to improve the quality of the environment. There now follows a discussion of each animal species.

8.4.0 Fishes

Children often drew waterbody elements surrounded or occupied by butterflies, bees, fishes, frogs and ducks in their drawings. Waterbodies seemed to hold greater attraction when related not only to preferred activities and but also to animals especially fishes. As we have seen water, in its many forms was important to children in forms of pond, river, lake, sea or aquarium. This in turn leads to opportunities to have animals associated with water - duck, frogs, and ponds, lakes and rivers also bred fish, crab, fresh water shrimps. Rivers, sea and lakes for instant offer fishing. Similar to "Western" children, Moore (1986) found that small ponds were places children like to frequent for certain activities like watching aquatic insects, spider, water beetle, dragonflies, and animals like frogs, fish, birds etc. Some drawings suggested how children demonstrate a high quality relationship with their preferred surrounding environment - special places for territorial possession. The most 'complete' ponds that had everything: aquatic plants, frogs, ducks, fishes, waterfall, butterflies, bees (Figure 8.6b, Figure 8.6j, Figure 8.6o).

Among animals appearing in drawings, fishes were most popular among Chinese children (37%), for some vividly represented with red coloured Japanese Brocaded Carp species or "Nishiki Koi" (*Carpinus carpio*), and Tilapias (*Tilapia spp.*) (Figure 8.5d). Malay children (29%) represented some identifiable common species like catfish (*Corydoras spp.*), Gourami (*Osphronemus goramy*), Snakeheads (*Channa spp.*). Although Indian children had strong preference for fish (42%) no specific type of fish were identifiable. The findings suggest that Chinese children have affective relationships with fish as they may be familiar with them in present home environments. Keeping and maintaining such affective bonds are their priorities in future homesites. As for the Indian children, such opportunity may rarely exist in present home environments and what is presented in drawings can be interpreted as a wish, for lack of access and opportunity to experience them in everyday life. Without personal, affective bond and experience with fish, details will not be represented in drawings.

A possible reason why fishes were favourite animals amongst Chinese children may be related to *Feng Shui* practice among Chinese people. Fishes are kept in ponds to create a dynamic stimulating or peaceful environment as Brown (1997, pp. 151) remarks: "The fish in a pond have an effect on *chi* energy; depending on their shape, colour and behaviour they can be more *yin* or more *yang*. Brightly coloured fish are also stimulating. Slow, peaceful fish with muted colours are more *yin* and promote a gentler more relaxing atmosphere." In reality, many Chinese kept fishes in their houses as part of a belief that fish can bring a good luck to household. For this reason, many Chinese people kept fishes either in ponds or aquaria (as discussed earlier in Section 8.2.6).

All together in drawings, there were 208 fishes illustrated in either ponds (87%), rivers (9%), or in aquaria (4%). There were two main types of fish drawn. Firstly, those of fishes kept as pets especially in ponds and aquaria (Figure 8.5a, Figure 8.6n). Secondly, fishes bred in larger ponds or lake for harvesting or fishing sport (Figure 8.5g, Figure 8.6d, Figure 8.7h), and finally fishes living in the natural environment of rivers, lakes, or seas as part of ecosystem. It could be suggested that children perceived waterbodies holistically as ecosystems, not only showing waterbodies but flora and fauna associated with water environments.

8.4.1 Birds

Birds were illustrated in a high percentage of drawings and in significant quantity (N=275). They are most shown flying in the sky (91%) as compared with only 3% representing caged birds. For the Malay and Indian children, birds marked the highest number drawn (58 and 181 respectively) and appeared in 45% and 58% of the drawing respectively, but only 36 birds recorded contributed to 26% of all the Chinese children drawings.

As a pet, some children presented birds in aviaries and cages or bird houses. Some birds were associated with an immediate surrounding, resting on a tree or in a nest (5%) or in the compound around the house (1%). The inclusion of wild birds as favourite creature is perhaps a symbolic representation of children's desire for natural environments and awareness of ecosystems - trees are habitats for birds. Birds shown as part of sky could also be interpreted symbolic or cliched representation. In reality birds are normally seen flying high in the sky; they fly from tree to tree, hopping from branch of trees, or flying in a flock migrating from one area to the other. In the essays, children sometimes expressed their special interest in watching and listening to things like birds singing and feeding animals as part of a hobby or passing free time. Keeping birds in cage is quite common and popular amongst adults regardless of ethnic backgrounds. Obviously, there is significant similarity in preference for birds in both boys and girls although none of the species identifiable. Bird

species are perhaps more difficult to draw to differentiate the species by shapes, sizes or colours.

In some drawings the presence of forest, river, hills, trees or agricultural plantations showed children's interest in nature which offers lots of places for birds to live although no kinds of birds can be identified from drawings. Can drawings portray a space or place as peaceful and quiet? Wooden benches, *wakaf* or a hut for contemplation may suggest "the quiet place": as place for their daydream, to find solitude and to heighten their emotional awareness, watching the living thing around - flowers, listening to birds singing as mentioned frequently in the essays. Children were aware of some species of bird have beautiful voices when they sing, although no specific species are mentioned. It suggests that children have a kindly sentiment and emotional response toward birds and prefer them to be part of their environment.

8.4.2 Pet Animals

Pets and tamed animals appeared more frequently than farm or wild animals in the overall samples of children's drawings. Judging from the types of animals, surrounding locations and their association with figures drawn, some of them can be categorised as pets. To most children, pets play an important role as favourites or companion treated with fondness as the object of affection. Household pet breeds affection through physical proximity and its "attendent comforts" in home environments (Pile and Thrift, 2000, pp. 12). This attitude is supported by preference for a house with large open spaces as it offers opportunity and increased freedom to keep pets.

Animals such as rabbits, dogs, and cats were equally distributed in drawings by both genders, apparently without significant preference to specific animals. These animals that enable touching, holding, cuddling which is frequent with cat, rabbit, and dog allows children to interact more intimately, give more affective emotional attachment and increases children's interest. as well as can be associated with children's activities. The findings from questionnaire however, support the idea that pet animals offer a sense of touch, holding and cuddling are more preferred, for instance rabbits (25%), cat (22%), dogs (14% for Chinese and Indian) compared to fishes (11%) and birds (16%). There is no significant difference between ethnic and gender preferences for animals mentioned in questionnaires.

In this study, it can be suggested that the spatial locations of animals in the environment shown in drawings, can be interpreted as expressions of this relationship. This supports findings from the study by Moore (1986), and Moore and Young (1978, pp. 110-111) using

similar drawing technique (termed as "graphic simulations") from "Western" children where pet/domestic animals like cats and dogs scored a higher percentage rate (38%) compared to farm animals (27%), fish/ aquatic life (19%), and wild animals (19%).

Pets like cats, rabbits and dogs appeared with figures that suggest self or owner or family members (Figure 8.2a, Figure 8.5a, Figure 8.6k). It can be suggested that self figure is an owner of a pet, if it appeared in drawings significantly close to the pet. This suggest preference for the pet, and to a closer emotional bond between children and animals. This evidence supports the findings from Kid and Kid (1995) that children drew their pets significantly closer to themselves representing the emotional distance between the self and a pet. They suggested children who own pets interact more closely as their relationship is more accepting and less complex i.e. emotionally attached to pets especially dogs and cats. There is also the possibility that by presenting animals in drawings children can 'display affection for their pets or believe that pets made pictures more interesting,' (ibid, pp. 240).

Representation of animals in drawings as pets were relatively low for comparison between children's cultural groups and genders. However, interpretation of fishes as favourite pets is possible if they are depicted in ponds, aquaria within immediate home spaces (31%). Fishes appearing in other form of waterbodies (such as lakes, rivers) may not represented pets but wild life. Domistigated animals included chickens (11%), ducks (7%), birds in cages (3%), cats, dogs (4% and 2% respectively) without apparent distinction between cultural groups and genders. Other pet animals like rabbits and tortoise were not significant. Chinese children showed the most types of pet and Indian children the least. Despite limited spaces in home, Chinese children may experience having pets kept in their house more often than other groups of children, perhaps partly sharing adult's attitudes towards keeping animals within their residential premises.

Children perceived their relationship with animals more positively than their relationship with humans. Children were far more protective, emotionally attached, actively involved, and factually informed about familiar animals especially pets. Regardless of cultural and gender difference, children has positive, interest and concern for animals. This suggest their awareness of "humanistic" and "moralistic" attitudes toward animals.

In the *Hadith* - saying of the Prophet: "Showing kindness to an animal - any animal - is an act which is rewarded by God," (Hamid, 1989, pp. 161). In drawings, children loved to play with cat, rabbit, tortoise, and dog and they probably relied on those animals as sentimental outlets. The findings support the explanation that children have an affective feeling towards animals. As Kidd and Kidd (1995) suggested the relationship between children and their

pets are much closer compared to relationship with humans. Children's prefer to be with their pets.

8.4.3 Domestic and Farm Animals

The third favourite animal, chicken (11%) was mostly represented in the home compound with coops drawn nearby in drawings (Figure 8.2a, Figure 8.2b, Figure 8.6d, Figure 8.8g). Apart from fishes, birds and pets, other species appeared occasionally in Malay drawings and more widely among the Chinese children. Indian children showed fewer species altogether. Within present living environments (especially for those living in highrise flats), perhaps it restrained Indian children, and offered limited access for experience and to become familiar with wider species of animals. The presence of domesticated animals, especially chickens, ducks, and farm animals to some children is perhaps seen as an additional source of food rather than as pet. The appearance of domestic and farm animals were closely related to village settings if portrayed. In the village, chickens were reared in the home compound, ducks in pond. In urban neighbourhood, people do not keep or rear chicken for practical reasons. Farm animals like buffalo and pig only appeared in boys drawings to suggesting perhaps again a wider home range amongst boys. They may have access to rural or village places to see these animals themselves.

8.4.4 Wildlife (Insects and Birds)

Although the size of some animals and wildlife are too small in reality to show in drawing, most children exaggerated the scale of these and elaborated them with details when drawn to make their presence noticeable. Some animals are not related to children's activities especially wildlife that move from area to area within their territories through out the day. Various species of birds for instance require vast habitat features of plant species diversity, good ground cover and low vegetation, and structural complexity and tree density (Ariffin, 1992) which is difficult to include in drawings.

There were not many insects drawn though flowers and grasses presented frequently. Butterflies and bees appeared only in Chinese girls' drawings, whereas other insects such as ladybirds, caterpillars, grasshoppers, beetles, spiders are common and available in natural habitat within urban neighbourhood. Insects were rarely shown in drawings by most of the children. In reality, the neighbourhood environment indicate a lack of wildlife availability, rather than a lack of interest amongst children (as proven in essay). A major reason for lack of availability was the limited habitat since the "monoculture of mown lawn," (Moore, 1986, pp. 245) is insufficient for proper shelter and adequate food sources for insects.

8.4.5 Missing Animals and Insects

Farm animals like buffalo and pig only appear in boys drawings (2%). Similarly insects like butterflies and bees appeared only in girl's drawings (4%). Butterflies were preferred by girls rather than boys. Their beautiful colours, shape or movement may have been used as decorative devices in girls drawings rather than a desire for them in the environment although the two are related.

With thirteen different types of animals and insects, the preference for animals was wide spread among the Chinese children's drawings as compared to nine and four types for Malay and Indian children respectively. Another significant finding was indicated by the total absence of insects like butterflies and bees in both Malay and Indian children's drawings. Unlike Chinese children, Malay and Indian children did not use insects as decorating devices. This particular technique or device may be copied from books, children's programmes in television, or have been taught in art class. Chinese children may be well exposed and equipped with this technique better than other children (Figure 8.6g). Some children find insects are too small to be indicated in their drawings. Only 8% and 3% of Chinese children's drawings recorded the presence of butterflies and bees respectively, with relatively small numbers of insects drawn. Other animals like tortoise, dog, frog, crab only appeared in a small fraction of Chinese children's drawings. In the essay, mentions of animal were very few but with more species compared to what appeared in drawings.

It was also observed that factor of religion and social cultural values contributed to the presence or absence of some animals, for instance dogs and pigs are prohibited by Islamic religion i.e., among the Malay children's drawing. Cows are considered sacred animals only related to temple images or deity for the Indian children.

In general, many children's drawings could be interpreted as providing habitats (in the form of trees, grass and waterbody) for many species of animals and insects even where specific species were not drawn. This may be because the scale of organism is usually too small to be draw on paper. In his study, Moore (1986) suggests the reasons for the absence of animals represented in children's drawings of their favourite places may be that:

Perhaps it is because of the ephemeral quality of interaction. Animals are not place-specific. They migrate and hibernate and constantly move around in search for food and shelter. Children move around a lot too, so that although the paths of children and wildlife may cross frequently, they are the briefest moment. (pp. 45)

Children may not include animals and insects in their drawings that they disliked or fear: snakes, spiders, and harmful truly dangerous animals such as the tiger, the elephant, crocodile etc. This fear in children toward certain animals and amphibia has been universally proven as it exists in "Western" children too (Tuan, 1979, pp 14).

8.4.6 Symbolic Aspects of Children's Representation of Animals

"Symbolic perceptions primarily emphasise affective, emotional relationships to animals, focusing attention on the likes, fear, attractions, and subjective feelings that children possess in relation to animals. Relatedly, the symbolic factor emphasizes the human capacity to employ animals as metaphorical devices for enhancing communication and thought." (Kellert, 1983, pp. 260)

At a more indirect level, the importance of symbolic perceptions of animals is that animal symbols play important roles in a variety of human growth and communication factors. Indeed, human learning and development, process may reflect animal contributions to human society as important as the better known utilitarian, ecological, and scientific values of animals. In this regard, Shepard (1978, cf., Kellert, 1983) remarked:

"Animals are employed as devices for thought, metaphor, communication, and differentiation, thereby providing the basis for much human expression, feeling, and ideas. By offering opportunities for taxonomic distinction, for expressing basic dilemmas of selfhood, and by communicating complicated thoughts and feelings through analogy and abstraction, animal provide a number of fundamental symbolic functions. For instance, children's books and stories were found to include animal characters. In many contexts, animal species are symbolically employed to express particular feelings and motives." (pp. 260)

It can be suggested the use of animals for symbolic functions in children's books may have influenced children (especially amongst Chinese children) to copy the communication technique utilised for learning as presented in books. In their drawings too, children represented animals in a symbolic or abstract manner in form of sculpture or as playing object (Figure 8.5b, Figure 8.6g). These depictions however, may be a "translation" of an adult's approach to using animal characters in "decorating " the built environment.

Analysis revealed that domestic animals (familiar species) and pets were aesthetically attractive to children. The least preferred types were biting and stinging insects, which can be seen as aesthetically unattractive animals; animals associated with human injury and damage, and invertebrates in general. Based on these results, the following factors appear important in influencing symbolic perceptions of animals: perceived danger from the animal

and the predatory tendencies of the animal, and the relationship of the animal to human society (e.g., pets for companion, play, farm animals, pest).

8.4.7 Conclusion

The findings revealed that there were three types of animals, namely bird, fish, and chicken that children across the ethnic groups particularly preferred to be part of their environment. Each type of animal may be depicted to perform different functions either behaviourally attractive (e.g. gentle movement or sound of particular animal), their character or appearance (shapes and colours), or for the sake as compositional components that enhance the drawings representing natural environments, habitats or ecosystems (e.g. related to waterbodies or vegetations). The widely spread types of animals in Chinese children's drawings perhaps, could be explained in term of their present living environment in densely populated urban areas which are limited in wildlife habitat, hence deprived them from enjoying being closer to animals and wildlife in natural environment. Consequently, they may keep more pets or animals in their home. Types of housing children actually live in (see Table 7.5 in Chapter 7), location and characters of residential neighbourhoods may influence the type animals shown in their drawings. High density compact housing is characterised by lack of natural resources that can support wildlife, lack of open space around the house for outdoor pets. The wider range of animals in Chinese children on the other hand could possibly being influenced by knowledges and informations gained through media of television, books, comics, and magazines they read.

Children who live in highrise flats especially among Indian children may have different attitude toward animals. Highrise living restricts children from keeping pet animals due to space restriction and regulation imposed by authority. It was found social, emotional and cognitive development of children living in highrise flats is affected because of difficult access to the outdoors, and constraint for attachment to nature and wildlife (Van Vliet, 1983). The presence of animals was considered highly prized in improving the quality of living environment, thus most desired. This phenomena may be reflected amongst Indian children as fewer animals species represented in their drawings but in highest number of each type of animal (e.g. 108 fishes and 181 birds, compared to only 43 fishes, 58 birds for Malay, and 49 fishes, 36 birds for Chinese in their drawings). Indian children's emphasis was more on quantity rather than quality. Thus, the interest was well expressed in drawings.

Most of the animals drawn were typically familiar rather than unfamiliar animals which are easily found either within present residential neighbourhood environment (e.g. frogs, birds) or animals kept as pets (e.g. cats, dogs, rabbits, fishes), insects (e.g. bees, butterflies). Animals and wildlife familiar to children is in reality far greater in number compared to limited

number of species presented in drawings. Possible reasons perhaps they were too small to draw on a piece of paper; types of environmental settings cannot accommodate them; or being influenced by adult's attitudes to have clean monoculture lawn or their presence in environment were taken for granted.

The significance of animals in relationship to the children's home landscape drawings can be ranked according to the importance in the thematic aspects, character or appearance, and compositional component. Thematic aspects are related to the animal's movement, friendliness, affective, sound, interactive, and functional aspect, for instance it affords activities. 'Pets offer amusement by their physical appearance, their enduring tricks and minor talents... Pets can be doted on, but also teased and humiliated..' (Tuan, 1984, pp. 144-145).

A second thematic aspect is concerned with visual appeal characterised by the character or the appearance of animals including their colour, shape, size, form, beauty, and sense of touch. Children may not discriminate animals but it was found that the most significant influences on children's protective feelings toward animals were "the intelligence, size, perceived harmfulness, and aesthetic appeal of the animal." (Paulhus and Dean, 1977, cf. Kellert, 1983, pp. 261).

The third thematic aspect is compositional components within drawings to a lesser degree employed by children merely to make the representation look interesting, complete; associated with the contextual habitat or eco-system; or as a common or familiar objects; and or presented in an alternative form of sculpture or decorative objects. Other plausible explanation was from the compositional point of view perhaps, with the presence of sky, trees, waterbodies, and floorscape of homesite, the most compatible elements would be birds, fish, chicken etc.

In designing an ideal landscape environment, children portrayed it as a "happy" atmosphere (interpreted by the presence of smiling faces, playing with friends, and colourful jovial environments). In a "happy" atmosphere, they tend to prefer having animals around as means to express their emotional link between them. As a human being, the sense of identity among children becomes more secure if they can link themselves to external physical elements in nature. In this sense animals best serve as their self-image (Tuan, 1978). In Islamic values (for Malay children), the attitude toward animals emphasise moralistic valuation: animals that can fly, like birds and insects for instance are seen as creatures created by God living in their own communities need to be respected, avoid cruelty to animal as stated in the Qur'an:

There is not an animal
(That lives) on the earth
Nor a being that flies
On its wings, but (forms Part of) communities like you.
Nothing have we omitted
From the Book, and they (all)
Shall be gathered to their Lord
In the end.

(The Qur'an, Surah Al An'aam, or Cattle 6: 38)

Source: Ali, Abdullah Yusuf (1968) *The Holy Qur'an: Text, Translation and Commentary.*

In Hinduism, the fulfilment of one's duty towards all creatures can range from making up for the many acts of cruelty committed against animals by humankind; also being kind to all living creatures, by giving the left-overs from meals to animals, moreover the deities have to be atoned by worship (Klostermaier, 2000, pp. 30). In the context of Western society, human perception of animals may be similar to the above view as Kellert (1983) notes:

"... the moralistic viewpoint objects to pain or harm to animals or the denial of animal rights not rationalized by absolute necessity, in contrast, the utilitarian perspective assumes the positive value of exploiting animals and their habitats if some practical benefit results, omitting situations of obvious cruelty or suffering." (pp. 249)

Kellert (1983, pp. 250) however, also suggested that children's attitudes are significantly different to adults. Children's attitudes were characterized by a relative lack of appreciation, concern, affection, and knowledge of animals (wildlife) and the natural environment, but more concern about utilitarian, dominionistic and negativistic attitudes. This statement however contradicts with many findings of studies that looked specifically into children's interactions and uses of their environments (e.g. Moore, 1986; Titman, 1994; Raymund, 1995). Kellert's study was focused on broad human affection, cognition and perception of animals based on a typology of basic attitudes toward animals. Investigations of children's relationships with animals were measured based on ten adult attitudes or valuations. The findings from drawings however, suggest children are fully aware the importance of ecological relationship between animal and wildlife with their habitual environment. They have shown their affection, concern, appreciation toward animals much greater through humanistic, moralistic and aesthetic values. These remarks support findings in the study by Kid and Kid (1995):

"Some children were extremely aware the presence of wildlife and have a positive attitudes, knowledge, and feeling about wildlife and nature. They understand of positive attachment toward nature and protection of animal and wildlife which last them for a lifetime." (pp. 241).

However, despite this awareness, children still lack critical eyes that their environment (micro-climate, vegetation and urban wildlife) can be modified, affected by planning and design (Moore, 1986, pp. 221). Finally, from children's point of view, the association with

animals and wildlife can be identified in term of the recreational, aesthetic, educational, ecological, social values of wildlife based on Kellert's (1983) ten different attitudes or evaluation toward animals. The categories although based on study of American attitudes, knowledge, and behaviours toward animals, are still useful and applicable in the context of this study as summarised in Table 8.5. The findings from drawings showed that, the most prevalent children's attitudes were the "ecologistic, humanistic, moralistic, aesthetic, utilitarian," and "negativistic." Analysis of drawings suggest many factors influenced children's attitudes toward environmental concepts and activities related to animals and wildlife: aesthetic values of wildlife, culture, knowledge about the benefit and importance of wildlife.

8.5 THE BROADER LANDSCAPE CONTEXT IN CHILDREN'S DRAWINGS

Broader landscape context is related to children's home range. The analysis of children's drawings may provide clues as to how children from different cultural background and gender perceive, cognise and organise home range and territory in their ideal home environment. Children's relationship with the surrounding neighbourhood may be portrayed in term of accessibility, i.e., they can travel to various kinds of places for certain purposes within the broader residential landscape.

Concept of home-range can be measured by interpreting mode of movement or mobility (e.g. by cycling) and freedom of children within single spatial home area or setting (accessibility) either continuously linked (e.g. by pathways or linkages) or discontinuously linked (e.g. by barrier such as street), utilised and occupied in normal activities (such as play, meeting and socialising with friends or peers) (Anderson and Tindall, 1972) (see section 4.5 in Chapter 4). It can be expected of children with restricted home-range, and a lack of experience of exploration in the wider landscape will depict or define a smaller space immediate to home. For those with a greater territorial range, their experience in relation to activity and exploration would be likely to draw on this experience in their representation of home environments. Through drawings, children would be able to represent the extent of environment they prefer to venture within freedom of movement, and how these spatial areas are linked to each other in supporting preferred activities.

In drawings, it is possible to study home range by exploring inclusion of landscape features and spaces as significant activity nodes. Obviously, it is not possible to measure distances children travel to various kind of places as suggested by Bussard (c.f Gaster, 1995) but the inclusion of elements related to the broader environment may suggest familiarity with a wider home range. The recent rethinking of the concept of home-range by Gaster (1995), placed children's independent movement with the environment centering on the home as an important concept that helped to reveal children's relationship with places meaningful to

them such as sidewalks, backyards, neighbourhood shops and vacant lots. The main concern is children's needs, freedom and ability to access and experience various places and spaces within an array of neighbourhood settings on their own.

TYPOLOGY OF ATTITUDES	HUMAN ATTITUDES TOWARDS ANIMALS	CHILDREN'S ATTITUDES TOWARD ANIMALS	FINDING FROM DRAWINGS
Naturalistic	Primary interest and affection for wildlife and the outdoors	Children have positive feeling about wildlife and nature (Kid and Kid, 1995).	Limited interest toward affection for wildlife. Restricted to common species like birds and insects.
Ecologicistic	Primary concern for the environment as a system, for interrelationships between wildlife species and natural habitats	Children understand of positive attachment toward nature (Kid and Kid, 1995); Animals as community need respect (Qur'an, 6:38).	The presence of animals and vegetation to relate their natural habitat e.g., bird's nest, aquatic plants.
Humanistic	Primary interest and strong affection for individual animals, principally pets.	Pets for play and symbolic care (Titman, 1994); As self-image (Tuan, 1984); Display affection for pets (Kid and Kid, 1995); Preference for pets (Moore and Young, 1978); Children's protective, emotionally attached, actively involved and factually informed (Kellert, 1983).	Cats, rabbits and dogs represented as pets for play. Fishes in ponds and aquarium kept as pets.
Moralistic	Primary concern for the right and wrong treatment of animals, with strong opposition to exploitation or cruelty toward animals.	Children understand protection of animals and wildlife (Kid and Kid, 1995); <i>Hadith</i> - say of prophet to show kindness to animals (Hamid, 1989); Attachment to animals provides sense of responsibility and accomplishment (Moore, 1986); Animal rights in Islam: animals should be well fed and well-looked after, and against to cruelty to animals (Hamid, 1989, pp. 161).	Children caring attitude toward animals e.g., provision of shelters for animals. Presence of pets during play activities. Feeding animals as part of obligation shown in drawing and mentioned in essay.
Scientistic	Primary interest in the physical attributes and biological functioning of animals.	Low interest and knowledge (Kellert, 1983)	Missing. No mentions or evidence.
Aesthetic	Primary interest in the artistic and symbolic characteristics of animals.	Physical appearance of pets amused children (Tuan, 1984); Aesthetic appeal of the animal has influences on children (Paulhus and Dean, 1977, cf. Kellert, 1983).	Brightly coloured fishes in ponds and aquarium for their aesthetic appreciation. Multi-colours butterflies, bees and flowers in home compound.
Utilitarian	Primary concern for the practical and material value of animals or the animal's habitat.	Children enjoy the microcosmic fishing activity immensely (Moore, 1986); Children's high significant for material benefit of animals or their habitats (Kellert, 1983). Children reared duck for food (Hart, 1997).	Fishing as favourite activity. Animals reared for food e.g., chicken.
Dominionistic	Primary interest in the mastery and control of animals typically in sporting situations.	Children's knowledge about animals for sporting purpose (Kellert, 1983).	Missing in drawings. Rarely mentioned in essays.
Negativistic	Primary orientation toward an active avoidance of animals due to dislike or fear.	Some animals are feared or disliked by children e.g., snakes, spiders, lion and tiger (Tuan, 1979); Children show negative attitudes toward dislike and feared animals (Kellert, 1983)	Feared and disliked animals were missing in drawings e.g., dangerous, poisonous animal such as snakes, biting insects.
Neutralistic	Primary orientation toward a passive avoidance of animals due to indifference.	Low interest and knowledge among children about indifference (Kellert, 1983); Missing animals and wildlife (Moore, 1986)	Missing. No mentions and evidence found in children's drawings.

Table 8.5 Basic Typology of Children's Attitudes or Valuations Toward Animals and Wildlife
Source: Adapted from Kellert (1983) and other's works.

8.5.0 The Range of Action

The drawings indicated children's activities taking place within part of their home territory. For some children the territorial range is quite broad across a neighbourhood for example. To others the range is limited to within the immediate homesite for just a short distance away from home judging from the scale of the drawing. Within this range their friends are close by showing the opportunity to interact socially. Some children's home-range, especially Chinese children, do expand far beyond the small home compound. Most children expressed confidence in moving anywhere within their home compound and neighbourhood but not the city as they perhaps have less knowledge of this or it is not accessible to them. In the drawing, city or urban features do not appear as part of the environment at all. Children do know the type of environment that would be ideal for them however, the street and urban scene is seen as so inconvenient, perhaps due to traffic danger and parental restriction. Thus, children prefer an open field, village setting, playground or play areas instead as safe and tolerable places.

In their drawings, the Chinese children keep consistently within their home boundary, which is smaller compared to Malay and Indian children's boundaries. Their concept of other home areas was occasional. The drawings suggest that children prefer to move freely and participate actively in environment and within their "personalised" territory they are more confident. The Indian children tend to fix their action space in the nearby street and play spaces, thus less mobile.

The Malay children, however, appear to be the most mobile, often showing a broader context over a wider neighbourhood, and occasionally much further than the immediate homesite. The presence of bicycles in some of the drawings (Figure 8.3f) suggest that they are more often on the move: walking or cycling. Despite this spatial range, they seem to be exposed to a more restricted variety of people, activity, and place as shown in their drawings. The important barriers to movement appear not to be distance but personal fear, dangerous traffic, lack of spatial knowledge, or in case of the girls, parental controls as suggested by findings from questionnaires.

The types of environmental settings used in drawing may be indicators for the extent of home-range, between homesite or compound, urban, and rural, the village or *kampung* setting and suggest a wide home-range with more activity nodes: rivers, agricultural plantations, hills, group of trees or forest, topographical changes, and open fields. This type of setting is able to provide contact with nature (Kong, 2000), a much richer environment for explorations, diverse activities and adventure compared to urban home-range in the central

city. It can be argued that with slightly higher preference for village settings amongst Malay children (37%) compared to Chinese (33%), and Indian (24%), the extent of home range for Malay children may be consistently greater. Similarly the home range for boys (33%) was found to be slightly larger than of girls (28%) as shown by their drawings. In the essay, one boy writes to suggest his wide home range:

"There would be many facilities in my ideal home environment such as waterfalls, rivers, adventure places, historical features, forest reserve, magic features, a big playground, an underground library, a science lab, a traditional museum, a robot, a view to KLCC, a computer room, a canteen and a workshop." (Malay boy, age 10)

The finding supports evidence from a study by Anderson and Tindall (1972) that the extent of home range for boys and sub-urban children age 14 to 19 year-old was larger compared to girls and the inner-city children respectively. This phenomena in home range is related to and affected by both children's perception and cognition. Children with limited environmental experience (limited access, with restriction imposed) have proportionately restricted home range concepts and environmental images (Stea, 1970). Thus, children's perception and cognition of their neighbourhood environment will determine the extent of their home range (Gaster, 1995).

8.5.1 The image of the ideal home environment

A striking difference between the ethnic groups is the way in which the children image their environments and neighbourhoods. In their drawings, Chinese children drew similar coherent spaces. Their representation of the home spaces perhaps can be interpreted as "nice," "friendly," "protected," "fun," and "beautiful." They portrayed neighbourhood friends and emphasised waterbodies, flowers, and the presence of animals. Some drawings are crowded with vividly drawn friends and outdoor activities (Figure 8.4c, Figure 8.5c, Figure 8.5e, Figure 8.6h, Figure 8.7b)). In fact, their drawings exhibit much richer elements, displays strong boundaries and enclosures compared to Malay and Indian children. There is a strong impression of an immediate territory thoroughly known and personally participated in, a territory where they are familiar with the basic institution of the community.

The drawings from the Malay children give an utterly different impression. They are dominated by arrays of wider environmental settings, most of them with further detail or indication of village or rural settings, thus, a consistent setting is recorded, but one without a boundary except for occasional hills or mountains as a background (Figure 8.2a, Figure 8.2b, Figure 8.3e,g, Figure 8.4a, Figure 8.7h, Figure 8.8g,h). Their drawings focus on the places within the home environment with which the children are likely to be able to get involved; primarily the outdoor play spaces between the home and the surrounding

environment - and neglect most of the adult features (e.g., vehicles and street). All the drawings are daytime drawings ranging from the morning to the evening before the sun-set.

Attempts by Indian children to portray various location in relation to the house as a whole, produce "islands" of special activities linked by linkage of path or street (Figure 8.8e). However, none of the children in the study, produced drawings of home environments linked with an elaborate street network with urban features like shops, institutions, places of entertainment, historical buildings, and waterfront which Johore Bahru city offers. In most of children's drawings, the area they cover and the elements they contain are more diverse than any typical existing neighbourhood environments. Children have a concept of place of their own furnished with the activities they preferred most. Their attention is more fully to the immediate space surrounding the house. Their knowledge about natural environment is not saturated with the availability of natural resources within the city boundary. Perhaps, children selectively present the locales most preferred and useful to them. Many children find their own areas within the home environment interesting, and prefer to spend much time with friends playing or socialising. They may find their present home environment as unsafe place due to traffic, and it is noisy and dirty; cramped and there is little place to play. The need for a more spacious space, open field and grass compound for activity is fully depicted in many drawings and expressed by more than 60% of children in their questionnaire (see Figure 8.16 and Figure 8.17: preferred spaces for activities).

8.5.2 Attachment to People in Home Environment

One additional aspect regards contact with other people and illuminates the social link of children in their environment. The list of people and their relationships in questionnaire responses and the mention of people in essays sometimes give a scale of relationships (as best friend, good neighbour). Most of the children prefer to be with others, especially friends (more than 30% in essay, and more than 25% in questionnaire), parents, family and relative, or occasionally neighbours (4% in essay and 8% in questionnaire) (refer Figure 8.15). The needs for "sense of contacts" with closely knit people like father, mother, brother and sister or family and relative for a more personal attached and affective relationships were mentioned frequently in essays and questionnaires.

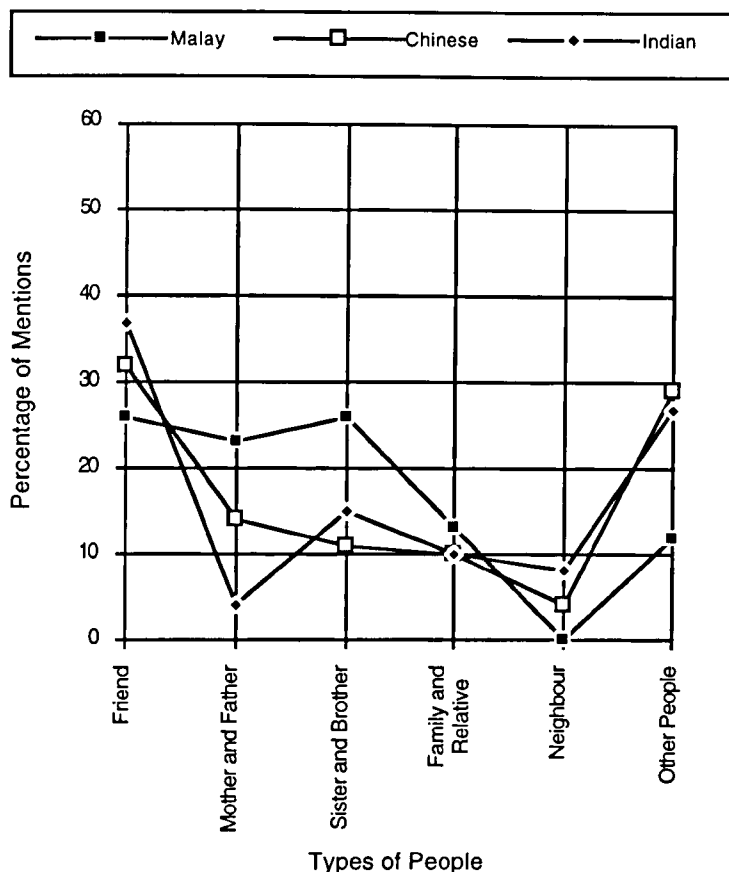


Figure 8.15 Children's attachment to people as shown by response from questionnaire.

The images of home environments show an interesting dichotomy. Boys mostly represent the environment as a wide open, boundaryless spaces. Their drawings are schematic but accompanied with some sensuous detail, including similar types of space for various activities. Girls on the other hand tended to make pictorial representations showing outdoor features and facilities, grass lawn areas, and flower planted areas. Their drawings are full of details embellished with texture, ornaments, and splashes of colour. These sensuous representations seem almost as if they were an escape from a harsh, dull and monotonous environment - an escape accomplished by the addition of colour, trees, waterbody, perhaps where none exist at their present home environment, or undulating land, the present of mound or hill where the present living environments are flat.

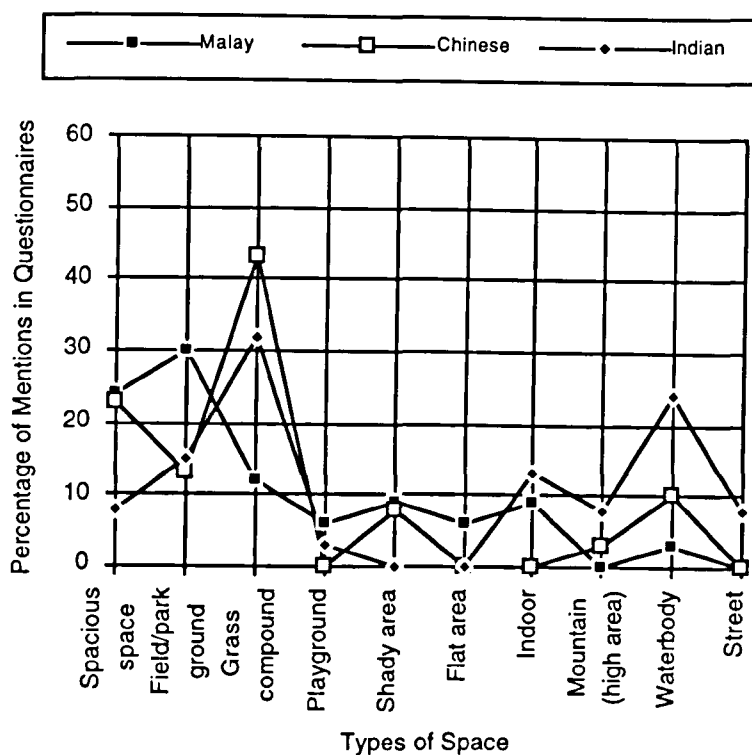


Figure 8.16 Spaces preferred for activity as mentioned by children in questionnaires

The reaction of Indian children of different gender on the concept of home environment are again dissimilar. Their drawings vary widely in extent, from the immediate surroundings of a single house with definite boundary to a wide open areas. Some drawings show essentially a street environment. The street are narrow and winding; other areas are appended as an area for a house, outdoor features and facilities (Figure 8.1c, Figure 8.1e, Figure 8.1f, Figure 8.8e). Other facilities like shopping area, schools, bus stops are totally missing as part of the home environment. The social facilities are conventional or traditional play facilities in play areas. The tarmacked, treeless streets are empty of human users except for a few cars. The houses are drawn as big, beautiful and comfortable with extension of compound used for rearing chicken, gardening and play. Cycling is rarely depicted in the drawing but frequently mentioned in the essay (26%) as a favourite activity much desired for many children.

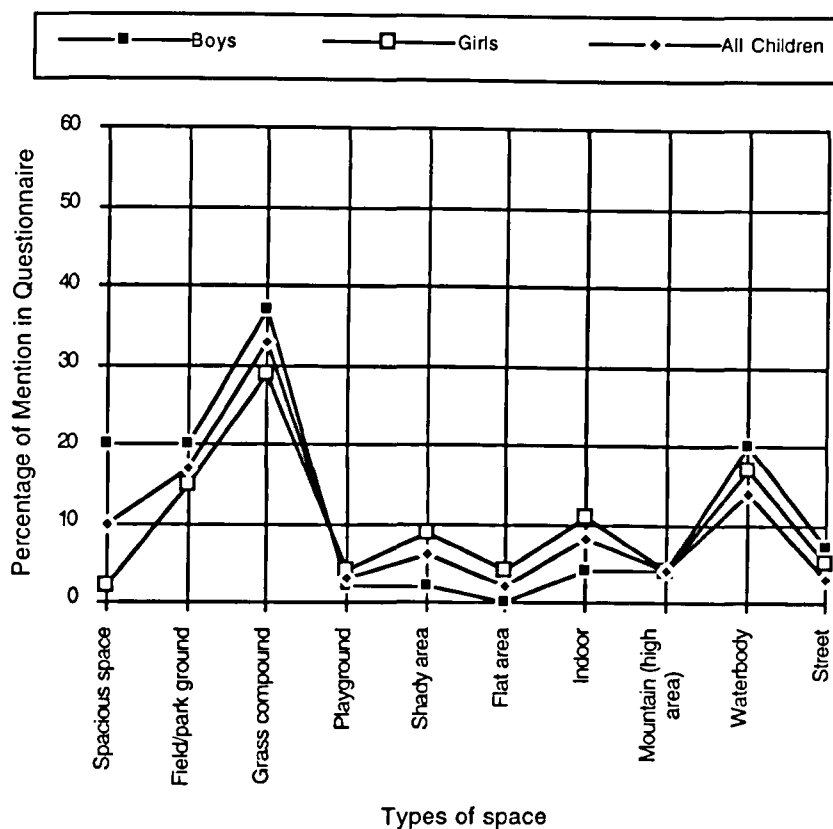


Figure 8.17 Types of space preferred for activities as mentioned by boys and girls in questionnaires.

The scenes drawn can be interpreted as an environment that can be manipulated by the children so they can move through the environment, walking and doing activities freely with friends. It represents a kind of hope for such environment in the future. Their positive feelings are reinforced with the physical appearance of figures in the drawings - happy smiling, apparently full of vitality, and actively involved in various activities. Natural environments with the presence of greenery and plants appears to influence children's affective attitude and emotion which bring happiness that well stated in this essay:

"I would like a big bungalow with a beautiful playground and big swimming pool. I would like to have a big compound with a good view. The image must be of a natural environment with greenery. Plants symbolically represent happiness and peace for the whole family. There would be a swimming pool in the compound surrounded by seating, benches designed and handmade locally. Other facilities would include one children's playground with a lot of stuff normally found in playgrounds. The fish pond has in the background a fountain of water and a small foot bridge. In the evening I would rest while feeding the fish in the pond. Seeing the fish would make me feel happy.

I like skipping, jogging as it helps to strengthen feet and bones. There would be one bicycle, a swing, a slide and a small car. I will cycle every Saturday and Sunday. Playing with the swing gives me peace of mind. After jogging and running around the home compound, I would play badminton, netball and playhouse until I get tired. I would then rest in the small playground, help my mother sweeping, help my father washing the car before bathing, praying, resting, watching television then sleeping." (Malay girl, age 9)

8.5.3 Preferred spaces or places

In the questionnaires, when asked which environment they like best for their favourite activities, most of Malay children answer consistently: open field or park ground (30%), and spacious space (24%) or at the grass compound (12%). The responses of the Chinese children showed slight variation: grass compound (43%), spacious space (23%), followed by an open field or park ground (13%). Those from Indian children say much the same, although they also emphasise waterbody areas and indoors (Figure 8.16). The boys prefer grass compound (37%), and with an equal percentage for spacious space, open field or park ground, and waterbody area (20%). As for the girls, the ranking order of preferred spaces is grass compound area (29%), waterbody area (17%), followed by open field or park ground (15%) and indoors (11%) (Figure 8.17). Some places may be so common that they become overlooked by the children. In questionnaires, when asked where they least like to be, most children mentioned dirty and smelly areas, boring places, where they are under control or have no friends. A few will mention places they believe to be dangerous such as monsoon drains, vacant land with dirt and rubbish, open areas full of trash, and busy, dangerous streets.

In sharp contrast to questionnaires, most children indicated grass compound as a favourite space for activity and equivalently they gave it a loving emphasis in drawings with colourful flowers. For many children perhaps, grass compound and open fields or park ground are a welcome relief from the harsh reality of hot and dangerous street outside that surrounds their present urban environment. "Urban children, in particular, find they are trapped in landscape of despair and social neglect... compounded with restricted access to local resources, all contribute to make many cities a hostile and threatening place for children and youth. A consequence of this 'urban risk' is people's retreat to home environments," (Malone, 2001, pp.6). Thus, to many children, they placed a high regard to homesite with green, natural environment: an oasis of stimulating experience where the children can do new things and read books, play with friends under the shady trees, or be with the family members and pet animals. This must be an effect of housing planning on the children, and points to the important role the homesite can play in the lives of children.

Through drawings, children are able to describe their ideal home landscape. Their utopias reflected consistent themes: natural environment rich with trees and other vegetation, friends, quiet, free from traffic, spacious spaces, big house, cleanliness. (The repeated emphasis on health and beautiful spacious environment may indeed reflect some hidden messages of what have been taught in school, and what is deprived them in the actual

environment). It is quite remarkable how differences across ethnic backgrounds and genders tend to level out in describing the ideal. Many children in all three different ethnic groups describe rural scenes or village settings, while others advocate home compound excitements (e.g. play, gardening, swimming, resting etc.). The Malay children most often picture a village. This representation of socially homogenous village or *kampong* is perhaps a symbolic acknowledgement for the need of community interaction where territorial right is commonly shared for the whole area since "there is no obvious delineation between public and private space, residents maintain a common claim to the whole area," (Walter, 1978) (Figure 8.3g). Chinese children frequently describe a home environment with luxury of outdoor space, and the Indian children are pre-occupied with play spaces and equipments. Only a few children depicted living by a beach front (5%), on top of hill (1%) or river front (26%) in drawings.

As depicted in drawings, it can be suggested children are conscious of few barriers affect their present movements, although they may actually use their freedom less than one might think. Some children have shown feature of defensive behaviour with the presence of walls, fences especially amongst Chinese children. This is perhaps evidence of an urban community with high mobility and high cultural and social diversity where space and home territories are necessarily defended (Brower, 1980). Almost all children mention the dangers that surround them: natural danger (as in the rivers and forests), but above all the hazards of traffic, neighbourhood conflicts and of the threatened assault of "bad people." Children want to be more independent of their present environment and of their parents, to have more opportunity for spatial mobility and freedom as social and environmental context of a neighbourhood can offer environmental and social competence (Malone, 2001).

8.5.4 Beautiful Environment

Beautiful places within their home environment for the Malay children include the garden, parks, and trees. For most of the Chinese children there were grassy and flowery compound with pond and colourful fish inside. The Indian children, on the other hand indicated places with flowers that give opportunity for gardening activity, fish pond and playground with lots of play equipments. Rivers, forests or hills in reality hide something fearful (such as drowning in river, getting lost or attacked by wild animals in forest), but their rich natural resources are also much desired to some children. Rivers for instance meandering through landscape with boulders, waterfalls, afford fishing or picnicking by the bank. Forests and hills may offer adventurous pursuits like jungle tracking and climbing respectively (frequently mentioned in essays). Ecologically rich environments "afford" a source of stimulation (Wohlwill, 1983, pp. 12) and children are able to differentiate between natural and man-made environments. This

mixture of fear and romance parallels perhaps their ambivalent feeling for the natural resources as found in their essays:

"A beautiful and clean home environment will make me feel happy and comfortable. Beautiful, colourful flowers would be planted in planting pots. Fruit trees like guava, rambutan and mango will also be planted. There will be a swimming pool with crystal clear water, together with chairs and tables for the family to rest near the house. At the rear of the house, there would be a rice field of average size and green hills for fresh air and peaceful environment and a beautiful good view. Some coconut trees would be planted in the compound. A see-saw, swing and seating would be placed near the rice field for me and my sister to play. With a big and comfortable compound I can get engaged with various sporting activities. In the morning, I would help my mother and father water the plants and sometimes sweep litter in the compound. I would have my breakfast then swim with my brother and sister. In the evening, I would like to cycle around the house, play with the swing, have tea with the family next to the ricefield on a bench while enjoying fresh and clean air. Sometimes I would like to read a book for peace of mind and play badminton with my brother at the rear of the house." (Malay girl, age 9)

8.5.5 Conclusion

The findings from drawings suggest, in general, children's home-range evolved around environmental cognition that developed from small, familiar and used territory such as home site to an actively explored larger areas in forms of activity nodes (specific areas that support certain types of activity such as rivers, open spaces or playgrounds, streets etc.). The various familiar places children portrayed in drawings can be an indicator of the broader context of home-range they prefer and relate to. At the same time it may also mark preference for accessibility to the neighbourhood environment as children's independent access to their wider local environment is of high value for children (Tranter and Pawson, 2001).

Through drawings, it was possible to elicit children's preferred structure of home-range in form of activity nodes (i.e., games and play areas, adventural play areas, place for social interaction). Drawing can not indicate distant. Children like to travel, and bicycle ownership among children was represented with limitation although frequently mentioned in essays. The study of children's home range yields various issues related to "design challenge," (Gaster, 1995, pp. 36). In this research, the focus is on the understanding the concepts of home-range as portrayed and locating the possible ways and means for its application in the planning and design of the environment for children. The concept of home-range can be usefully integrated into the planning and design of neighbourhood or urban environments.

8.6 SPATIAL DYNAMICS AND AFFECTIVE ASPECTS IN CHILDREN'S DRAWING OF HOME ENVIRONMENT

The findings from the analysis of children's drawings revealed some pertinent aspects of spatial environmental concepts. Children used drawings as a mean to transfer their imagination, depicting the ideal home environment interactively, without necessarily being influenced passively by the present physical environment (Barbey, 1974) in which they have limited access to natural landscape resources for play activities, and recreational opportunity (Malone, 2001; McKendrick, 1999). Cultural and gender similarities and differences of what appeared in the drawings were the basis used in interpreting the spatial dynamic of children's environments.

Generally, the findings indicate few significant differences across the different ethnic groups and genders in many aspects. The variation is minor with reference to only certain relevant dimensions of affective aspects of the home environment as suggested by the analysis of imaginary home environment illustrated by the children. Children's interaction with an environment is significant and important to them, through which meaningful thoughts, activities or environmental interactions will be indicated by an affective state. Thus, affective aspects are related to aesthetic and emotional experiences with environment (Ulrich, 1983). An emotional links possibly portrayed in drawings in forms of need for socialisation, sense of security and freedom may be part of affective aspects of children's interaction with home environment. Cultural and gender factors may influence and vary affective responses of children. These similarities and differences will be highlighted in the following discussion of findings.

8.6.0 Concepts of ideal home environment

Children's drawings illustrate various home environmental settings - most of them being entirely different from typical urban housing. In a relatively small percentage, a fantasy or fancy house is evident but the children have been "practical" about the concept of surrounding environment. External home features such as garden, flower, pond, play equipment, and shelter for animals seems to mark the identification of home environment. Children acknowledged their needs and reject dependence on the world of adults as more often home environments are represented for their affairs, in isolation from adults. One could assumed that the hidden messages conveyed through the drawings are: the home environment that I designed is meant for children and restricted to others that may be allowed in. The concepts as depicted by drawings may be interpreted as *"....I have all the support facilities for the activities I prefer.....It is a beautiful, conducive living environment for*

me to share with others....Here I feel so happy, free to venture, secure and have a lot of fun playing with friends and pets..... "!!

In essays, children reflect this sense of ownership by giving their own "toponyms" for instance "heaven," "sugar house," "Famosa water park," "Mushroom," "Tropical rain forest," etc. Their home landscapes are not restricted by environmental change but "open to creative verbal interpretation," (Moore, 1986, pp. 225). Several concepts of landscape dominance, comfort, defensible, openness and freedom, happiness, beauty and colour, relaxed and peaceful, and active are expressed. The drawings portray an environment or a place more than a home environment but represent an open range of more diverse environment accessible to children as they wish.

Obviously, while designing the "ideal home environment," children took ideas from various sources, either from their own experience, knowledge, interest, or preference before transferring them into their drawings. A typical traditional or vernacular house in a rural or village setting for instance is a testimony of how knowledge and experience influenced their drawings as they imagined them. Thus, the content of children's drawings is most likely inspired by what they have seen else where through reading, visits, watching television, or perhaps their own creative ideas. The transfer of idea occurs at two different levels, the practical and affective level. At the practical level, it relates to the securing of preferred activities, security and freedom. The affective level associates with socialising, favourite people like best friends, family members, animals and external features or facilities. Therefore, most of the drawings are non-comparable to the standard planned and designed environment of the urban housing or neighbourhood they presently live in.

8.6.1 Children's Dynamics in Environment

Children's dynamic use of environment can be interpreted through various aspects in their drawings: environmental settings, scale or size employed, topographical connection or accessibility, and exploration or adventurous quest (Table 8.6). Most drawings acknowledged the immediate home environment which is the "compound" with ethnic variation range from 45% for Malay, 43% for Chinese and to 74% for Indian children. Rural or village or *kampong* is preferred by Malay children (37%), Chinese (33%) and Indian children (24%). An urban setting was least preferred among all children (16%). In gender preference, a similar pattern of inclination towards compound, rural and urban settings appeared between boys and girls. Some of the drawings, especially those picturing an open environment, the dynamic of space was in the form of boundaryless environment. However, these open spaces of home environment have a pleasant character. The open spaces have different floor surfaces (e.g. grass, pavement, earthy ground) and are furnished with

different features and facilities (e.g. ponds, benches, shelters, play equipments) that suggest path, and various spaces for activities.

DIMENSION OF QUALITATIVE ASPECTS OF HOME LANDSCAPE	MALAY	CHINESE	INDIAN	BOYS	GIRLS	TOTAL
1. Environmental settings						
urban	21	19	8	20	13	16
rural/ village	34	38	18	33	28	30
compound	45	43	74	47	59	54
2. Scale/ size of elements						
to scale	82	76	55	67	74	71
out of scale	18	24	45	33	26	29
3. Topographical connection						
flat land	34	50	40	32	47	41
steps/ stairs/ ramp	6	7	5	7	4	5
slope	3	3	3	3	3	3
bridge	4	6	1	6	2	3
fencing	25	16	16	22	18	20
street	16	1	8	11	7	9
pedestrian path	13	17	26	18	19	19
4. Exploration/ adventurous						
hills/ mountains	47	47	54	56	51	65
river/ waterbody	28	29	15	29	21	26
forest	25	15	15	15	21	19
sea/ beach	0	9	6	0	7	5

Table 8.6 Space dynamic as interpreted from children's drawings.
(Note: all figures are in form of drawing's percentage)

A high percentage of drawings employed correct scale in depicting the relative size of space or elements in the home environment ranging between 55% for Indian, 76% for Chinese, 82% for Malay children, and 67% to 74% in boys and girls respectively. The only exception is amongst Indian children which had 45% of drawings out of scale with an exaggeration of elements drawn. This extremity however does not suggest the spatial dynamism of the environment rather a relatively undeveloped or limited skills in drawing presentation.

The dimension of spatial dynamic may be in the form of topographical connection and accessibility, represented by means of flat land (ranging from 32% for Malay, 50% for Chinese, to 40% for Indian children). Change of levels such as sloping site appeared least followed by bridges and steps in connecting spaces. Topographically, since flat land appears more frequently than sloping land form, this may suggest children's needs for independence of movement. Streets as connecting elements may make spaces dynamic. However, the low appearance of streets that provide access and link in most of drawings is exception and of interest in ethnic groups (range from 1% in Chinese, 8% in Indian to 16% in Malay children's drawings) and between genders (7% in girls and 11% in boys).

It appears that the presence of hills or mountains in the drawings may symbolically signify the children's desire for exploration or adventurous quest. Hills or mountains were drawn more frequently compared to other features like river, forest or sea or beach. As already identified only rivers are closely associated with adventurous activity such as fishing in the drawings. However, the adventurous activities related to river and sea or beach are frequently mentioned in the essays and questionnaires. One can assume that the appearance of mountain and forest in the drawing are not associated contextually with the environment portrayed. They may instead be used as compositional elements to make the drawings look good, far too remote to be part of the environment unless they are related and linked with other landscape elements in drawings.

Some drawings portrayed a mound with a house built on top, or tree houses accessible through rope. Climbing to the tree house, tree trunk or branches can be conceived as part of an exploration as discussed earlier (see Section 8.1.0.6). Most of the above features are commonly associated with traditional homes in rural settings and can signify a quest for adventure. Thus, the children often signified concepts of traditional and village which can be interpreted as more dynamic which means more "lively" than the "sterile" or "soulless" present urban home landscape.

In present crowded and static or "soulless" housing neighbourhood in Johore Bahru, home compound are kept to the minimum and confined by fence, wall or street. This limited provision appears at the front and back of the house (Figure 8.18 and Figure 8.19). This layout stems from the practical and economical necessity of providing maximum units to a plot on land. The compound spaces have therefore been narrowed down to a minimum width, thereby restricting and regulating dynamic behaviour and only serving the purpose of front garden and back space for movement and services. The majority of children's drawings suggest a rejection of this urban form.

8.6.2 The concept of landscape permanence as affected by efficiency

The concept of permanence of landscape as discussed earlier in Chapter 6, can be explained in term of environmental character (man-made or natural), form of the house (traditional/ vernacular or modern design) and efficiency (see Section 6.1.1.1 in Chapter 6). Almost more than two third of the environments that children presented are "man-made" nature rather than "undisturbed" nature. This concept applies across ethnic groups and genders. Children suggest their environment should be efficient, clean, orderly or well organised as opposed to untidy or cluttered. The urge to have a clean, healthy and orderly home environment is undoubtful strong as it is frequently mentioned in both essay and questionnaire.

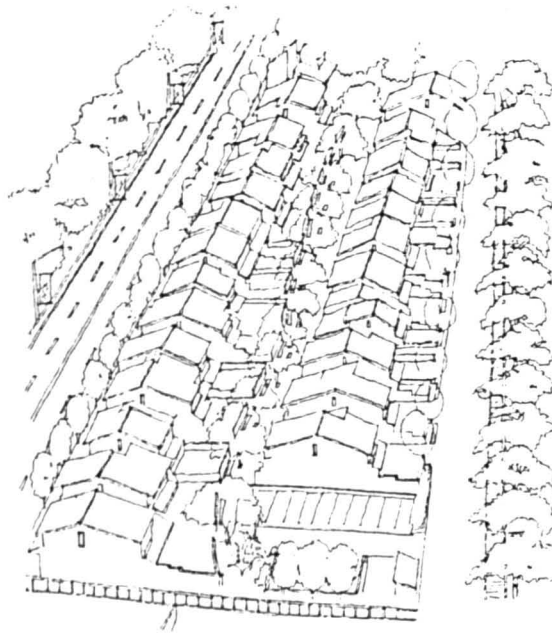


Figure 8.18 Grid-iron residential layout is dominated by streets. It has no provision for pedestrian path at all. (Source: Biro Inovasi dan Perundingan UTM, 1999).

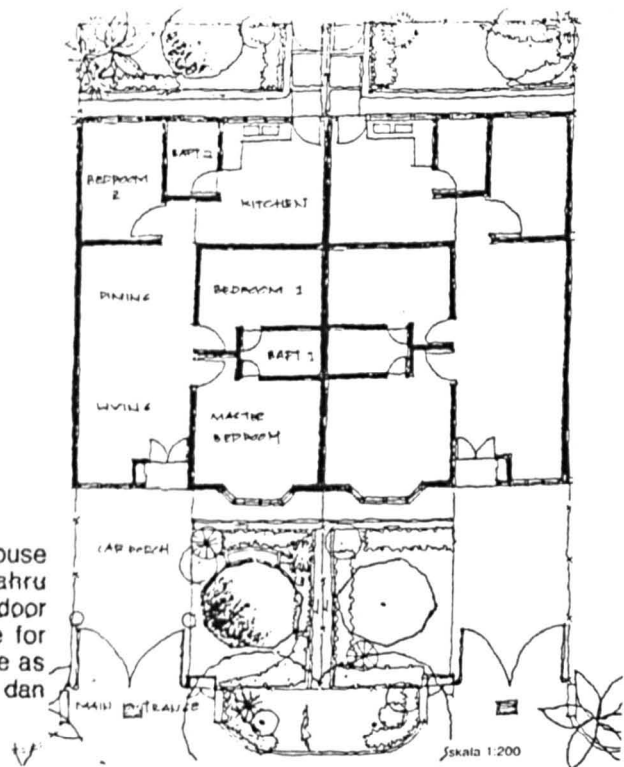


Figure 8.19 Typical floor plan of terraced house in urban housing scheme in Johore Bahru showing relationship between indoor and outdoor spaces. It provides minimal outdoor space for children, limited to in front and back of house as defined by streets. (Source: Biro Inovasi dan Perundingan UTM, 1999).

Efficiency is perhaps suggested in the ordering of outdoor landscape features - planting pots, garden furnitures etc. In their drawings, nearly half of the children illustrated a clean, tidy environment and more than one third expect an orderly and well organised home environment, a reflection of social traditions that imply certain rules and regulations. Children have been influenced to conform to the rule of social conventions by sharing the adults' definition of efficiency where untidiness and clutter is unacceptable. Thus, children's drawings demonstrate a particular concept of ordering and displaying features or objects (e.g. planting pots in rows; seats around the table etc.) within the home environment especially in the compound, adopting adult behaviour in becoming concerned for well organised environments.

DIMENSION OF QUALITATIVE ASPECTS OF HOME LANDSCAPE	MALAY	CHINESE	INDIAN	BOYS	GIRLS	TOTAL
1. Environmental category						
man made	65	66	74	65	70	68
nature	35	34	26	35	30	32
2. Efficiency						
clean	54	50	49	50	38	44
orderly/ organised	36	39	32	34	35	33
cluttered	10	11	19	16	27	23
3. House character						
traditional/ vernacular	26	8	16	17	20	18
modern (typical urban house)	74	84	84	81	77	79
fancy/ fantasy	0	8	0	2	3	3

Table 8.7 Aspect of permanence as represented in children's drawings.
(Note: all figures are in form of drawing's percentage)

As for house character although more than 70% of houses depicted were modern or of typically urban character. Traditional or vernacular types of timber house with pitch-roof built on stilts appeared to be reasonably popular amongst the Malay children (26%) (Table 8.7). The traditional or vernacular house with it surrounding environment provides a pleasant and reassuring feeling of permanence for some children as shown by their drawings. Rural or village environments have not been influenced by problems of urbanisation in the city. In the traditional home environment, the setting is as much as indication of social-cultural values, community and symbolism as of adaptation of environmental sustainability, conservation and preservation of natural resources, and landform such as agricultural plantations, forests and rivers. It indicates children's desire for a similar aspect of permanence found in nature and in the tradition of vernacular house depicted in drawings and mentioned in essays:

"I would like to have a house and live in a village area. In the village the air would be fresh and I would be able to buy things cheaply compared with the city. In the village, there would rarely be traffic congestion. I would like free flowing river near my house so I can bathe and wash clothes. I would like to plant nice fragrant yellow, black, red and pink roses outside my house. For a healthy body, I would choose sporting activities." (Chinese girl, age 11)

Other forms of houses illustrating unusual "progressive" or fancy or fantasy house in the shape of "pineapple", "balloon" or "burger" only occasionally appear in the drawings of Chinese children (8%). It can be suggested these forms of highly decorative house were primarily influenced by children's exposure to television, books, and magazines. At the same time they also represent children's needs for "creativity and innovation," a change of experience in the man made and in the highly urbanised modern housing environment.

The present urban housing neighbourhood developments do not incorporate but reject values permanence. The resulting is a loss of function of providing security and stimulation. Those involved in the provision of housing are primarily concerned with efficiency and financial constraints and technical requirements.

8.6.3 The desirability of a "basic ambivalence" in the spatial configuration of the home landscape for children

"Basic ambivalence" can be described as a coexistence of children's opposite attitudes or feelings towards spaces in home landscape. Children are found to prefer a range of spatial configurations of opposite characters. Within the spatial environment, the house is more often presented at the centre as the main focus for the theme depicted in nearly half of all children's drawings (Malay, 47%, Chinese 37%, and Indian children 62%) (Figure 8.20). Between genders, girls (55%) prefer more slightly a house located at the centre than boys (40%) (Figure 8.21). It appeals to centrality as nearly half of total children's drawings represented a house centrally located in the spatial configuration. Other reference to "basic ambivalence" indicates the opposition between two impulses in the environment character that symbolise the different values of central static, self enclosed environment as opposed to open and vast environment. Here the central static, enclosed environment suggests either passive or complacence character (Barbey, 1974), where as the latter (open vast boundaryless environment) involves initiative and discovery. Other spatial locations for the house are either on the left (17%) or to the right (23%) in favour of house at the back of composition (11%). Another ambivalence is outdoor and indoor. The instructional bias of asking children to draw external spaces perhaps produce more outdoor than indoor environments.

Regardless of the location of houses, spaces in front, or on both sides of the house were normally filled up by a range of vegetation elements (trees, shrubs, flowers, or grass); various types of barrier or linkage elements (fencing, wall, pedestrian path, foot bridge, or street); various types of spaces (open space, compound, play spaces); different types of waterbodies (ponds, lakes, rivers) and different figures in action (Figure 8.21, Figure 8.22). Green hills or mountains, yellow or orange suns, and blue sky were represented more often as background as opposed to flat green compounds in the foreground. What ever physical landscape elements children have chosen for the home environment, they appeared in opposite characters either positive or negative, affecting children's attitudes and emotions. Table 8.8 summarised all physical landscape elements represented at various location in relation to house in drawings.

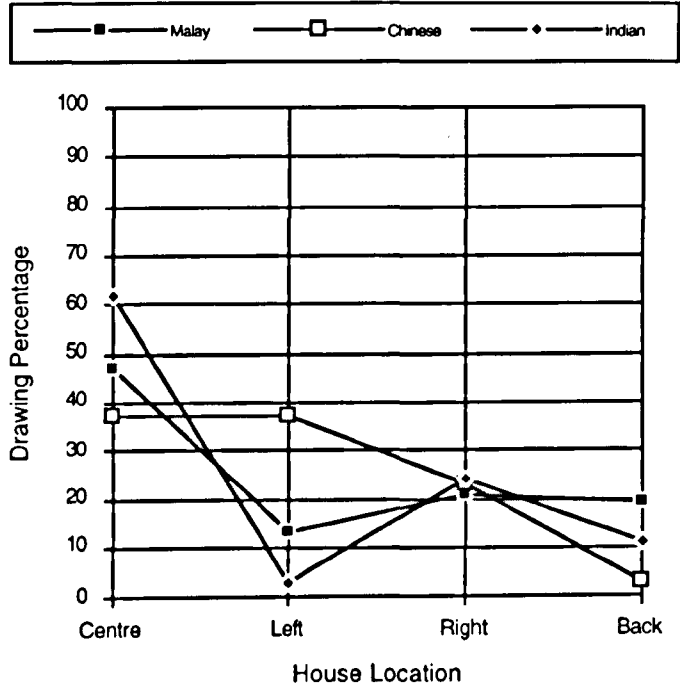


Figure 8.20 Locations of house represented in children's drawings by different ethnic groups.

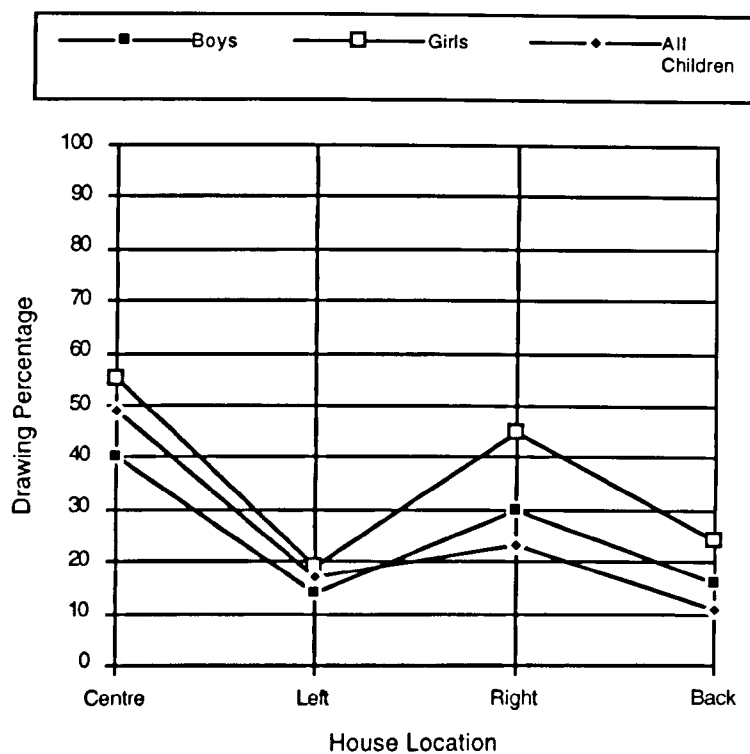


Figure 8.21 Location of house represented in children's drawings by different genders.

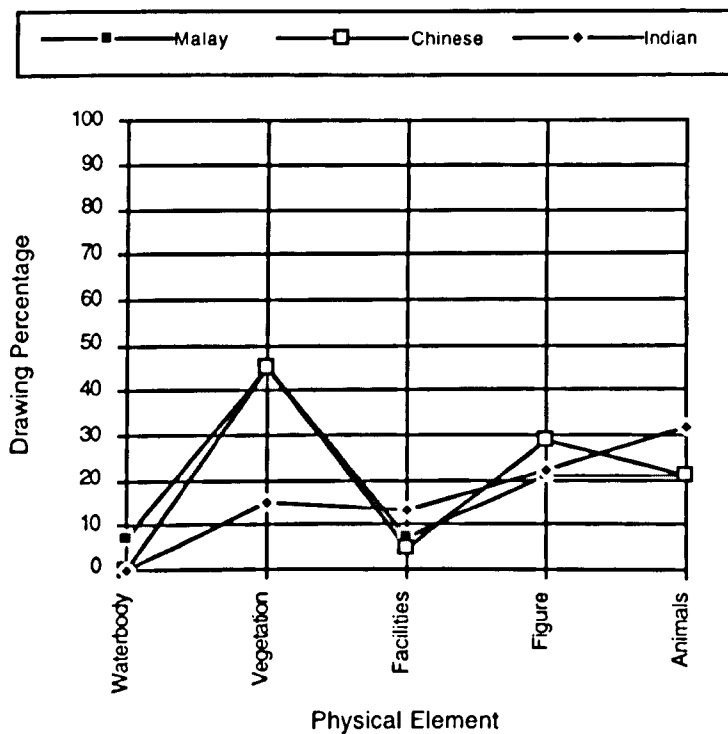


Figure 8.22 Physical elements represented in groups in drawings.

8.6.4 Children's colour preference in home landscape drawings

When the aim is a knowledge of preferences and meanings and not merely of use, it can be suggested that one has to set aside all motifs and colours that are determined by nature, such as green of grass and trees leaves, or a tree-trunk coloured brown by convention (Eng, 1957). Thus, landscape elements given in the natural local colour, is the colour corresponding to the real appearance of the object seen from close to (Figure 8.23). Colour phantasy and colour likes and dislikes have free play. This colour convention is observed to be influenced by many other factors such as age and subject matter as Golomb (1992) puts it:

Among five-year-olds, the use of color becomes more theme dependent, a tendency that six- to eight-year-olds of our sample elevate to the status of are representational rule. Color now helps define the meaning of forms, and it can provide additional spatial anchors for the ordering of multiple items in a picture, This is well demonstrated in the baselines, drawn in brown or black, which serve the important function of providing a common ground on which objects stand, and the blue sky that clearly demarcates the top part of the paper. Together, baseline and sky create a spatial framework within which objects and events can be portrayed. (pp. 133)

SPATIAL LOCATIONS OF PHYSICAL ELEMENTS IN DRAWINGS	MALAY	CHINESE	INDIAN	BOYS	GIRLS	TOTAL
1. Infront of the house						
waterbody	12	5	11	14	10	11
barrier/ linkage	12	14	12	19	12	15
vegetation	28	35	33	29	38	35
open space	16	10	17	11	12	12
facilities	8	11	13	10	14	12
vehicle	5	1	1	4	2	3
figure	10	8	9	10	9	10
animals	7	7	3	2	3	2
2. Rear of the house						
waterbody	9	9	0	15	2	7
barrier/ linkage	20	15	39	9	17	22
vegetation	63	76	61	53	77	67
figure	8	0	0	3	4	4
3. Left side of the house						
waterbody	15	11	1	14	12	13
barrier/ linkage	16	2	21	12	8	10
vegetation	25	46	33	31	39	35
facilities	13	6	6	7	11	9
vehicles	1	0	1	1	1	1
figure	5	8	7	10	5	8
open space	18	15	15	19	15	17
animals	5	12	5	6	8	7
4. Right side of the house						
waterbody	12	15	4	15	13	14
barrier/ linkage	15	0	13	11	7	8
vegetation	38	25	50	36	43	41
open space	14	41	18	16	14	15
facilities	4	12	6	9	12	11
figure	14	6	6	13	9	10
vehicle	2	0	2	0	2	1
5. Background						
Hills/ mountains	75	64	55	55	66	61
Sun/ cloud	25	36	45	45	34	39

Table 8.8 Spatial relationship of relative locations between physical landscape elements in children's drawings. (Note: all figures are in form of drawing's percentage).

Many elements like vegetations, barrier, linkage, figure and outdoor facilities were represented in similar sizes and in a groups to suggest their close association for activity and social links in home environment settings. Thus, they were represented more vividly and in more detail in colours. More than 30% of vegetation elements appeared in relation to spatial configuration within the home setting, thus green was the most frequent or dominant colour used in drawings, followed by blue (22%), brown (20%), yellow (13%), red (3%) (Figure 8.24). Amongst Indian children more than 50% of landscape elements are dominated with green in their drawings. Green seems to be most popular colour with higher mention rate in the questionnaires. More natural landscape elements such as planting, grass, tree foliage were represented in drawings as part of home landscape. All children when describing their favourite colour in questionnaires for their ideal home landscape, stated that it is certainly green. As Tuan (1990) puts it:

The evident object of comparison for green is given in plants, and in the great majority of languages the term for green is related to the words for plants and growth....It would seem natural to associate the colour blue with the sky; yet the influence of sky on the development of terms for blue has not been as great as one might expect. (pp. 26-27)

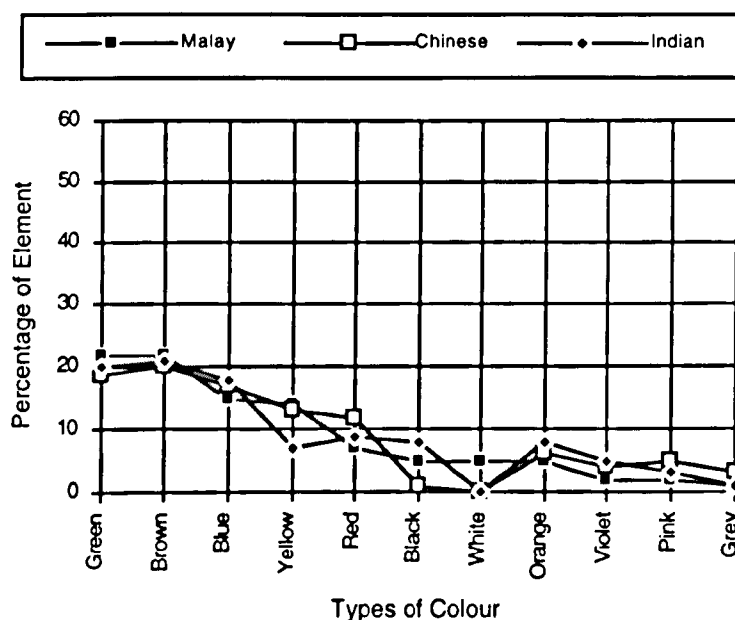


Figure 8.23 Use of colours for physical landscape elements in children's drawings.

Children use of natural "true local colour" related to elements for a more a realistic effects and this use of colour is very much governed by a principle of realism. Most colours appear frequently, and appropriately in children's drawings except violet which tends to be occasionally used with much control (Golomb, 1992). Changes in colour preference are also influenced by skill in presentation. In summarising the observation, Golomb writes further:

..... some attempt to vary the brightness value of a specific colour. Thus, for example, a light coloring of the background can serve to create the airy impression of being outdoors, and it also suggests distance, both of which serve to unify the composition.... color no longer subservient to form or merely co-joined to a previously drawn contour, and it now becomes a major determining force of the picture..... Clearly, the developmental changes in color used chronicled so far do not suggest a linear progression. The waxing and waning of single color-use depends on the particular task at hand and on the child's representational competence. (pp. 133)

The drawings of ideal home landscapes carry diverse images for themes. The main themes accross the ethnic groups are similar rank order generally revolving around natural landscape elements or environment (34%) like trees, garden, flowers, and waterbody; dominant house image (15%); a secure territory and accessible environment (14%) represented by barrier and linkage; an outdoor range of spacious space (10%) as depicted by green spacious compound; followed by a good bright sunny weather (8%) as shown by the presence of sun and blue sky; and then with play facilities (6%), waterbody (6%), and pets and animals (3%) trailing behind (refer Figure 8.25, Figure 8.26). These themes carry an affective meaning of expressive qualities and may influence the choice of colour in drawings. All of these images of the main themes according to Golomb (1992) are culture-specific.

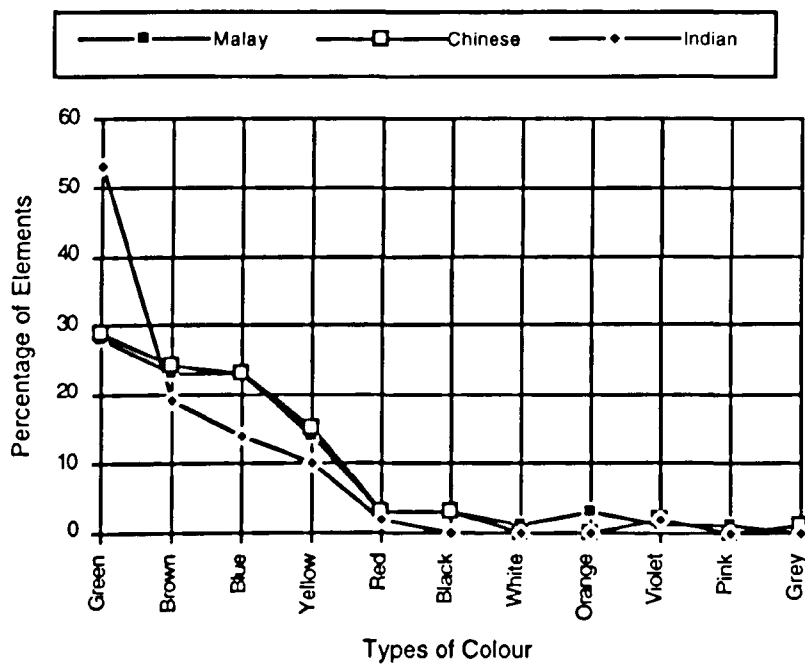


Figure 8.24 Dominant colours used for landscape elements in children's drawings.

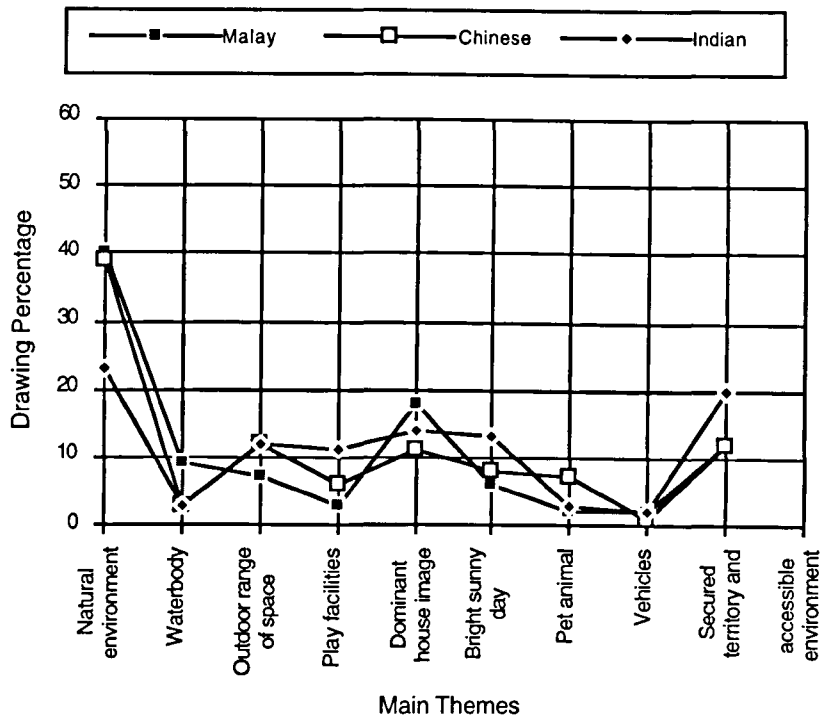


Figure 8.25 Main themes as represented in children's drawings that affect colour preference.

Drawings have been influenced to certain degree by various sources of idea, either from television, books, comics, magazine, their own experience or creativity and/ or other people ideas as discussed earlier. The influences from television and reading materials are obviously profound, for instance the choice of house formed in the shape of pineapple, burger or bread; oversize cups and highly decorative and colourful butterflies. Bright and colourful colours chosen for those objects may be influenced by actual colours seen in the media. This phenomena is highly visible amongst the Chinese children's drawings but did not appeared in Malay and Indian children's drawings.

In this research, the methodology did not specifically asked children to depict their feelings through drawings. The drawing task was geared towards children's concepts and activity preference of the ideal home landscape. However, one can assume that the elements in the drawings reveal positive aspects of feeling as the negative or dislike elements are likely to be excluded (Siebert and Anooshian, 1993). For children, the concept of ideal home landscape is closely related to the natural elements or features of their interest and found to be stimulating, supporting diverse preferred activities as they have creatively drawn on paper. The natural environment is found to be able to affect and stimulate the children's imagination (Sebba, 1991). Thus, the colours and affects are perhaps closely related with what children can associate with or translate from the natural environment in their drawings.

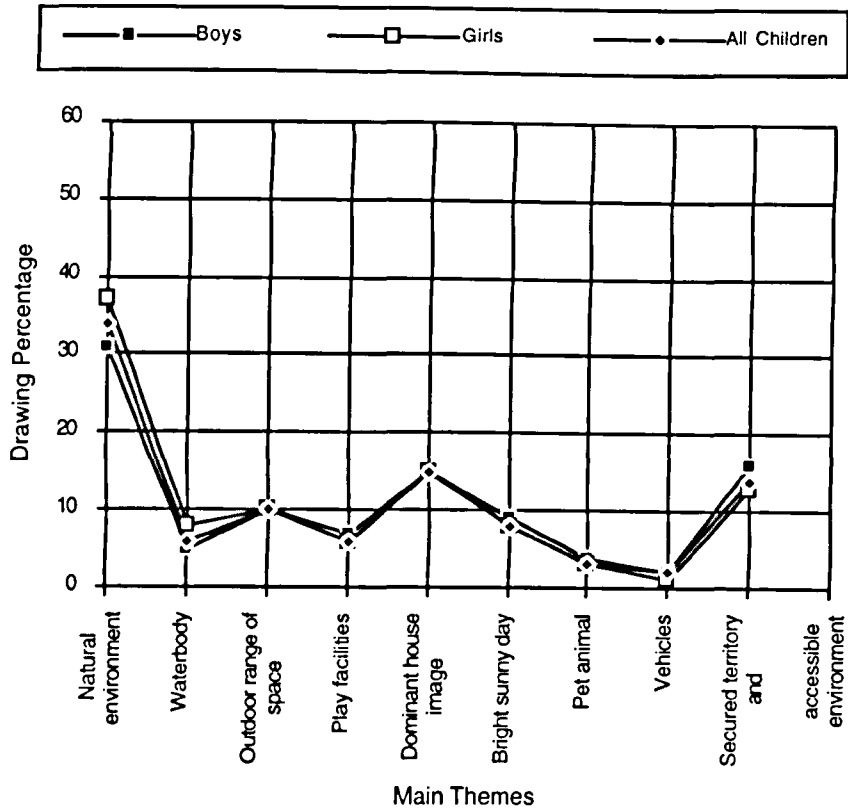


Figure 8.26 Main themes represented by boys and girls in their drawings.

8.7 CHILDREN'S OUTDOOR ACTIVITIES PREFERENCE

The drawings illustrated children's preferences for certain activities which were also frequently expressed in both questionnaire and essays. The picture emerging from studying children's drawing is of diverse activity preferences. These activities were measured as "frequency rates" or "percentages" for the genders and across ethnic groups by identifying the presence of figures and features and facilities (even pets) which suggested different activities. Equipment and pets are often drawn to indicate possible activities. For example, outdoor furniture such seats, benches or gazebos might indicate talking and social interaction or other communal activities.

The content analysis of the essays indicated that each child mentioned on average about five activities. The questionnaires indicated an average two activities. The total range of activities was very large but those which were frequently mentioned in essays can be grouped into a few general categories. Figure 8.27 to Figure 8.32 summarise what children portrayed in drawing images and presented in essays and questionnaires when asked to indicate their favourite activities in their ideal home landscape respectively. A complete list of all activity mentioned more than twice in 114 essays, and a selection of activities which

were less frequently mentioned are also included in order to enable a comparison of findings from essays, drawings and questionnaires between boys and girls, and different ethnic groups.

Aspects of cultural and gender differences in relation to activity preference will be highlighted whenever appropriate supported by evidence found in questionnaires and children's essays. In the discussion of findings, some of the underlying environmental and cultural factors that help explain children's activities preferences will be illustrated - factors which may be recognised and taken into account in any future planning and design guideline and policy in urban planning.

8.7.0 Children's Play Activity

Children manifestly play: therefore children's activities outdoor are considered play. Planning, design and provision of outdoor settings for children can be thought of as forms of play spaces (Spencer et al., 1989), i.e., playgrounds. However, children's play at playground and designated areas are found to support a relatively a small fraction of children's time spent playing (Hole, 1967), and to be irrelevant to children's "real" needs. Children play anytime, and older children above ten years old, tend play everywhere (Cristina D., 2001). Therefore their activities are synonymously termed as play activity. Play has been defined in different terms and serves many purposes, through which:

.. a child learns and develop (his) physical, cognitive, emotional, and social attributes. The child may not engage in play activities or behaviours with the learning of these things in mind, however, through play the child acquires some of the information which lead to mastering them. Because it is play, the child is free to experiment, test, and notice some of the elements that the activity, situation, and behaviour is composed of....Play is an activity a child/ individual engages in, in a mental, physical, and emotional manner. The child/ individual involves himself in play in an enjoyable and voluntary way. Through play the child/ individual may gain information which leads to a better understanding (learning) of non-play situations. Involvement in play is not goal oriented, however certain outcomes do occur in play. As such play is a need or a priority for the child to be involved in (Sobaihi, 1995, pp. 82-83).

Children's activity is actions, or occupations that involves exertion of energy. Much research literature deals with children and play (Cohen, 1982,1987; Freeman, 1995; Holme and Massie, 1970; Moore et al., 1992; Weinstein and David, 1987; and Wilkinson, 1980b) since children readily involve themselves in games, engage in activity, recreation and amusement, especially in spontaneous activity. Thus, in the context of this research, the term "play" and "activity" are interchangeable. Play is important in giving a meaningful context to the environment presented in drawings. In this section, various preferred activities as depicted or suggested in children's drawing through the presence of figures "in

action" or by virtue of play facilities or equipment, landscape elements present in images will be discussed.

Children's preferred activities are presented in group of categories. These categories of activities were formulated based on categories proposed by Moore (1986, pp. 47-50 and 278) who studied children- environment interactions. Although he utilised children's drawings extensively, grouping of activities were derived from interviews and closely observed field-trips to identify place-specific favourite activities and were not interpreted through drawings. Other early studies of children's play on housing estates by Hole (1967, pp. 21-24) and children at play by Department of Environment (1979, pp. 81-84) were also used as guidance. In this study, to facilitate discussion, there are seven distinct categories of activities developed based on response from drawings: "general outdoor play/ games," "playing on equipment," "ball play/ ball games," "adventure play," "mobile play," "outdoor household activity," and "indoor activity." As much as possible, interpretations from drawings are made by highlighting similar findings from questionnaires and essays - to see how and why they are similar or contradict each other, especially in terms of cultural and gender differences.

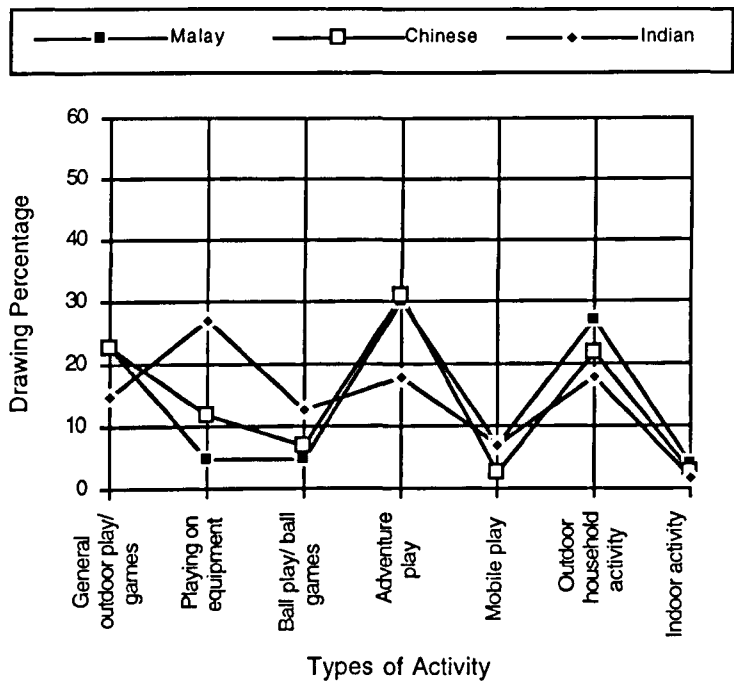


Figure 8.27 Types of activity represented in children's drawings of different ethnic groups.

8.7.1 Preferred Activities

Analysis of drawings generally indicated "adventure play," "outdoor household activity," and "general outdoor play or games as the most preferred categories of activities both across different cultural groups and genders. Drawings suggest non specific activities like "play in home compound," and "traditional games" such as "skipping," "hop-scotch," "kite flying," "spinning top," and "hide-and-seek," with the presence of figures and features indicating these activities. Children were able to differentiate their outdoor activities in great graphic detail. The findings from questionnaires and essays served as a means of cross-checking any discrepancies that need further explanations. In drawings, the presence of figures "doing nothing," features like benches, shelters, seating and an open spaces perhaps also suggest general outdoor play, inclusive of sitting, standing, talking, observing, resting constituted an important part of preferred activities.

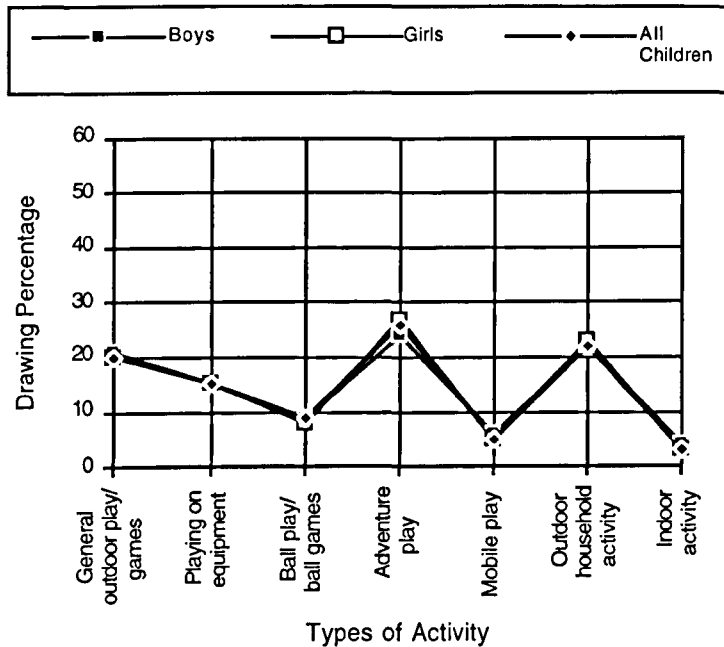


Figure 8.28 Types of activity represented in drawings by boys and girls.

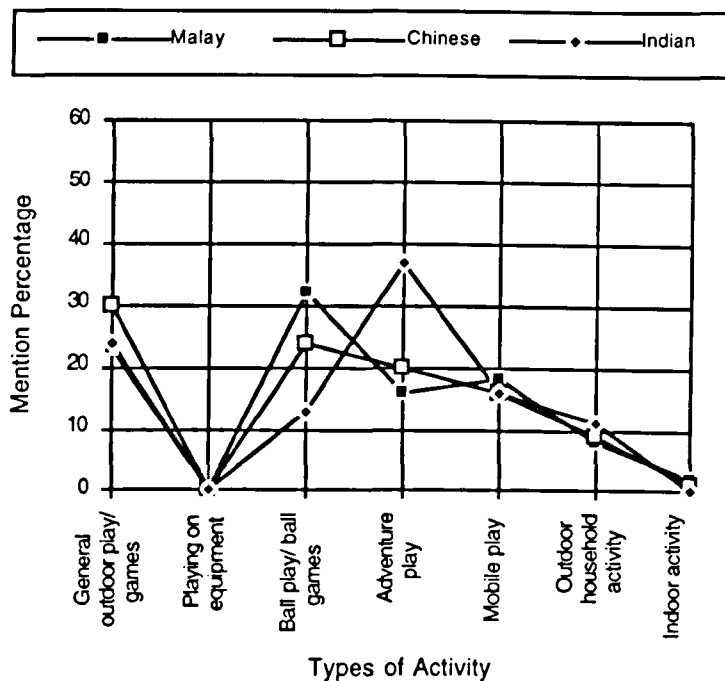


Figure 8.29 Types of activity mentioned in questionnaires.

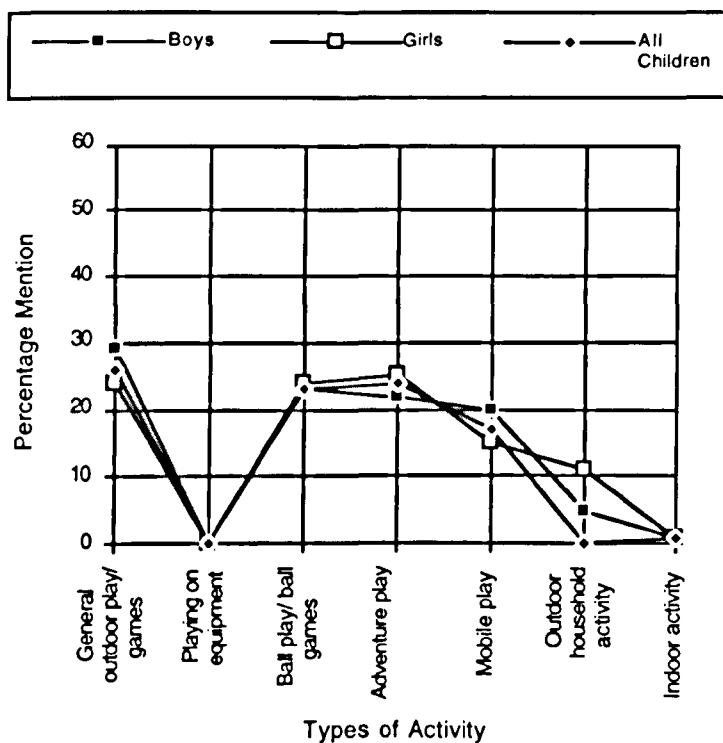


Figure 8.30 Types of activity as mentioned in questionnaires by boys and girls.

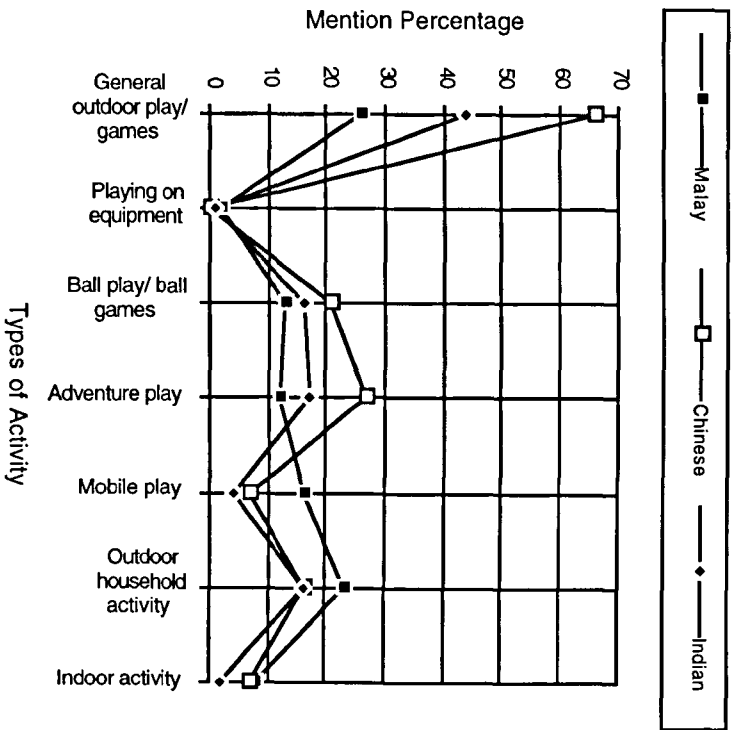


Figure 8.31 Types of activity mentioned in children's essays.

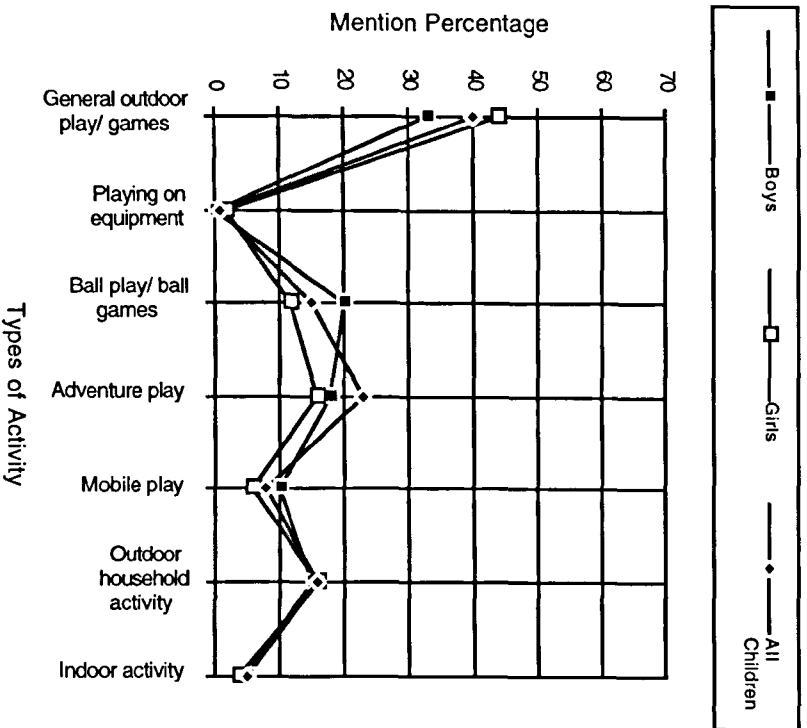


Figure 8.32 Types of activity mentioned in essays by boys and girls.

8.7.1.0 General Outdoor Play

General outdoor play contributed to 20% of all activities including watching, seating and reading, and traditional games such as "chicks and eagle," "blindman's bluff" and "grand daughter." This implies a preference for much more seating and shelter (Figure 8.1c, Figure 8.4c, Figure 8.5c, Figure 8.5f) which would enable a group of children to cluster together. It was noted that children portrayed seating benches or outdoor reading shelters for sitting or playing imaginative games. This suggests a design for grouped seating with sense of intimacy and shelter which can be provided in home compound. Girls showed more outdoor furniture in their drawings (67%) compared to boys (33%) to signify attachment to immediate homesite for social and sitting activities. The provision of shelter may be a focus for imaginative play for girls; and they may be tied more to the dwelling than boys (Van Vliet, 1983a; Parkinson, 1987; Moore, 1986). Their presence in drawings for their particular interest would seem have been justified. Items such as swings (in drawing was most shown by girls - swings as a setting for a social activity, i.e. 33%; boys - 18%), and probably activities associated with them (e.g. talking) were preferred by children that included in their drawings symbolically as to attract other children into the places.

Girls attachment to homesites were represented through their preference for activities and features that can be associated with the immediate home environment. This attitude is perhaps influenced by their lack of freedom imposed by parental restriction that limit exploration beyond home. In relation to this, van Staden (1995) offers an explanation in term of gender difference as he writes:

Boys tended to spend more time in their neighborhood engaged in a broader range of activities than girls.....boys also took less part in structured group activities and rated their neighbourhood somewhat more positively than girls. Girls experienced less freedom and more social restrictions in exploring and more social restrictions in exploring and actively interacting with their extended surrounding than boys. (pp. 181)

8.7.1.1 Playing On Equipment

"Equipment play" included activities using traditional play apparatus: "see-saw," "slides," climbing frames, and "swings"; and "contemporary" play apparatus as indicated by integrated pieces of play equipments. Play with play equipment (23%), such as swings, see-saw and slide, "traditional play equipment" (14%), and particularly swinging, engaged an even higher proportion of children for part of their preferred activities (Figure 8.6h, Figure 8.7b, Figure 8.8b).

The study of drawings indicated a wide selection of preferred playground equipment. Certain "traditional play equipment" such as swings, slide, see-saw proved more popular than the "architectural", "composite", or modern items intended to stimulate the imagination. Slides in particular offer the opportunity for children to enjoy rolling or sliding down a slope (Tuan, 1978), or offer children the opportunity to challenge each other (Heseltine et al., 1987). Moveable types of play equipment such as swings, see-saw or interactive types were more favoured in drawings. Although more preferred than other types of play equipment, children only spend little time on traditional play equipment (Hole, 1967; Moore, 1986; Spencer et al., 1989).

Certain deductions can be made from data in the survey concerning children preference for play equipment forming part of their ideal environmental concept. It is recognised of course that, some children particularly Malay children rarely included play equipment in their environment. This seems in agreement with the notion that children play everywhere (Wilkinson, 1980, pp. 16). It can be suggested that Malay children have more access or exposure to this type of equipment in real life, therefore it is no longer considered as special or ideal. Conversely, Indian children for the lack of access to play equipments have prioritised them in drawings.

Figure 8.27 and Figure 8.28 show that almost all children involved in play activities, either in traditional games, make some use of play equipment, or ball games. Imaginative games which do not involve the presence of play equipments were difficult to identify from drawings. This suggests a limitation of drawings. In their essays too, children were concerned to have playground as part of their home landscape for play opportunity:

"I would build one playground for my brother since he likes to play very much. This playground would have play equipment like see-saw, swing and badminton court. My dream house has a beautiful and peaceful atmosphere. There are so many activities I would like to do," (Indian boy, age 12).

8.7.1.2 Ball Play/ Ball Games

"Ball play" or "ball games" included any activity related to ball games - from organised group ball games to informal games. Taken together, "equipment play" and "ball games" accounted for barely a quarter of the activities suggested in drawings. However, the provision for children facilities within residential neighbourhood and urban planning strategy has always placed play equipment and spaces for ball games as a priority facility for children.

Since ball games, open green or playing fields areas make relatively greater demands on space (Figure 8.2b, Figure 8.7e) than play equipment, details of children's preference are of

interest. Ball games are considered team games as portrayed in the drawings. These team games occupy children for relatively long periods, and appeared to be preferred by both boys and girls. Indian children portrayed more in drawings (13%). They were frequently mentioned in essays by Chinese children (21%); and more popular for Malay children in questionnaires (32%). The findings from drawings, essays and questionnaires have placed an overall preference for ball games of about 16% of all activities.

There is no difference in preference for ball games in both drawings and questionnaires. In essays, boy mentions rate is higher than girls (20% and 12% respectively). Across different cultures, in drawings Indian children show 13% of activity preference for ball games compared to Malay (5%) and Chinese (7%). In questionnaire both Malay (32%) and Chinese (24%) have higher mentions rate to Indian children (13%). This differences in drawings and questionnaires may be due to the fact that ball games are associated with play equipment, playgrounds or open spaces. In essays, the preference for ball games among different cultures are almost similar (Malay: 13%; Chinese: 21%; Indian: 16%). This suggest ball games were well spread out, equally popular among cultures and genders with no significant difference and contributed about 16% of all children activities.

8.7.1.3 Adventure play

Adventure play involves "basic activities" (Holme and Massie, 1970, pp. 252-253) which offer exploration and experiment to work with natural materials freely and creatively. Moore (1986) used the term "adevnture play" to described children activities where the environment is manipulated or acted on in some way by children - activities regarded as having a high developmental value. The study collected limited data concerning adventure play needs of children. It is because adventure play involves natural landscape resources that require larger areas of home range. This why adventure play is hard to identify in drawings. The most striking feature elicited by drawing analysis was the frequency of 'adventure play' that represented 26% from all children's drawings, depicting activity like fishing, swimming, play with animals, camping, picnic etc. (Figure 8.2b, Figure 8.2d, Figure 8.4c, Figure 8.5e, Figure 8.5g, Figure 8.6d, Figure 8.7h, Figure 8.8h). The essays and questionnaires revealed the children's desire to get involve in adventure activity as all the three ethnic groups placed them with high mention rates of 24%, with boys (18% in essay, 22% in questionnaire) and equally preferred by girls (16% in essays and 25% in questionnaires). The need for adventurous play activity suggests this kind of provision is only possible for larger designated areas within a broader territorial range of children environment in the urban area.

Overall, almost a quarter of all activities depicted in drawings, and mentioned in questionnaires and essays can be grouped into the "adventure play" category without any distinction in preference between genders. Both Malay and Chinese children marked higher preference (30%) for "adventurous play" compared to Indian children (18%). However, the mentions of "adventurous play" in questionnaires were higher among Indian children (37%) compared to Malay (16%) and Chinese (20%). This low depiction rate among Indian children is perhaps influenced by their limited opportunities for adventurous pursuits in their present neighbourhood environment and thus, may be much preferred as favourite activities mentioned in questionnaires. This occurrence suggests that drawings are strongly influenced by or reflect a currently experienced situation (including familiarity) rather than an ideal one. There is no significant difference found between boys and girls with regard to this type of play category.

In drawings, "fishing," "swimming" and "animal play or feeding," were represented most frequently (26%). Other adventure play included "tree climbing," and less frequently "camping," "picnic," "making fires," "play in sand," "ballooning," "play with found material," (e.g. betel nut palm sheath), "play in tree house," and "play in a maze." Over 10% of adventure play activities related to waterbodies (fishing and swimming) or involved play with pet animals or feeding (fish, cat, dog, rabbit). In considering how often water features appeared in drawings, their presence contributed to the preference for aquatic activities or water-based play activities. Adventure play activities that related to found objects such as tree climbing and play with betel nut sheath contributed to only 3% of all adventurous play activities.

8.7.1.4 Aquatic Environment as Activity Places

Water is a dominant element in many home environmental settings and represented in more than 25% of drawings, much higher in essay (57%), 10% of adventurous activities in drawings were fishing and swimming. Pitt (1989) reported 25% of all outdoor recreation in US is water-based where swimming, fishing and boating on a river is common among children.

Ponds are as source of attraction to children and we may construe the rivers, lakes, or seas as behaviour settings that afford the opportunity for active recreational or adventurous activities. These water features can contain both social and physical dimensions - aesthetic quality and setting that afford activities in or around it. Thus, children's representation of waterbodies in their home environment may be quite complex and more than simply the existence of ponds, lakes, rivers. Many other landscape elements co-exist in the representation of aquatic environments to give strong relationships and meanings: flow of

water, vegetations (trees, shrubs, aquatic plants), landform (change of level) definite edges (earth bank, pavements or walls), structures (foot bridges, boulders, seatings), aquatic fauna (fishes, crabs, prawns). All those linkages suggest complete ecosystem together with sounds from waterfalls. Children's attraction to water may be similar to adults for aesthetic and sensuous qualities (ibid):

Water has a magnetic attraction in the environment that is unrivaled by other materials or elements. Human response to aquatic environments emanate from the sound, smell, taste, and feel of water, as well as from the sight of it (Litton et al., 1974). The presence of water nearly always enhances human perception of scenic beauty or preference in rural and urban settings (Ulrich, 1983). (pp. 219)

Malay and Chinese children represented waterbodies more frequent (28% and 29% respectively) compared to Indian children (15%). This suggested Malay and Chinese children seek or have greater access to more adventurous quest within rural environmental settings. Indian children were seem to be less likely prefer to engage in exploration of rural or natural setting and are more likely to seek engagement in urban settings (refer Table 8.6). This attitude may be influenced by social and physical context: experiences in specific environmental setting, exposure or familiarity that create an affective aquatic environment, knowledge and information children have through education and experience of familiarity. The finding suggest that Malay and Chinese children have more experience, familiarity and exposure to aquatic environments.

In drawings, children normally associated aquatic experience with group activities: fishing, swimming perhaps as it gives opportunity for social interaction and attention (Pitt, 1989, pp. 234) among peer group. The activity within an aquatic environment may be influenced by the social group (Knopf, cf. Pitt, 1989). Most adventurous play suggested that they were only possible with broader natural resources being available and accessible to children so their adventuresome environment could be extended for play activities not limited by social and physical factor within neighbourhood settings.

8.7.1.5 Mobile Play

"Mobile play" included depictions of "cycling," "roller-skating," "running," "racing remote-control car," received a surprising low score, considering children like to move through footpaths, pavements, streets where mobile activities could possibly take place. This lower score may be influenced by constraints experienced in present environment with limited range among children due to parental restriction, traffic danger, and limited access to larger neighbourhood. It could also be influenced by difficulty in drawing figure on the move or on a bicycle. Cycling for instance received a low score (4%) in drawings, with slightly higher mentions in questionnaire (8%), and merely 4% in essays. These confirm low score and one

reason for low appearance and mentions of cycling in drawings, questionnaires and essays was the influence of presence neighbourhood environment: lack of safe, functionally adequate place to cycle. "The danger posed by street traffic meant that many parents restricted bike riding to streets immediately around the home, " (Moore, 1986, pp. 48), and parental concerns about children's safety to ride on the roads (Valentine and McKendrick, 1997). Again this suggest that drawings are strongly influenced by current experience.

8.7.1.6 Preference for cycling

Cycling which normally takes place on roads and footpaths, is totally missing except in two drawings, one in a Malay boy appeared in the middle of green open space and and the other in a Malay girl riding on the street apparently free of traffic (Figure 8.3f). This was reflected very well that on existing housing estate, there is no provision of special tracks for wheeled vehicles. Parent's fear for traffic hazards, bicycle ownership has a negative impact on children altogether as revealed in the questionnaires. This reason supports Moore (1986) as he writes:

Most cycling took place near the children's homes. Those who had roadworthy bikes used them primarily as part of their everyday routine - for moving more quickly around their foot-defined territory. More extensive trips were rare, even though time was available. The most obvious reason was the extreme hazard presented to bike riders of all ages when using major roads. The dangers encountered beyond quiet neighbourhood streets was apparent to most parents, who therefore tended to rigidly control bike riding. (p.p. 66)

Although bicycle ownership was by no means universal, the mention rate for cycling activity is low in both essays and questionnaire especially amongst Malay and Chinese children. A study in the U.K by Hillman et al., for instance found that the number of primary school children allowed to cycle to school had fallen to a quarter from two-third (cf. Valentine and McKendrick, 1997, pp. 223). For some children, bicycles were an important means of getting around and a primary means of extending territory beyond the limits of foot travel, especially on occasional weekend trips or during school holidays when longer time was available. Bicycle riding offers "sensory stimulant " to children, thus it can be argued that low depiction in drawings may be a manifestation of their frustrations faced in environments with a lack of facilities designed for supporting cycling activity (Figure 5.12a, Figure 5.12b, Figure 5.12c in Chapter 5).

8.7.1.7 Outdoor Household Activities

One of the obvious categories of activities frequently associated with home compound was outdoor household activities: gardening and planting or other related activities (e.g. attending plants, plucking flowers, fruits, sweeping rubbish/ litter; watering plants, pruning or cutting vegetations; washing car were common depicted in drawings. Children are known to enjoy gardening activity (see Section 8.1.0.4) that can take place all year round. Gardening, planting and plucking fruits and flowers represent 20% of all outdoor household activities. Vast open environments favour gardening and planting activities more often with abundant of trees, fruit trees and vegetables.

8.7.1.8 Preference for gardening and planting activity

General gardening and planting involves tending and caring for plants and activities associated with it - watering, cutting and pruning, raking and sweeping dead leaves, and harvesting flowers and fruits. The low presence of planting or vegetable plot in drawings as discussed earlier could possibly be used as a yardstick for measuring children's keenness for this activity. More frequently the presence of flowers or planting pots, fruit trees, aquatic plants signified the caring attitude towards the land. The opportunity to get involved in gardening and planting and tending flowers perhaps translates from the symbolic association with the environment resulting from their "sense of pride and ownership" (Titman, 1994).

In Malaysia, gardening is part of school's co-curriculum activity and gives children the opportunity to have hands on experience with planting skills and knowledge. At home, gardening is perhaps an adult's pursuit where children are asked to help or participate. Mentions from essays have indicated, to many children gardening activity was a healthy exercise, helping toward greening the earth, and acting as a cost saving from buying fruits or vegetables in shops. In the Qur'an, there is also mention of priority for agricultural activity as Hamid (1989, pp. 60) puts it: "God, according to the Qur'an, has spread out the earth and made it suitable and fertile for cultivation. He sends the "fertilizing winds" to drive the clouds and scatter the seeds and He sends down rain to bring forth vegetation of all kind." In Chinese, active physical activities of gardening, ball games, and running are considered more *yang* whereas walking, relaxing or resting are the opposite - *yin* features.

Many children that have shown their preference for gardening and planting may be stimulated to caring for their home compound, "expressing pride" in the accomplishment of gardening, to share with others the joy of experiencing to see the plant growing, and bearing flowers and fruits. The activities represented in drawings were kinds of gardening

and planting maintenance work e.g., sweeping litter in compound, cutting grass, pruning shrubs or hedges, watering plants, planting flowers, and harvesting fruits and vegetable with the presence of vegetable plots (Figure 8.3a, Figure 8.3c, Figure 8.4a, Figure 8.5g, Figure 8.6j, Figure 8.7d, Figure 8.7h, Figure 8.8a, Figure 8.8g). It can be argued that children may appreciate plants but do not like gardening and depiction was influenced by adult's attitudes. However, this may be the children's best way to represent conceptually an accurate image of their environment - a "beautiful," "clean," "fresh" and "conducive" living environment. Thus gardening may be to some children a highly valued activity especially amongst the Malay children (Drawing: 27%, Essay: 23%, Questionnaire:8%); Chinese children, (Drawing: 22%, Essay: 16%, questionnaire: 9%); and for Indian children, (Drawing: 18%, Essay: 16%, and Questionnaire: 11%). Generally there is no distinction in preference for outdoor household activity between girls and boys as shown in drawings, questionnaires and essays.

8.7.1.9 Indoor Activity

Some children depicted indoor pursuits like watching television, resting or both at the same time inspite of specific instruction to draw for an outdoor activities. Among indoor activities shown in drawings included watching television, playing video or computer games, cooking, sleeping etc (Figure 8.1c, Figure 8.5a, Figure 8.6h). In essays mentions of activities like helping parents, cooking, eating and drinking, dancing, singing, doing school works, reading, sleeping and listening to music made up to 3% of overall activities. Watching television was suggested by the presence of a television set in a house, external television antenna or parabolic disc receiver in drawings. In this study however, the interest is on outdoor activities rather than indoor activities. Indoor activities were occasionally shown in drawings although very few (3%). Watching television, video and computer games and other indoor household obligations were depicted in drawings and frequently mentioned in questionnaires and essays although the task assigned for outdoor activities. Perhaps the influence of favourite indoor activities like watching television was so great and indicate unconscious preference, i.e., projected as an importance interest an inevitably to be part of children's favourite activities.

8.7.2 Missing Activities

Children's drawings did not reveal formal or spectator category activities like "shopping," "eating out with parents," "going away to recreational forest," "watching football matches," "going for movies," or "going away to beach for swimming and picnic." The questionnaires and essays marked similar lack of mention for these types of activities. As these pursuits were mainly dependent on adults commitments, participations they may be perceived by

many children as beyond their control. They are perhaps not shown because they involve trips away from home environment.

Other formal activities unlikely to be associated with play e.g., going to shop were also missing. Generally, activities that take place beyond neighbourhood environment and children's home range were not represented in drawings or mentioned in essays and questionnaires. Children appear to have a clear territory for what might be part of their home environment. However, in essays it was found one or two children mentioned formal activities which normally took place in wider home range that may not possible to represent in drawings:

"... nearby would be a shopping complex, computer shops with facilities for internet and computer games, a sport centre for football, bowling, badminton, jogging and a car racing track. Outside the house, I would like to have park, a fish pond, a small animal park and a playground. I hope to see many people go swimming at the pool, doing shopping, playing computer games, seeing animals at the park, fishing in the pond and many other activities. I would like to see more people going to the sport centre for sporting activities as now there are many fat people around. I would also like to see many people going to the racing track to race their remote control cars."
(Chinese boy, age 12)

8.7.3 Gender differences and similarities in activity preference

The distribution of various type of activities is markedly similar for different genders. Although as shown in the Figure 8.32, girls do show slightly more activities than boys, there are no marked differences in the general pattern of activities preferences of the two genders. There are of course, differences in activity content within the broad types or categories of activities that were preferred by different genders. For example, ball games amongst boys are often shown as organized games involving many children, but for girls games usually involved small number of children in activities such as see-saw and slide.

General outdoor more passive play such as outdoor reading, resting, watching or observing surroundings or other people attracted children of both genders with no significance difference between boys and girls. In essays, girls mentioned these types of activity more frequent than boys (44% and 33% respectively). Girls were more likely to watch or observe the surrounding environment or other people at play, or resting and boys were more likely to illustrate "adventurous" play such as fishing, or play with animals or pets or with friends in essays. In the essays many activities were mentioned as "hobbies."

There appears no difference in preference in ball games for boys and girls shown in drawings and mentioned in questionnaires. However, in essay boys have higher mentions rate of 20% to 12% in girls. Individual games, netball and see-saw seem more preferred by girls, whereas football and fishing were more popular for boys. Girls, may prefer see-saw

because it allows conversation and paired activity. Playground equipments, such as swings, slides are drawn frequently by both boys and girls, as is the preference or desire for a large space to play and a shelter or a hut. However, in both essays and questionnaires, play equipment was hardly mentioned at all by children. Boys and girls seemed to have an equal preference for play equipment and ball games. The greater interest was shown by boys in ball games, usually played as a team (although often more informally by two or three children as frequently illustrated in the drawings), and by girls in play with play equipment.

About 15% of boys and girls drew external activities using play equipments. It has been shown that certain of these activities for instance swinging, sliding, and play on see-saw were a more preferred than "contemporary play equipment." The percentage of mention rates for play equipments was merely 1% in the essay, and in questionnaires, when asked about their favourite activities they appeared totally missing. There remains the question of why do boys and girls prefer these pieces of traditional play equipments than others? They could be symbolic representations of play equipment in general.

8.7.4 Ethnic differences in activity preference

It is notable that conventional items of playground equipment such as swings, slide, and see-saw featured prominently amongst the items drawn. This does not conform to the general picture indicated by the questionnaire (0%) and essays (1%) in the low mention rate in activity preference. In questionnaire and essay children mentioned about their favourite activities in the home environment with no reference to play equipment at all. In the drawings, there is no significant difference in preference between various types of activity among Malay and Chinese children as they are equally distributed and similar in preferences. Adventure play and outdoor household activities like gardening or planting and general outdoor play activities made up more than 70% of all activities. Indian children placed high preference on play on equipments (27%) and similar emphasis on other types of activity such as general outdoor play, adventure play and outdoor household activity. Generally, all children placed low preference for play on equipment (with exception for Indian children), ball play, mobile play and indoor activities.

Why do Indian children (27%) included these traditional play equipments more often in their drawings? Indian children perhaps do have less access to private outdoor space and therefore visit parks with play equipment more. Another possible explanation is that play equipment is used as a typical symbol of play, fun and recreation in drawings. The ubiquitous representation of play equipment in Indian children's drawings suggest it is nice to draw and has good simple shapes. These questions can possibly be answered once the cross-referencing with other themes from the drawings, together with the findings from the

questionnaires and essays. Perhaps one additional measure of the activities preference is the relative appearance of various items of play equipment in children's drawings.

The essays however, gave a slightly different pictures. Malay children seemed to acknowledge their keenness for a general outdoor play activity (26%), followed by outdoor household activity (23%), mobile play (16%), ball play (13%) adventure play (12%), indoor activity (8%), and play on equipment (2%). The Chinese children tended to prefer general outdoor play activity (66%), adventure play (27%) then followed by other types of activities. Indian children had a similar pattern to Chinese children and placed a high preference for general outdoor play (44%), adventure play (17%), followed by ball play and outdoor household activities (16% each). Despite these differences between ethnic group, Figure 8.31 also shows that they share many common interests in general outdoor play, adventure play, and outdoor household activities: gardening or planting, watching or observing, swinging, swimming, ball games, and playground equipment (although there are some differences in emphasis). The common thread in these shared interest appears to be the need for physical exercise or movement, which is related to child's rapid physical growth.

It is more difficult to extract possible variations in preference for activities according to ethnic background from essay and questionnaire data, since activities were extremely diverse. Essays obtained from Chinese and Indian children were more restricted in their literary expression due to language difficulties. Despite these drawbacks, it is of particular interest that activities including gardening or planting, swimming and playing badminton, appear to attract the whole ethnic range.

It is suggested that the frequency of equipment and activity appearance in drawings could be used as a measure of the preference and the enjoyment which each affords. Equipments and activities provide an objective means comparing type of equipment and activity with another. Play equipment could also be a symbolic representation of playground, park or open spaces in general. It might be argued that the appearance of a features in the drawings could also be part of hidden functions or alternative activities, other than what have be interpreted.

It will be noted that some of the items or details of features and play equipment represented, such as swing, and see-saw are subjects which appear more frequently in Indian children and girls drawings (see e.g. Figure 8.6h, Figure 8.7b, Figure 8.7f, Figure 8.8b, Figure 8.8f). If drawn, play equipment was normally given various bright primary colours: red, yellow, and blue. One minor point of interest is that these traditional play equipments has a lower place in the order of preference amongst Malay children. This suggests that other alternative activity such as gardening and planting may have a priority than play on traditional play

equipment. On the other hand perhaps, owing to greater interest, Indian children drew traditional play equipment with highest number (47 different types of play equipment), but it appears much less popular in Chinese samples (17 number) and Malays samples (8 number). Figure 8.2d, Figure 8.3f, Figure 8.6h, Figure 8.7b, Figure 8.7c, Figure 8.7f, Figure 8.8b, Figure 8.8h show that items more traditionally associated with playgrounds - swings, slides, see-saw consistently offer a high level usage preference eventhough other less conventional, composite or modern equipment items (multiple-play equipments combined together e.g., slide, climbing frames, shelter, and netplay) were occasionally presented in drawings. More interactive or moveable items such swings (appeared as more than half of play equipment drawn). This may be a piece of equipment, including a seat that is likely to be found in playgrounds, parks and gardens.

Activities classified as 'general outdoor play/ games' included games such as hide-and-see, hop-scotch, kite flying, and spinning top were popular in drawings of Chinese children (23%), and equally favoured by Malay children (23%), but not as frequently illustrated by Indian children (15%). Hide-and-see games were shown in the drawings developed around the natural element of tree trunks, shrubs, that provided obstacles to hide behind, or dodge. Some children conveyed a sense of mystery in three dimensions, with change of level (undulating landform, presence of mounds), visual barriers (walls and fences), and vegetation "screening" (hedges, tree trunks) as part of the landscape for play.

8.7.5 Range of children's activity preference

In the drawings, children's expressions of activity emphasised limited range of play activities which can take place within homesite. Depicted figures were often shown smiling and overscaled suggesting a child centred view. The activities featured in the drawings occurred within the immediate spatial range of home environment, in front of the compound or at play and facilities areas closed by. Thus, the drawing is lacking of territorial range representing the spatial extent and preference for experiential variety of external places in the children's landscape as discussed earlier in Section 8.5. This is because children chose to conceive of the ideal home environment as one of small and intimate scale. The results may suggest a lack of independent use of children's broad territorial range, or it may just show immediate environment of home subject to instruction bias in response to the researchers design request. Moore (1978) proposed three broad concepts including territorial range that explain what Hart (1979) termed the "*phenomenal landscape*" the environment used and experienced by children. Moore (1986) defines territorial range as "the totality of a child's space-time domain - of familiar places closed to home as well as a constantly expanding boundary condition, leading to unfamiliar, challenging encounters in new places." It can be

expected that if children had a broad range, a wider range of facilities or places, and activities or formal events (e.g. shopping, eating out) would be shown.

8.7.6 Nature and Activity

Several important themes were identified in children's drawings. These include 'nature', 'secure territory or accessible environment', 'dominant house image', 'good climate or sunny day', 'range of openness spaces', 'play equipment', 'waterbody', and 'pet animals,' all to represent 'happiness' through behavioural freedom as discussed earlier in Section 8.7.4. Emphasis was placed on physical landscape elements that afford specific activities e.g. trees for climbing, play equipments for play, rivers for fishing, green open space for ball games etc. The quality of physical environment is influenced by the affordance of children's environment that supports children's social activities and play (Kytta, 2001).

In drawings, the environment as perceived by children was presented as a "natural" and "humanised landscapes" that looked "harmonious" with surrounding home environment: ponds, rivers, agricultural plantations, trees, and lawns. This suggests that children find "natural environment settings" is stimulating. Equally important, nature offers more intricate and stimulating play objects to children for example trees for climbing and making tree-house, betel nut palm sheath for play (seated on the sheath while being pulled around), tree trunks provide places to play hide-and-seek, river and lake for fishing, grass for play surface, sand for play, and insects for appreciation. All those components were seen by children both as an individual element as well as comprising a total unit within the home environment context. For instance, children's interest in natural vegetation seems to be a utilitarian, part of cultural heritage (see Section 8.2.2). Tuan (1978) identifies the importance of natural environments to children's play:

Children the world over seem to enjoy playing with such basic earth substances as water, clay, and sand; they like to climb trees and slide down slopes. Nature has few "do" and "don't" signs posted by adults. It is relatively unstructured environment in which children's carefree vigor can be allowed full play. (pp. 29)

"Natural" environments were the most preferred theme. Representation of rural or village setting appeared in 34% of all children's drawings compared to other themes. To children, rural places and village settings reflect the natural environment as a physical setting that offers freedom for their activities, opportunities for play and for all kind of adventure quests. This point, emphasises Tuan's (1978) notions of children and natural environment. He finds: "Pleasurable activity rather than aesthetic quality or any idea of virtuous living seems to be foremost in the children's mind," (pp. 28). As a whole, children's feeling and attitude toward the physical environment of home can be considered positive, knowing well what

they prefer although some may be limited by adults influences. Nature itself as represented in drawings was never simple but represented with strings of natural elements that closely interrelated to each other.

8.7.7 Activity time

The drawings were unable to provide information about the relative time children devoted to external pursuits. This information could however be collected from the questionnaires and essays. It was not known or conclusive from the drawings whether girls prefer or expected, i.e. have to spend more time indoors for domestic responsibilities. Generally more than 40% of all the children mentioned more than one hour was spent for their favourite activities during late afternoon between 4.00 p.m. to 7 p.m. every day in the questionnaire (Figure 8.33, Figure 8.34). The presence of sun suggests preferred occupancy time for children's activity outdoors as they are expected to be in the house after sun set.

Can one conclude that the children's preference for a wider range of activity, is reflected in the facilities they chose to draw? There are a number of relevant points to be considered. Malay children's preference for activity were diverse with an obvious interest for certain types of activity: adventure play, outdoor household activity, and genreal outdoor play games. Chinese children were fully occupied with similar activities especially traditional games , and Indian children placed a relatively high priority on play with play equipment , as well as ball games. This perhaps due to two reasons. First, adults may influence children to adopt the attitudes and values of adult world. Secondly, some children have less or greater access to environment either because of restriction by parents or the present living environment with lack of access to broader neighbourhood range. The types of activity variation gives a clear idea of "significant" physical landscape elements (feature or facilities) that supported the total amount of activities.

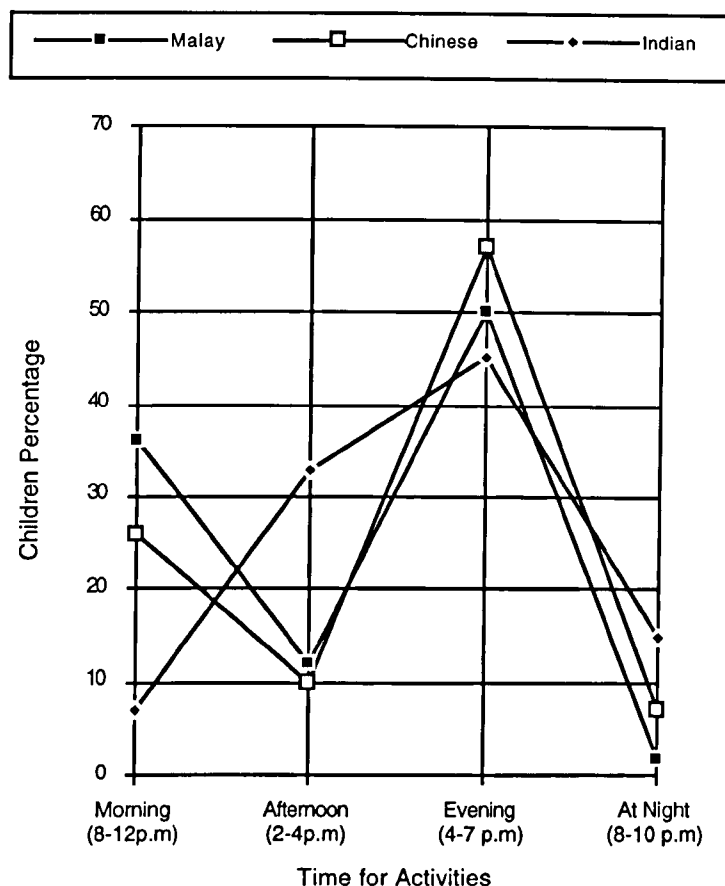


Figure 8.33 Time for favourite activities as mentioned by children in questionnaires.

8.7.8 Home as Social Centre

As revealed through their drawings, play is not a task-oriented activity to serve certain purpose or fulfilling specific aims or objectives. In essays however, children's mentions of activity such as 'exercise', and 'jogging' reflect their knowledge and desire for a healthy life style. The study of children's drawings has show that there are a variety of specific play setting (e.g., at play equipment) and non specific settings (e.g., the presence of river and other natural landscape elements), and these are probably necessary in the promotion of play and other types of activities, and the social interaction which goes with it. To this extent, the home compound performed the function of a social centre in the children's landscape where a child prefers to find some company. For example the presence of people in groups, the mention of specfic groups of people in essays such as best friends, neighbours, siblings and family members confirm this social need.

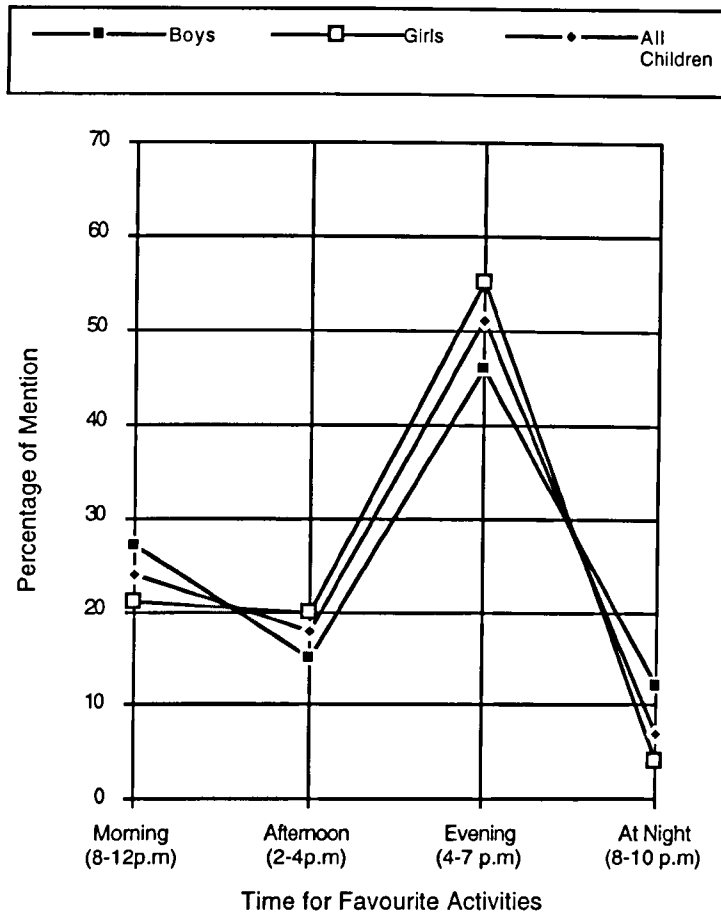


Figure 8.34 Time for favourite activities as mentioned by boys and girls in questionnaires.

It can be argued that children illustrated their home environment with social values identified as a locus for activities and social relations (Lawrence, 1991). Home environment as a social unit represents family (Hayward, 1975), friends, peers and neighbours. Children's preference is more toward 'freedom of action as well as physical emotional security,' (Despres, 1991, pp. 98) as manifested through open vast spaces, together with presence of walls and fencing in their drawings. This aspect of children's social relationship with other people is related to expressive quality - attachment to other people, to reflect home as a social centre represented by group of figures involved in social activities.

Children manifested their expressions through spatial matter in which the location for figures were selected. The size of figures varies greatly from drawing to drawing within different ethnic groups and genders but they share common spatial matter as the majority of figures were depicted at the front of home compound (60%). Play areas with play equipments appeared favourable for Chinese (22%) and Indian (47%) children and only 2% for Malay children as the place for activity. Natural settings and street are rarely chosen for a figure to be except for Malay children that marked 18% and 12% respectively. However,

boys (5%) depicted figures on the street slightly more than girls (1%). Indoors is also infrequently shown with figures; ranging between 2-6% for different ethnic groups and genders. The majority of children have indicated open spaces or compound, play areas or playgrounds, near landscape resources (e.g. rivers, ponds, lawn, trees etc.) for social activities to take place. The street was not favourable place for activity perhaps for fear of traffic danger and because of parental restrictions. In everyday experience, streets have not been designed to accommodate uses other than for transportation (see Section 8.3.3.2 and Section 8.3.3.3).

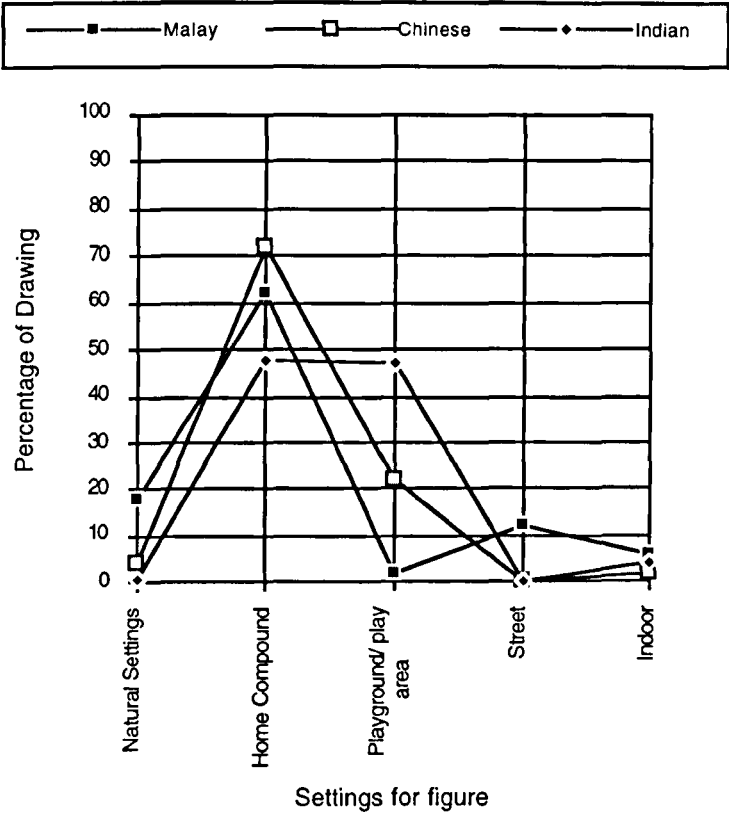


Figure 8.35 Location of figures in drawings representing meaningful contexts of relationships and activities according to different ethnic groups.

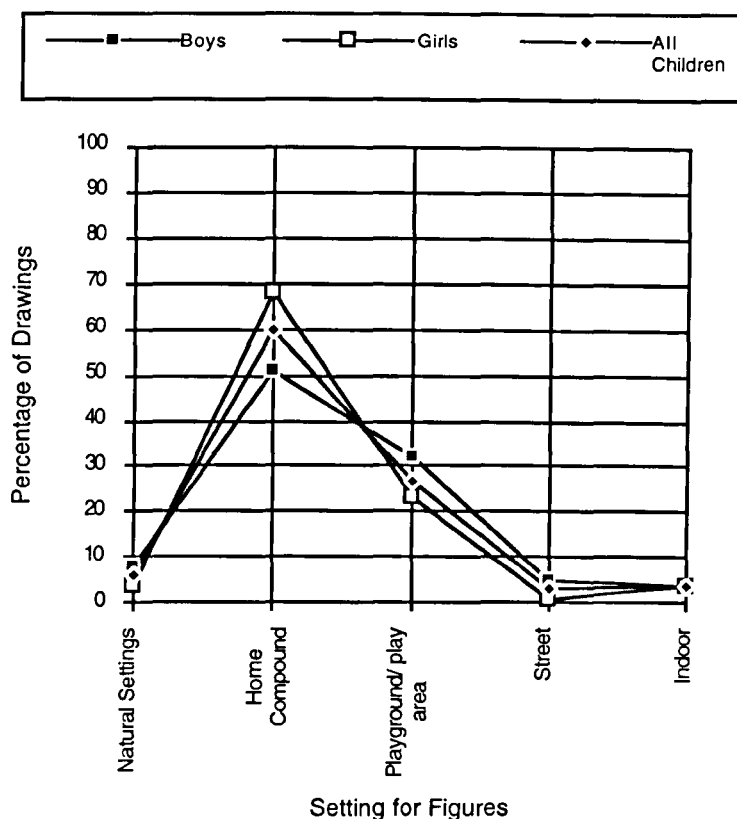


Figure 8.36 Locations of figures in drawings according to gender.

8.7.9 Children's Expression of Happiness

Feeling is expressed through facial expression of people involved in activities. It can be assumed that the depiction of ideal home landscape carries an embedded positive feeling. In the essays children used words like "happy", "love", "enjoy", "fun", "cheerful", "affection" etc. as part of happy expression for describing ideal home landscape. Emotional expression can be successfully portrayed in images, for instance when figures are depicted in different "context" (Golomb, 1992) or "theme" like play. Most of the drawings portray meaningful contexts for play, adventure play and gardening activities, being with group of other children or in crowd, and the presence of pets in depicting emotion. Within these environmental themes, happiness appears frequently depicted, embedded in play, adventure play and gardening activities, together with the presence of other children and pet animals. However, feelings of happiness are expressed in slightly different emphasis between ethnic backgrounds and genders in their meaningful context. Generally, happiness is play and getting involved in adventurous activities as indicated in more than a quarter of children's drawings. Gardening activity, the presence of other children and pet animals contributed close to 40% of the meaningful contexts for children's expression of happiness.

There are in children's drawings some instances of conscious choice of colour with respect to their affective expression, e.g. the happy, merry, beautiful, red colour of flowers in home compound, and the blue waterbody in "a quiet-cool home environment." Most of the children's drawings from the sample have shown the same level of colouring knowledge and skill, although the Chinese children's drawings technique generally more advance as their use of colours seems richer and more refined. Generally, children prefer pure, clear colours and 'light-clear' colours. They showed interest in colour harmonies and colour contrasts, while showing very little interest in shades. This finding supports Lowenfeld and Brittain's (1987) explanation in their attempt to define the meaning of colour in children's drawing:

Children move from a rigid color - object relationship to a realisation of the properties of color..... This greater understanding of color differences is not a true visual awareness because children do not indicate the changing effects of colors in light and shade. Some children will find that the sky has different blue of the river or the lake, and some will find that the tree is a different green from the green of the grass. A child in this stage of development who still uses rigid color-object relationships does not have sufficiently refined visual sensitivity to notice the differences that distinguish a green shrub from a green lawn. (pp. 311-312)

Through drawings, some children have taken an effort to express their feeling, and colour to certain extent have been utilised to depict expressions of happiness. It is acknowledged that the methodological approach in data collection is not specifically designed for this purpose however, the presence of human figures in association with favorite or preferred activities may reveal some commonly experienced feelings. There is also methodological limitation as a comparative study between different ethnic groups and genders may not be conclusive since in some drawings figures were absent and in some if present, in the form of basic stick figures. It can be suggested that children find drawing people is difficult and avoid to include them (Brown et al., 1987). With limited graphic skills, like some Indian children they have chosen to draw stick figures instead. The stick figures representations among many Indian children may also suggest their limited experience of different environments, so they may not see themselves as having a strong identity in the ideal home environment.

8.8 CONCLUSION

Analysis of the drawings reflects some genuine difference in living pattern between genders and ethnics background of all children as portrayed by different preferences for certain features or facilities which support activity types within their ideal home environments. In essays and questionnaires, children's expression of preference reflected very strong what was available in the present environment. For example, only small minority of children expressed desired for a quiet place to read. However, if more seating of this secluded type were available, reading and games which are normally played indoor might take place outside with protection from sun and rain. One surprising feature which emerged from drawings was the consistency of results concerning preferences for certain items of play equipment and various types of activities. In a field that is apparently affected by many factors such as social economic status, types and locations of present resident etc. such marked regularity in the children's "concepts" of home environment and their activity preference was unexpected.

8.9 REFERENCES

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CONCLUSION

9.0 INTRODUCTION

This chapter is concerned with presenting the conclusions that can be drawn from this research. Some of the important findings and issues raised by the research will be highlighted and discussed. While this research is primarily aimed at establishing the meanings/ concepts and preferences for home and neighbourhood landscape, all the findings from children's drawings will be highlighted.

Techniques/ methods of interpreting children's drawings qualitatively will also be discussed. The research has provided some valuable information on differences and similarities between three ethnic groups in Malaysia and between genders that have also emerged from the drawing analysis. The final part of this chapter will deal with the possibilities for integrating the findings with the planning and design of children's urban landscape. These suggestions might provide a way forward for improving the future provision of children's urban environments by suggesting appropriate new approaches and practices.

The sections in this chapter are set out as follows:

- i). An overview of conclusions relating to the use of children's drawings as a research tool including approaches to qualitative analysis and interpretation of data from drawings.
- ii). A summary of the findings of the research in terms of children's aspirations for their 'ideal' landscape environment.

- iii). Discussion of the practical implications for planning and design of urban environments with particular reference to Johore Bahru. General issues on directions for future research will also be discussed.

9.1 USE OF CHILDREN'S DRAWINGS AS A RESEARCH TOOL

9.1.0 The Strengths of Drawings as a Research Tool

It was found that in certain ways children's drawings are a reliable and effective tool for gathering information about children and their environment. Through drawings, children are capable of communicating ideas about preference for their home landscape in the form of environmental concepts and activities. The findings suggest influences of peers, adults, and media on children's graphic techniques. However, their preferences were vividly and clearly expressed. What children have communicated may reflect the reality of the environment that is needed for their development which has, up until now, failed to be provided. Children's needs have been neglected or even misunderstood in many environments planned and designed by adults. With rapid urbanisation more children will live in the urban neighbourhood environment. This could be as high as 60 percent in developing countries (Dallepe, 1996 c.f Malone, 2001). Yet the present neighbourhood hardly considers children as a user and fails to demonstrate a caring attitude toward children. There should also be concern to allow children to participate in decision making processes regarding matters related to or concerning them.

As a visual method, drawing can dramatically improve the degree of children's participation. Drawing offers a valuable means for children to communicate as they enjoy doing it. Drawing can be used effectively as a "warm-up" exercise, or as stimulus for further discussion or expression. It is also valuable as a method for getting children to become aware of the visual and spatial qualities of the environment and the possibilities for its improvement.

Children's drawings in this study appeared to be representing ideas about environmental concepts and preferences. Although there were differences between children, more similarities were observed across ethnic groups and gender. This study also demonstrates that drawings can provide an excellent source of data for qualitative analysis. The drawings children draw provide an insight into what is important to them and how they view their environments and the world around them. Children's drawings also indicate both ideals and preferences, as well as existing environmental experience and knowledge. Children are

able to manifest their expressions and feelings in relation to the environment depicted in their drawings, for example through the presence of landscape elements, people and animals.

As a research tool, children's drawings have proven to be a reliable method of data collection (Blades, 1990). In collecting data from children though many well established methodologies e.g., observation, interview, questionnaire etc. (see Chapter 3) can be utilised, using drawing is a more encouraging approach for children to represent information on environmental needs and preferences.

Children's concepts of environments and their activities preferences often integrate affective feeling and environmental concerns. The data shows that young children's concepts and preferences for their ideal home landscape and preferences are diverse and broad. It is important to recognise that the special approach of drawing methods can offer different sets of data compared to other methods. The use of drawing in conjunction with questionnaires and essays is appropriate for comparative study of cultural and gender differences. From the methodological point of view, the study makes a contribution to developing techniques for research on and with children within the developing discipline of "environmental design and research." Qualitative analysis and interpretation of drawings produced findings useful for decision making and action. It is suggested that in future research, discussion with children about their drawings may help analysis, interpretation and minimise tendency for the "pre-emption of children's ideas by adult interpreters," (Hart, 1997, pp. 162).

9.1.1 The Weaknesses and Limits to Use of Drawings

Children's representations are affected not only by their ability to draw, but also by their ability to put together their knowledge and their visual perception. In this research, all the children were in the same age group, 9 to 12 years old, and should be at the same stage of drawing development, i.e. 'visual realism.' However, cognitive development may vary from child to child across different ethnic groups and genders. Children with poor ability to draw (especially among Indian children) may have been at a lower stage of drawing development, i.e. 'symbolic realism.' Children often know more but their limited graphic skills may restrict what their drawings reveal (Grieve, 1995) and will effect the final product (Moore, 1980a). Some children may represent "stereotyped images that relate to what they have learned to draw, which in turn is often an expression of a limited range of objects emphasized by the particular culture or subculture (Hart, 1997, pp. 162). Thus, children may have chosen

landscape elements in drawings that are familiar or easy to draw far more than others and this may have produce a "bias" in their drawings.

During the drawing task, a group of children may have shared information through copying although special efforts were made by the art teacher facilitator to remind children not to do so, but instead encouraged them to draw according to their own ideas and creativity. The information children have about their environment is crucial for the mental representation of concepts and preferences (Barraza, 1999). All the above factors are important as they pose limitations on using children's drawings and affect the analysis and interpretation of children's drawings.

9.1.2 The Need to Use Multiple Methods

The various methods used in this research provide diverse responses to complement each other and there is also flexibility to accomodate other possible methods and involve a wider range of age groups. Younger and adolescent children might have different ideas in voicing their needs and preferences. Besides children, adults from different backgrounds and professions, and agencies either directly involved or not with children, may also play a crucial role in shaping urban environments. In order to understand the issues holistically, all those involved, related and concerned, ideally need to participate in a future full scale research project. Much of the truth about urban environmental issues and problems is embedded in social and cultural environments, and scattered across a wider range of population from different ethnic groups. It is necessary to have these matter brought together. In doing so, both the importance and generality of provision, planning and design of urban environments, especially for children, can be addressed holistically.

Other different methods are also available and should be considered in research involving children. Children's drawings, questionnaires, and essays served better together as a research tool in eliciting informations from children. Communicating with drawings has advantages and limitations and questionnaires and essays offer explanations that drawings can not. All the findings however complement, inform, and can be linked to each other. The use of questionnaires may not be the best possible method to collect information from middle age (8-12 years old) children. Interview methods could be a possible alternative for understanding children's views, needs and preferences. Children's interaction with and, use of urban environments could perhaps be established well through observation or behavioural mapping. Most of the research on children has employed more than one

method, and a combination of various methods whenever appropriate, to give a broader understanding in depth of research problems, issues and concrete evidence for action.

In this research, for example, if a simple interview schedule involving a "write and draw" technique, followed by a group discussion had been administered, it may have helped in transcribing qualitative aspects which can be useful in developing themes and categories and providing illustrative examples in the context of the qualitative data. It would, however, have been impossible to achieve such a task in the time available, so the discussion had to be omitted.

9.1.3 Approaches to Analysis

9.1.3.0 Developing Qualitative Analysis and Interpretation for Drawings

In this research, for the analysis and interpretation of content, the drawings were coded using a set of categories based on literature review taking into consideration cross-cultural and gender comparisons between different ethnic groups of Malay, Chinese, Indian and boys and girls. Drawings were found to be valid representations of each child's most preferred "design" of ideal home environment settings and associated activities. Across different ethnic groups and genders, the drawings demonstrated a wide range of graphic skill on the part of children.

Further interpretation of the main categories and sub-categories after coding in order to interpret meanings were carried out by developing themes, typologies and concepts, and relating the study through literature to form a framework and theoretical assumptions as the basis for data interpretation. Finally, analytical threads were developed that unite and integrate the major themes. The above methodological procedures were found to be useful in interpreting data from drawings.

A similar set of categories was used for analysing the essays, using an open-coding procedure. Analysis of questionnaires were based on answers given for each pre-set categories. For open-ended questions, further analysis and interpretation was required for categorising the answers (Section 7.3.3 in Chapter 7). The above approach enabled comparison to be made between the findings from drawings, essays and questionnaires, this was wherever appropriate and necessary.

It is interesting to note generally the difference between responses from drawings, essays and questionnaires. The number of places mentioned in the essays and questionnaires (acknowledging the many open-ended questions in the questionnaire format (see Appendix III))were far fewer, and focused on far fewer "physical landscape elements" than those illustrated in the drawings. The drawings consisted of a larger number of physical landscape elements, and provided more substantial insights into the physical attributes of environments children prefer, than did the essays and questionnaires. Both essays and questionnaires were essential, however, for investigating the social and psychological "hidden dimension" of environments that drawings failed to convey or children found difficult to depict. For instance, children may not be able to represent sensuous aspects of their environment (Blades, 2000) and the time-space dimension in drawings. Any missing elements, negative instances or contradictions of what drawings peculiarly portrayed were checked against findings from essays and questionnaires.

9.1.4 Scope for Future Development of the Approach

9.1.4.0 Bias in Task Instruction

Obviously, the researcher attempted to frame the questions in a form that children could understand, but this is not as easy as it might seem as some children had trouble in distinguishing the meaning of certain expressions used in the questionnaire. As a result, it made testing very difficult in some areas. Both Chinese and Indian children in the sample needed a lot of help in explanation and translation of some of the terms used into their own language (ie. Mandarin and Tamil for Chinese and Indian children respectively). This help may influence the consistency of the research procedure as ideally a single person would be able to maintain a standard through out. This is what the author would have wished. However, since the data collection was carried out with the help of native language teachers, the correct terms cannot be ascertained. Children's response thus, cannot be assumed valid all the time.

Within the allocated time frame, the research would have benefited from the involvement of team work, at the expense of an increase in financial resources and time allocated for data collection during the field work. For instance, having finished the drawing task, a discussion or an interview with children could have given the opportunity to explain or talk about their drawings and would have highlighted hidden messages in the drawings (Oakley et. al, 1995; Moore, 1986). Perhaps, with additional financial support, there would also be the possibility

to expand the scope of the research by looking into aspects of the process approach to children's drawings using a video camera.

This research was limited to the study of environmental concepts and preferences of children aged between nine to twelve years old in relation to home environment settings. The results of an initial study of children's responses to streets and schools settings, though partly analysed, have been excluded from this research, and thus are not reported here. Although younger children and adolescents were also users in those environmental settings, the method using drawings as a prime tool was suited well to the selected age bands. The aspect of ethnicity, which was explored in greater depth, involved an immense amount of work and was very time consuming. Thus, aspects of cultural elements were not fully explored on their own in this research and can be seen as limitation to the research findings.

This research was also limited to urban school children's concepts of and preference for their ideal home landscape, rather than other populations of children who may live and go to school in different home and school environmental settings. This is because the urban areas are more crucial and need immediate attention by the local planning and design authority. As the envisaged value of the research is in the possibility of integrating the findings within the main stream of planning and design of urban open space for the provision of children's landscapes, it has to focus on the urban open space planning. Therefore, children living and going to school in rural environments were not considered here.

Apart from home and school environments, other environmental settings may also be of spatial importance to children - for instance street, playground and open space, and other urban spaces. The studied environmental setting (home environment) was chosen as the most common *mesosystem*, based on Bronfenbrenner's model of the ecology of human development (Pelligrini,1991), within the children's immediate range environment (see Chapter 7 for detailed justification).

There is clearly great scope to this research to be developed further and the findings and broad issues discussed throughout this research will hopefully provide a platform for further research in the near future. It is not regarded as final and conclusive but rather a modest attempt to suggest that there could be a more effective way to understand what children actually see and prefer for their landscape environment as compared to what adults think. Then careful and selective analysis techniques can reveal hidden and symbolic dimensions of preferred qualitative aspects of their landscape. These findings, though incomplete, can still be consider indicative and relevant to the existing planning system to yield a better and

more effective way of providing appropriate provision of landscape environments especially for children.

9.1.4.1 Future Use of Children's Drawings as a Research Tool -Final Thoughts

From this first experience, a number of conclusions have been drawn about better ways of conducting such a study. Research should be flexible and able to be conducted with modest means in almost any situation. Rather than further elaborating such study, the aim should be to simply it while still permitting local elaboration according to interest. The research has been carried out and controlled by the author and research assistants. However, closer contact with teachers is likely to be useful and highly recommended for future research.

Another benefit is drawings offer a means of communication where visual languages are "shared." Language communication is critical for children of this age; Chinese and Indian children are those most affected by having to write in a second language (Malay). Help from teachers that can communicate using their mother tongue is essential. Since the linking of research to policy is a prime concern (Chapter 1), the findings would be useful in establishing future guidelines. The study deals with the way children form concepts of their environment and the activities they prefer. The use of drawings especially, and essays, as open-ended methods, dealing in depth with a small number of 114 children have produced some evidence concerning relevant conceptual clues.

There are several ways in which this research has developed. The immediate locality for children is crucial within the mesosystem of environment (Bronfenbrenner, 1979). Thus, it is more relevant to study children's home environment, street environment, and school environment, probing such things as their concepts of their landscape environment, nature, and culture from different ethnic and gender perspectives.

This research focused on one stage of children's development - age nine to twelve year old as they are using the spatial world most intensively at this age (refer Chapter 7). Future research should also seek to know more about children in different stages of development - at below nine year old or at the early adolescence stage - who have to bear the consequences of environmental planning and design. Ideally, if resources permit, longitudinal studies as children develop would be advantageous.

It now seems clear that a cross-cultural comparison of childhood concepts may be particularly important. Studies could compare micro-locations differing from each other in specific traits of environment, ethnicity, or gender. Building a localized patchwork of modest sample studies would be the most efficient way of informing decisions. The research advocates an extension of the range of sampling rather than an extension of the size of environmental setting, or the size of the sample population.

The study indicated children's views of their ideal environments without discrimination, i.e. they did not categorise spaces, for instance according to planning terms. The portrayed environments: natural landscape, animals and wildlife, safe, accessible environments, and cultural aspects of environment, play an important role in serving developmental needs in childhood. Are these concepts and attitudes equally shared by children in the 'Western World'? What attitudes serve children better in urban environments? Establishing concepts held by children and "a course of action" is pivotal to the above questions. One approach is to adopt a concepts scale (attitude scale) that is readily available and established in the literature from multi-disciplinary studies. This could prompt a comparative study between the findings from children in the study and "Western" children to establish a yardstick and encourage greater understanding about children and urban environments. Such work is beyond the scope of this research but could be undertaken in future.

9.2 FINDINGS OF THE RESEARCH IN REVEALING CHILDREN'S ASPIRATIONS FOR THEIR 'IDEAL' LANDSCAPE ENVIRONMENT

The findings generally indicate that children have placed positive values on natural landscape elements such as vegetation, waterbodies, animals and wildlife, and attachment to other people. There is also evidence about children's interest in a wide range of outdoor activities including play on play equipment and with natural materials with friends or peers. Vast open rural settings provide greater opportunity for freedom and adventurous pursuits thus, much desired among many children compared to children's preference for urban settings. Many children revealed their aspiration for a safe, clean and beautiful environment as part of their 'ideal' home environment.

The study of children and their urban environments has led to a series of conclusions. Some lead to other sets of questions on different dimensions of the topic that need to be further addressed. Further research work and study is also necessary as indicated by some of the conclusions. None of these concluding remarks can be generalized or are conclusive. Research on children and their urban environments is a dynamic process, with continuously evolving concepts suggesting planning and research efforts to answer an array of issues and questions. More important, the conclusions aim at providing a platform or impetus for future research which can then begin from an established foundation.

The concepts and attitudes adopted by children in the sample is very much shaped by social-cultural concepts of the immediate setting, its relationship with various other settings (e.g. child's relationship with neighbourhood environment, school, peer group), and the broader context of all settings (Bronfenbrenner, 1979).

9.2.0 Main Findings

Children's outdoor activity is often not viewed by the societies in developing countries as important for developmental needs, but rather as recreation, having fun, and releasing energy (Sobaihi, 1995, pp. 289). Adults have placed a high priority on academic achievement for children, leaving them less time for other activities except academic related activities (school home-work, tuition classes etc.). Learning is viewed as a separate activity from play which only takes place in a formal indoor spaces such as in school's class rooms, not in outdoor environments. Natural outdoor environments have not been thought of or accepted as part of the educational resource and important to environmental quality of urban environments. Natural outdoor environments where children are actively involved are not seen as a supporting environment for learning that can help to stimulate the process of child development (Adams, 1990) and to offer rich and stimulating resources and settings for informal learning (Titman, 1992, 1994).

9.2.0.0 Landscape Elements

The strong existing bond between children and play facilities, together with their affiliation towards natural landscape settings are both key findings of this research. Further conclusions of the research are that the children show a strong attachment or affiliation to the following elements which are regularly portrayed in drawings and mentioned in essays:

- Vegetations (tree, fruit tree, plant in pot, forest, shrubs, agricultural plantation, grass, flowers, aquatic plants, and vegetables).
- Waterbodies (such as fountain, aquarium, pond, pool, river, waterfall, sea/ beach, lake, and well).
- Topographical features (mountain, mound, slope).
- Landscape structures (play equipment; sculpture and furniture; barriers such as walls, fences and gates).
- Climatic elements (sun, cloud, wind, snow, lightening, rainbow, moon).
- Animals and wildlife (fish, birds, chicken, duck, cat, farm animal, tortoise, rabbit, dog, frog, crab, butterflies, bees).

Most children in this research did not portray the above landscape elements in any existing neighbourhood layout or settings. One can therefore assume that the present housing planning and design has a negative impact on their preferences, posing restriction on their favourite activities and thus failing in meeting user needs. For many children, their preference for vast open boundaryless space as a concept for their ideal home environment could be interpreted as a strong message or indication of what is missing in real everyday life. Children have shown their attachment or affiliation to physical landscape elements especially water in the form of rivers, ponds, lakes, beaches, or swimming pools; vegetation, including trees, lawn, flowers; animals and wildlife; and play facilities.

9.2.0.1 Expressive Qualities

Aspects of expressive qualities of landscape have also been vividly highlighted by children through their drawings. The main expressive qualities that appear important are as follows:

- Range of action
- Attachment to people (family, friend, neighbour)
- Favourite spaces or places
- Spatial dynamics (different environmental settings; scale/ size of elements; linkage and connection; explorative/ adventurous environment).
- Colour preference
- Preferred outdoor activities (general play, play on equipment, ball games, adventure play, mobile play, household activity, and indoor activity).

The above expressions or feelings for instance have been manifested in the presence of people (e.g. friends), animals (e.g. cats, dogs, rabbits, birds, fishes etc.), trees (e.g. fruit trees, trees that provide shades), and flowers (e.g. lotus, jasmine, gardenia etc.). Through these elements, children are able to express their feelings of happiness, joy, fun and freedom, by virtue of doing their favourite activities, manipulating the landscape while interacting with surrounding environments. Though play activities are depicted through the presence of formal play equipment and facilities, children also frequently mention natural landscape elements which could also be potential play elements e.g. shrubs, trees, water-bodies, animals etc. Local authorities, developers, and planning agencies always believe that children's needs can be provided for solely by virtue of provision of play spaces with typical play equipment. To a child, their environmental needs are not tied to the presence of playgrounds. Natural landscapes form an integral part of their overall developmental needs and should not be seen in isolation and in a fragmented manner.

9.2.1 Cultural and Gender Differences

Across different ethnic groups and genders the research has shown slight variations in environmental and activity preference, taking into account that children's environment is dynamic, and susceptible to changes in preferences, needs, and environmental features over time. Within different cultural groups, Malay children have shown an inclination towards rural or village settings compared to Chinese children who appear to prefer a spacious home compound. As for Indian children, they appear to place priority on communal play spaces with traditional play equipment.

Girls generally have shown their home environments as confined within the immediate home site whereas boys prefer broader home range to be able to venture into diverse landscapes. Children's preferences for their ideal neighbourhood environment is composed of a series of attributes that children valued highly or had positive attitudes towards as summarised in Table 9.2, which highlights culture and gender aspects of the findings.

ASPECTS OF CULTURAL AND GENDER DIFFERENCES		
CULTURE/ ETHNIC	GENDER	ENVIRONMENTAL ATTRIBUTES
All children placed priority on social interaction through various activities in home landscape. Among Chinese children, they have shown preferences for group activities.	There is no significant difference in gender preference.	Children's preference for environment that can attract children for social interaction (Abu-Ghazze, 1999). Physical environments no longer support social contact and activity on the neighbourhood scale (social neighbourhood - web of social contacts and acquaintanceship, ie. a need for good urban social fabric in the neighbourhood).
The majority of Malay children represented vast open spaces depicting village or rural settings. Activities within the immediate home compound dominated Chinese children although village and natural setting were occasionally represented. Indian children were pre-occupied with play equipment and playground suggest their limited and restricted access to neighbourhood facilities.	Generally girls' activities suggest restriction on home range compared to wider range among boys.	Appropriate size and safe accessible open spaces (lack of open space and lack of consideration for pedestrian use). Acknowledge different cultural and gender needs.
Ethno-botanical use of vegetation may create strong identity or character for each house, and collectively will support image of neighbourhood. Some children's drawings strongly convey the message for identity especially among Malay and Indian children.	Boys are more concerned for broad scale neighbourhood identity. Girls are more sensitive to image immediate to home.	Fulfilling sense of identity (family as basic unit of society, and neighbourhood is basic unit of city).
All children have shown their preference for a sense of freedom in activities; natural landscape settings (e.g. trees, waterbodies), and the presence of animals and wildlife.	Equally represented in both boys and girls drawings.	Manipulative environment (sense of control, natural materials, fruit orchards, gardening activities, link with animals and wildlife).
Many Malay and Chinese children have shown their inclination to associate their activities in natural landscape settings. Only a few Indian children have shown home landscape with natural settings.	Girls preference for adventurous quest mostly restricted to immediate landscape resources near home compared to boys.	Landscape resources for opportunities to be close to and experience nature, and a variety of challenges for adventurous pursuits. Negative effects of high-rise living and city centre.
Only very small percentage of Malay children depicted cycling in drawings. It is totally missing element in Chinese and Indian drawings as it may reflect reality of restriction by present environment and parental restriction.	Cycling was rarely depicted in both boys and girls drawings.	Use of bicycles (increase sense of mobility, accessibility, safety which eliminate environmental fear in traffic free environment).
Malay children associate home landscape with village setting this is less pronounce in Chinese and Indian drawings.	Equally preferred by boys and girls. Boys on the other hand prefer to venture into much broader home settings	Village setting as an important symbolic representation of childhood place for broader environmental experience and access (traditional values).

Table 9.1 Environmental attributes in relation to cultural and gender differences.

9.2.2 Limitation Due to Sample

It is of course true that 114 children represent merely a very small fraction of the total child population. Qualitative research of this type can however provide a very valuable insight into the important issues. If a more quantitative, statistically valid view was required it would be necessary to research the views of a much larger sample of the population. Assuming that a sample of 5 percent sample of children is required, some 2,450 children would need be involved. From the management experience gained in this work, it can be said that it is unlikely to be manageable to supervise use of such a large sample. But this qualitative research was neither capable or intended to handle a larger sample due to time, financial and resource constraints and limitations. In the qualitative research approach, sample size is not a crucial factor affecting findings because qualitative research inevitably and intentionally uses small sample sizes to enable depth of study rather than breadth.

Nevertheless the selection of the participants was based on random sampling so as to meet the required number of children representing an equal number of both ethnic and gender groups. The 114 children were equally distributed among the three ethnic groups of Malay, Chinese and Indian (N=38 each), and between genders - boys (N=46 in total), and girls (N=68 in total) and so can be considered fairly representative of all participants. All the children came from urban environments, lived in urban neighbourhoods of housing schemes and went to typical urban neighbourhood schools. The number of children in each ethnic group is not representative of the general proportion of different ethnic populations in Johore Bahru, but rather represents the mix of the population in each school where children were involved in the data collection.

9.2.3 Sampling Frame

A non-biased sample in research can be established through a simple random sample method. Theoretically, in the simple random-sampling technique, elements are selected from the developed sampling frame based on mathematically random procedures followed by elimination of the actual elements in the sample (Neuman, 2000). The principle behind sampling frames is that any person in the sample has an equal chance or probability of appearing in the sample.

In this research, the most difficult part was that even if each sample was selected randomly, there is no assurance that all three different tasks (Drawings, questionnaires, and essay writing) could be completed by each sample. For instance, a selected sample may have completed the drawing and questionnaire tasks but failed to fulfill the final task of the essay due to many unforeseen circumstances (e.g. children's refusal or absent from school). Acknowledging this difficulty, the research had to maximise the number in the sample who completed all the tasks, and later the selection was based on the merit of task completion. Thus, a greater sample needed to be incorporated initially and finally 38 samples for each ethnic group were randomly selected. The pattern in the sampling distribution was determined by the minimum task completion for each group i.e. N=38, totalling 114 out of more than 1260 samples that completed the drawing task (some of which failed to complete other tasks). If the research had required only one task, it would have been much easier, either to adapt a strictly random sampling approach or to count all samples in each school population without additional sampling. Some researchers have opted for the latter approach to yield more representative results (Moore, 1974b, 1986). Despite the carefully accurate sampling frame as Neuman (2000) notes: 'random sampling does not guarantee that every random sample perfectly represents the population,' (pp. 204).

9.3 IMPLICATIONS FOR THE PLANNING AND DESIGN OF URBAN ENVIRONMENTS (WITH SPECIAL REFERENCE TO JOHORE BAHRU)

This section will explore the potential implications of the research for planning and design of urban environments. Admittedly, this study is too small to be useful as a firm basis for decisions, much less as a source of generalised theory. The intention, however, is to show that policy implications can be drawn from the findings and an impetus provided for further research with a similar focus in the future.

The positive values children attach to natural landscape elements and to certain qualitative aspects of the home environment should not be neglected in the practice of urban neighbourhood planning and design. It is essential that natural environments form an important component of the environmental settings for their activities and experiences. Current planning practice in Johore Bahru neglects this need but focuses on designating open spaces for recreational activities. This study recognise an urgent need to integrate natural landscape resources in provision to meet children's environmental needs through urban planning policies and guidelines.

9.3.0 The Need for Change

The children's drawings reflected the need for physical changes in their living environment, to better accord with their preferences. They expect to see continued improvement compared to the present housing environment. Children envisage changes in terms of conservation of the natural environment, a house with more space around it, more open grass fields, play facilities, and waterbodies, together providing more comfortable environments which are more conducive to healthy living.

9.3.0.0 Ideal Landscape Environment

The research suggests that all children would like to see more trees, better and safe streets, and more recreational facilities. A few children also mentioned more tall buildings, a shopping complex, a library, bus stops, telephone booths, schools, a university, a stadium, more places to play, more activities and services and better access to the facilities. The children also mention that they want more parks and playgrounds, cleaner and fresher air, and a more beautiful environment.

9.3.0.1 Housing Community Identity

Children should also be living in places that have a clear social and spatial identity - places they can understand and take pride in. They should have a role to play in community maintenance, for instance taking care of cleanliness and vandalism deterrence. Their sense of past and future should be connected to their locality, and related to the conservation of natural resources and to their historical heritage.

9.3.0.2 Access to a Wider Spectrum of Environments

The environment should be designed to open out to children. They prefer both quiet and stimulus and should find both close at hand. The relationship of the home environment, the natural environment and city facilities is important to children's welfare. It is critical since children are limited in their range and have a great hunger for stimulus because their growth feeds on it. Attractive public places, where interesting activities can be seen and engaged

in, should be accessible to children. For every new housing scheme built, access must be created for children through many means, by pedestrian and cycling networks, traffic segregation, or by elimination or reduction of the danger from traffic. With greater accessibility and confidence, children might learn to use the diverse environment as a learning ground. Ability to experience a spectrum of environments, places, people, and activity will reduce their boredom and vandalism, and deepen their development, which comes to the same thing.

The home environment would be more interesting if it is surrounded and enriched by natural environments. Most children's activities are highly programmed. They spend much of the day in the school classroom and have little time to explore their environment. Television is rapidly becoming a major way in which children experience reality. For many children with limited mobility, especially among Chinese and Indian children, it may be the only way they can be exposed to the range of opportunities in a society. While essentially a passive medium, it can also be used for local environmental exploration.

9.3.0.3 The Home Environment

It has become quite apparent, that in one respect this study needs to be extended in future. Although a few drawings showed indoors or both indoors and outdoors simultaneously, together with the mention of indoor activity such as watching television, it is necessary to get some record of the typical house interior of the present terraced house. The house plan indicates that the space layout may be critical to the children lives (see Figure 8.10 in Chapter 8). The degree of crowding in the home seemed to be a significant factor in the children's concepts of an ideal landscape environment and their activity preference as depicted in their drawings. The interior-exterior contrasts, the lengthy time spent before the television, and or computer, the importance of a child's own room and furniture, all indicate that a focus on outdoor space alone is inadequate. Children's use of space and territory should together provide a comprehensive description of internal and external spaces as a used landscape - what might be called an ecology of children.

9.3.0.4 Spatial Dynamics

The representations of home environment that attempt to promote the practical and the rational have eliminated the consideration of the symbolic function of environment. If the home environment qualities are reduced to performance and functional aspects, one neglects other important aspects of living in children's landscapes. Spatial location of the house for example, is important to children as they positively value spaces available around, at the front, sides, or rear of the house for various physical landscape features and facilities supporting their diverse activities.

9.3.0.5 Traffic

Children rarely included streets in their drawings which suggests that they view them negatively for restricting their mobility and access to a more diverse environment and a wider home range. Physical dangers of traffic and the psychological effects of parental restriction make streets unfavourable elements as part of children's environment. The street though may sometimes be preferred as play and socialising spaces for children as suggested by many studies, both in the "Western World" (Moore, 1987; Bjorklid, 1994) and in the Third World (Abu Ghazze, 1998,1999). In this study, however, it appears that children found streets as scenes of conflict.

Streets must also function as part of the symbolic environment, "epitomizing the community sense of place and expressing collective territoriality." It is important for a planner to understand that there are a full range of groups including children that use and participate in streets.

9.3.1 Implications for Planning and Design in Johore Bahru

Natural environments express the vitality of children's needs and suggest the intricate balance between man and nature. The significance of natural urban landscape resources must be viewed in a more holistic manner rather than merely emphasising socio-economic considerations. They should embody the essence of socio-cultural aspects of the community - creating both sense of belonging and sense of place for residents, especially children.

In an intensively built-up urban area such as Johore Bahru's city centre and urban residential neighbourhoods, nature may "provide aesthetic stimulus by reducing the inhuman scale of urban space, and by creating the micro-habitats" (Laurie, 1979) which enable children to relate to their environment. There is a need for environmental conservation to efficiently use of resources. However, "efficient use and conservation of urban landscape resources, cannot be advanced without effective urban planning," (Zen, 1993, pp. 316).

Accordingly, this research has aimed first to examine the possibilities of establishing developing 'true' needs and preferences of children as manifested in drawings through the concepts of ideal home environments. This information provides data that can be further translated into sets of more objective operational criteria, to integrate into planning guidelines and policies. These then provide the planner, and policy maker with readily accessible information on children's needs in environmental planning.

9.3.1.0 Urban Context

In Malaysia, planning activities are constrained by conflicting goals and circumstances created partly by the rapid rate of urban growth and congestion. A desire to provide an amenable and efficient urban environment conflicts with the need to conserve resources. In Johore Bahru's Structure Plan 1985, the concern for children was in the form of open spaces, and playgrounds that connected with a popular, though arguably misguided belief that children like only to play in (and one can satisfy their needs through provision of) playgrounds with play equipment and facilities. As Cunningham and Jones (1999) in their views on the needs of children within the built environment state:

Town planners develop formulae for the optimum distribution and size of playgrounds throughout the community. Indeed, one gets the impression that designers of the built environment have developed the notion that all children's environmental needs can be accommodated in the playground. As with many aspects of modern life, the central players in all this - the children - are apt to be forgotten. (pp. 12)

The city of Johore Bahru, like many other cities in Malaysia has gone through rapid development in response to social needs within society, and economic and commercial growth that is increasingly and inevitably essential. This rapid development also resulted from a response to growing pressure to become a potentially "vibrant gateway city and international business centre with an information rich society and pleasant living environment," (ISI, 1997). Among the important visions for development of the City Central

District is the enhancement of environmental quality for attractive, healthy, and safe living, and pedestrian-friendly environments with well designed urban landscapes.

Urban planning in Malaysia emphasises socio-economic goals. In the planning process, "environmental aspects such as landscape resources have not been given due consideration," (Zen, 1993, pp. i). Rapid development has resulted in the loss of resources such as forest reserves and river corridors. There is a need for a new approach to ensure that these resources are accessible and can be utilised to meet children's environmental needs. These resources first need to be fully integrated into the urban planning process. There is a need for an approach that allows the development of a systematic landscape resources inventory, and its presentation and analysis.

In developing countries such as Malaysia, relevant environmental research has scarcely begun. Without it the effects of poorly based and researched planning decisions are, as show in this thesis with reference to the urban environment for children, considerable. In improving urban environments for children, it is necessary to gather information that could validly inform policy and practice (Chawla, 2001; Lynch, 1977).

Confounding the above problem, the planning of neighbourhood environments is translating the above requirement only into barely adequate planning policies and guidelines with no emphasis on creating a high quality environment for children. The above problem is further exacerbated by the lack of tools to enable proper evaluation of the real impact of such policies, either qualitatively or quantitatively, especially at the local level. Many natural resources are lost at the expense of development, and in return the provision of children's environments is often merely tokenism, an outcome of fulfilling planning requirements.

9.3.1.1 Urban Form

The planning layout for housing in the city normally adopts the grid-iron street pattern to maximise the number of house units the land can accommodate, and at the same time fulfilling basic requirements imposed by planning regulations for the provision of public facilities such as open spaces and recreation grounds for children. As the emphasis is more on quantity rather than quality, the government has to rely on the private sector to fulfill public demands for housing. Therefore economic factors, based on a market driven system are more important than social, cultural and environmental factors. In one way the private sector plays an important role in helping with development of urban areas. However, profit oriented development gives less priority than non-saleable or non-profit development to providing a

good environment with open spaces and facilities for children. This requirement is fulfilled theoretically on plan, but in reality these kinds of provision utilise land that is not economically viable for development or "space left over after planning" (SLOAP). Within the legislation such a planning approach has never been viewed as inferior, and thus been rejected by local planning authorities. The role of the local authority is simply to ensure all planning criteria are met and basic requirements fulfilled. The local authority has no evaluation system to assess the merit of plans submitted. Open space provision often looks more convincing on plan, making urban environments appear much greener, although functioning minimally for the population at large.

Most new urban neighbourhood developments or new housing schemes in Johore Bahru are developed or built by private developers and private-public partnerships, with developers oriented towards efficiency of provision of infrastructure (services, pipes, drainage, cables, services disposal), and cost-effectiveness, i.e. easy and less costly to build but with a greater profit margin. The "*grid-iron*" pattern of development has become preferred as it can best provide such efficient services. However, in this form of development streets divide land and dominate the layout, leaving pedestrians and especially children at risk.

The constraint of "*grid-iron*" planning has resulted in relative immobility and limitations on walking in neighbourhoods especially among children. The dominant feature of this standard plan was buildings, streets and parking areas in repetitive divisions with little opportunity for the development of any great variety and diversity of physical landscape character. Within the standardised grid plan, there was less opportunity to organise effective distribution of public facilities. Urban neighbourhood environments therefore have no centrality, no focal points and facilities like open spaces are scattered haphazardly. The effect is a neighbourhood without dominant open space which might have assisted in focusing the daily activities of the neighbourhood, including those of children.

Present practice in neighbourhood planning has demonstrated that it can offer limited opportunities for children to learn, play and take part in recreational activities. Children in the research sample found themselves trapped and influenced by limitations in their environment: a lack of space for social interaction, restricted access to local natural landscape resources and urban facilities, and dangers of traffic. To some extent the children appear to reject the notion of present neighbourhood planning based on "*grid-iron*" planning and terraced housing concepts with demarcated public facilities. Urban neighbourhood environments could be planned by incorporating existing landscape resources as part of fulfilling the planning requirement for 10 percent open space, without dissecting the area into smaller spaces and distributing them all over isolated development

sites. However, landscape resources need to be planned and designed with children in mind, allowing continuous pathways, and appropriate safe access for children.

There are however, a range of possible actions that can be taken to ameliorate the existing problems and to improve urban livability. Open space design can vary in term of facilities to meet the needs of different user groups and the emphasis should be on quality rather than quantity, together with creating links between facilities to improve access opportunity. Possible actions that could be taken are discussed below.

In the longer term it is vital that alternatives are found to the 'grid-iron' system of urban development, so that the problems of existing urban form are not repeated in the future.

9.3.1.2 Traffic Management

Detailed design, for instance changing the surface, or adding street furniture can slow down traffic and eventually offer a full range of opportunity to each individual especially children. For example the concept of the Dutch Woonerf has optimised the possibility of mixed use of streets by different groups of people. Children's access to diverse environments and their right to play would be enhanced through making streets more livable.

Some through traffic can be eliminated by closing off part of the typical grid street network. This would give the opportunity to provide the neighbourhood with green open spaces with trees, safe recreational areas and local play areas for children. Future neighbourhood planning and design also has to provide an effective pathway network for pedestrians and children, making it possible for safe, continuous access to a wider range of public amenities, including open spaces and natural environments. This eventually may help in reducing conflicts that occur over the use of streets, improving access for children and ensuring quality environments that meet user needs, including those of children.

9.3.1.3 Urban Open Space Planning

This study has numerous policy implication relating to children in Johore Bahru, and perhaps more generally children in Malaysia. In light of their importance for social interaction and informal play, the form and regulation of local streets and small open spaces is one critical issue. Traffic hazards can be reduced through proper planning. Sidewalks can be widened in places, be fully paved or integrated with small play spaces continuously linked from facility to facility. Underused or abandoned rights of way, wastelands, and other "left-over" spaces can be made safe and utilised as children's green open spaces for play and recreational activities. Such areas would serve as a necessary supplement to the traditional parks and playgrounds, which do not allow for creative play. The under utilised river and beachfront in Johore Bahru, are unexploited resources with similar potential.

Children's liking for trees and other forms of vegetation is universal. There is a need for comprehensive landscape planning in order to be able to incorporate planting of trees as an essential part of the basic infrastructure of housing schemes. In a hot humid climate, providing a shady and protected environment must be a priority in providing open space - another aspect of integrating landscape resources into the planning system (Zen, 1993).

9.3.1.4 Access to Diversity

Children's experience of the neighbourhood environment is limited by access to diversity. This research suggests that children place a high value on freedom for outdoor experience and activity. Urban neighbourhood planning should provide equal access to an opportunities for interactions with environment. "The potential for interaction exist at all levels of range and experience, depending on the availability of adequate resources, the absence of physical constraints, and the degree of freedom accorded by parents, (Moore, 1986, pp. 51).

9.3.1.5 Conservation of Special Childhood Places

It is important to recognise, value and protect important childhood resources. In drawings, children portrayed riverfronts, forests, village settings, fruit orchards, and agricultural plantations as part of their special childhood places. The identification and conservation of such places is crucial.

9.3.1.6 Protecting Wildlife

The findings from the drawings on children's relationship with animals and wildlife suggest the practical need to develop a better understanding of children's perception of animals and wildlife as essential element in promoting effective wildlife management programs. Wildlife management can be understood in several contexts: the urban planning system, through full integration of landscape resources in the urban planning process (Zen, 1993); social impact; and both children's and wider public awareness and environmental education. Urban natural resources are probably the best opportunity to provide for both the number, and appropriate size of population of animal species that can benefit children more from their presence. In urban areas, provision of animal facilities will benefit children as Moore (1986) stated: "Caring for animals provides such an ideal opportunity for children to develop a sense of responsibility and accomplishment. More attention could be paid toward the accommodation of animal facilities, not only on homesites but in schools, parks and playgrounds - especially in high density areas," (pp. 86-87).

Wildlife such as various species of birds including Kingfisher (*Halycon concreta*), palm squirrel (*Lariscus insignus jalorensis*), wild pigeon or *punai* (*Treron* spp.), and insects like bees and butterflies may flourish in their habitats. Other wildlife mentioned by children including Monitor lizard or *biawak* (*Varanus* spp.), mouse-deer (*Tragulus kanchil*), millipede (*L. milipeda*), and centipede (*L. centipeda*) serve as an important indicator of children's awareness of the diverse habitats they required at different levels of vegetation canopies (Harrison, 1962, pp. 55-56). The most important habitat features for birds include diverse plant species, good ground cover and low vegetation, and structural complexity and tree density (Ariffin, 1992). The program of "bring back the birds" by WWF Malaysia in 1988 for instance was an effort to enhance the free and wild populations of attractive birds throughout the city of Kuala Lumpur. The project was carried out through diversifying "corridor" planting using various local plant species (ibid). Many bird species of Malaysia may have wide ranging habitat zones including "upper air, canopy, middle and ground zone," (Harrison, 1962, pp. 58). This is possible through conservation of natural landscape resources with urban areas like river corridors and secondary forest reserves.

Representations of natural resources of rivers, forest and wildlife in drawings may suggest that children's input can be further utilised to form environmental quality indicators. These urban natural landscape resources are either visually depleted, scarce or "degraded", and cannot support extension of wildlife (Zen, 1993) within the neighbourhood environment. These resources can be preserved and made accessible for children's educational

programs and recreational activities within urban areas and neighbourhood environments. A good neighbourhood will support creation of child-friendly and sustainable cities that "not only benefit children but the whole community socially, educationally and economically," (Malone, 2001, pp. 9), and a high quality urban environment will benefit both humans and wildlife (Ariffin, 1992).

All existing natural areas of urban wildlife resources can be enhanced through efficient and appropriate urban landscape resource planning, providing a better basis for conservation and preservation decisions and priorities. Social impact is also related to the benefits of wildlife habitat protection in the face of urban development and activities. High value of children's relationship with wildlife suggests the need to develop public awareness and an environmental education program. However as Kellert (1983) suggested: "Environmental education will need to move beyond simply emphasising affection for animals to a broader ecological understanding of species in relation to their habitat," (pp. 264). Public understanding and positive attitudes toward and appreciation of wildlife will possibly help to improve the concern for wildlife and the environment in the planning and design of the urban environment as a whole.

9.3.2 Involving Children In Urban Planning and Design

9.3.2.0 Importance of Involving Children

In Malaysia, children's needs and preferences are rarely or seriously considered in the environmental design process even of the facilities and spaces that are intended specifically for them like playground, parks, school etc. One of the reasons for this is that there has not been any research to gather meaningful information about children's interaction with and utilisation of urban environments. The urban planning system and process in Malaysia is not organised to give opportunities for children to participate directly in representing their own interests. These interests however, are represented through adult "advocates" who are understandably preoccupied with their own perceptions of children's health, education, behaviour, morals and safety. This attitude is manifested through a tokenism in the provision of play equipment at playgrounds and of recreational activities, that became a standard requirement and all this while have been thought to satisfy the needs of children. This view is aptly described by McKendrick (1999) in his discussion of children and playgrounds in the built environment. In neighbourhood planning, children's play areas are less important to adults than features such as shops, streets and transportation networks:

".... paradoxically, when tenants and owner-occupiers are asked to design their ideal neighbourhood, securing a children's playground is one of their main concerns. Housing developers increasingly offer a children's playground as the 'planning gain' which will accrue from their production of a new residential environment. There is a critical and widely accepted belief among adults that children need places in which to play and that the playground is the space that best fulfils this needs." (pp. 5)

In reality more often the child is simply ignored as a user of the urban environment. Thus, children tend to be neglected in the environmental planning and design process because they lack the capability and opportunity to express themselves effectively. If children's needs and preferences can be integrated in the urban planning system at local level, it will contribute to the remedy of this problem.

9.3.2.1 Children's Participation

In this research, the findings suggest that children have strong views about the environment and physical landscape elements, spaces and places around them. Thus, children should be encouraged and allowed to participate in the planning, design and management of environments that interest and concern them. In Malaysia, children's participation is rare, and if they are it is often involved only at the level of tokenism. Government bodies, agencies, non-governmental organizations, local authorities, community organizations, and professional bodies "need to collaborate and commit themselves to institutional change so that the participation of young people can reach a significant level of influence," (Thompson, 2000, pp. 52). Children's participation serves the purpose of involving children in design and planning processes and decision making for increasing their sense of trust and confidence. Children's involvement may also help to improve the quality of design with ideas they contribute. It will be likely to increase the opportunity to meet their needs, together with helping to develop a complete brief. Children's understanding of the process involved in decision making is, as Thompson (2000) suggests:

" For the designer, public participation can be seen as means of obtaining the best possible brief from the eventual users of the landscape and accessing information about the site and the community which could easily be overlooked in any conventional sort of site survey. Participation should also provide a very rich source of design inspiration. Perhaps the most satisfactory aspect, from the designer's point of view, is the knowledge that a scheme produced in a collaborative manner is going to have a far greater chance of long-term success than one which has simply been imposed." (pp. 106)

At local level, Local Agenda 21 is concerned with objectives for sustainable development, children's rights and UNICEF's child-friendly cities through involvement of children in the decision making process in planning and designing environments. There are many approaches to involving children in authentic participation in planning development and implementation processes for instance child-focused social and physical research methods.

The central principle in children's participation is that children are the future generation, thus their needs and preferences deserve to be incorporated in the planning and design process. Children's wish is that they can have the space to learn, develop, play and interact with others and get access to a clean, beautiful environment where they can associate with nature.

9.3.2.2 Adaptation to Children's Rights

Part of the United Nations Declaration of the Rights of the Child are the right to a stimulating, developmentally appropriate environment and the right to play. Children's needs must be fulfilled through environmental adaptation. This requires knowledge, skill and sympathetic approaches toward providing for the "complex ecological relationships and varied contexts of children lives." Adults planning must accommodate concepts of children as main users of local environments, in order to meet their needs. Effective policy formulation at local level requires an understanding of issues of what is developmentally stimulating activity and what spaces and places suit such activity - the reality of children's preference for their interaction with environments:

"The principles of the Convention of the Right of the Child reinforce the responsibility of the safe parties when it challenges them to uphold the child's right to live in a safe, clean, and healthy environment and to engage in free play, leisure and recreation in the environment," (Malone, 2001).

Understanding child-related issues and problems in urban planning can offer a better approach to improvement of neighbourhood and urban environments for children. The improvements in the means of planning for good children's environments in Johore Bahru will not materialise unless supported by the sympathetic planners, designers, insight decision-makers, politicians on sound and by reliable information. Above all, children with limited ability and access to the whole urban process have to rely on adult willingness for positive change of attitudes toward them. Without the above, the urban living environment

will remain unsupportive of children's changing needs and preferences. They may not be able to participate fully and freely in urban neighbourhood environments in ways that are increasingly becoming a thing of the past, for instance "spontaneous unregulated play in neighbourhood spaces" (Malone, 2001, pp. 6), as many adults recall in their childhood memories (Cooper-Marcus, 1995; Sebba, 1991; Seibert and Anooshian, 1993). Incorporating their ideas is perhaps a first step towards formal recognition of children in the planning process when formulating regional and district policy statements and plans (Tranter and Pawson, 1999).

9.4 FINAL CONCLUSION

Important findings from the research highlight the significance methodological approach and of child-related issues in the context of urban neighbourhood planning and prompt suggestions of areas which need further research in the future. Equally significant is what has been learned by the author from the conduct of this study.

9.4.0 Indication of Important Findings

The intention of this thesis has been to explore: the effectiveness of children's drawings as communication and as research tool; the analysis and interpretation of children's drawings using a combination of techniques/ methods, in an attempt to identify the truth about children's needs and preferences in their neighbourhood environment in urban areas; investigation of cultural and gender perspectives - with a multi-cultural society living in Johore Bahru, children's needs and preferences are found to be both similar and different, and influenced by many complex socio-economic, cultural, and environmental factors.

The thesis has also been set out to explore inform possibilities to integrate the findings with existing planning processes, policies and guidelines in urban open space planning. The study has shown the present misconception of children's needs and failures in provision that lead to various issues and problems. The urban planning process is inadequate and fails to demonstrate consideration of the large proportion of children (40% of urban population) living in urban areas of Johore Bahru.

The study has illustrated children's affection, concern and understanding of the need for natural landscape resources: various vegetation, waterbodies, green open spaces, wildlife and insects; better access to explore and venture into larger areas of natural resources; environments safe from traffic hazards; a requirement for traditional community living environments; and home as a basis for supporting children's needs, and for use for various outdoor activities and adventure quests. Playgrounds though still desirable feature in the children's environment, needs a different concept and approach, based on the sustainability with community themes (McKendrick, 1999), so playgrounds can be planned and designed to reflect and foster better links between child, community and neighbourhood landscapes:

It is society's responsibility to cater for play, especially the play of the young of the society. In society's provisions for play, the environment/ play settings are to be conceived and/ or designed certain purposes. The purpose should target to aid in the complete development of the child (physical, intellectual, emotional, social, etc.), according to the best possible advice available from people concerned with play as a developmental tool which will aid in the child's overall well-being. (Sobaihi, 1995, pp. 83)

9.4.1 Areas for Further Research

This study suggest there are many related area of interest which need further research in the future as briefly highlighted in Section 9.1.4.1. A few can be suggested here as an extension from this children's environmental study. Each could be highly specific but within the concept of a broad "ecology of children's development" based on Bronfenbrenner's environmental model. Areas for further research may include: children's perception and, use of streets in urban area; children's cycling; children's use of playgrounds; children's interaction with urban and rural neighbourhood environments; the use of water elements in urban open space; urban landscape resources - and theirpotential for educational and recreational uses; childhood memories; children's participation in planning and design of environment; concept's of the child-friendly city; the importance of animals in child development (as suggested by Kellert, 1983).

Each of the above areas of research should also take up the (local) social, culture, gender, and community themes and look at how children's environment can be planned and designed to reflect and foster links between child, local community and local landscape so that they are viewed in a broad perspective.

9.4.2 Learning Experience

Many things has been learned in the course of this study. Firstly, Children's drawing is a complex subject. The present study has aimed to identify children's formation of the "concept" of their ideal home environment and preferred activities in association with this environment, to evaluate the difference, if any, between genders and cultures and to suggest certain lines of action or improvement in planning and design of urban space or housing areas. In doing so it has been assumed that although the drawing of the children's environment was restricted to the home environment, many aspects of children's larger environment would carry similar signs or signals, and that many aspects of children's activities and leisure needs, could be planned and designed as part of the wider urban planning system. A radical change could be introduced by incorporating the findings in the planning and design for children's environments, which might be slanted towards open green space and recreational and leisure activity policy for children in the urban environment.

One can also conclude that the children's drawings have presented the fundamental aspects of their home landscape that have been neglected or have been given less priority by attempting to optimise urban development on economic grounds. From children's point of view, the nonevident and affective aspect of their home environment has the deepest meaning and strongest behavioural or activity influences. The qualitative aspect of home environment concepts - environment dynamic, ambivalence and permanence should be explored further to incorporate findings in the planning and design of children environment. The ultimate purpose of home landscapes is to stimulate better ways of living, where children are seen as important active users of facilities whose concepts and preferences vary from those of adults.

Finally, and perhaps most importantly, this research has shown how by working with children that one day will become the adults of next generation, one can learn their enthusiasms, concerns, understandings, love and caring attitudes, unbounded by crossing the social-cultural barrier that adults visually failed to negotiate in viewing the social and environmental context of children's world. All these were manifested in their drawings as they illustrated the environment they preferred to live in.

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APPENDICES

Appendix I

A BRIEF OVERVIEW: THE URBAN PLANNING SYSTEM IN MALAYSIA

A 1.0 INTRODUCTION

During colonial times, urban planning was introduced into Malaysia as a rational and scientific tool to improve the quality of urban life. Ironically, there has been little understanding in translating underlying the principles of planning systems in terms of their practicality in Malaysian economic, socio-cultureal, political, and environmental contexts. This paper is trying to understand the history and ideas of urban planning; how its system and practice and their underlying assumptions work and change to meet new challenges; its supporting machinery and institutions; its limitation of action within the Malaysian political economy as well as a brief account of the issues and problems that hinder its success

Generally, the term town planning is understood as an activity to prepare development plans to regulate and control the use and development of land in towns (Nghah, 1998). In the U.K. for instance, under the influence of the urban design tradition prior to the early 1960s, urban planning was viewed as the three dimensional design of towns (Healey, 1982). The main purpose of urban planning was to improve the living conditions in urban areas and the welfare of urban dwellers. The development plans for the urban areas were normally explained in the form of coloured maps, accompanied by diagrams and illustrations together with written statements in order to explain land uses and strategies that affect the physical environment and the welfare of the urban community. Though town planning objectives hardly changed, their form and content changed substantially. In Malaysia, the approach of urban planning places great emphasis on environmental issues, planning methods and the development of information technology (Nghah, 1998) such as GIS etc. Planning for the 1990s in other countries such as the U.K. had concerns about the environment that involved management for environmental change. The key themes emphasise 'local government strategies, quality of life, accomodating diversity and variety, promoting aesthetic quality, and developing the implications of widely shared values about environmental conservation and ecological balance,' (Healey, 1989, pp. 1).

A1.0.0 Issue and Problem

Most of the towns in Malaysia are still struggling with urban problems such as the issues of urban poverty, haphazard planning, urban sprawl and traffic congestion; the loss of open spaces to new development; inconducive, monotonous and soulless housing estates; the loss and destruction of natural resources and the natural environment such as rivers, beaches, hills; and demolition of old buildings with historic significance. These results are testimonies to a failure of the urban planning system adopted from the 'Western' notion of modern planning even though some success has been observed. In this planning system the ideology, scope, form, content, and the assumptions of its purpose were based on 'Western' theories. This has unfortunately been the main issue and problem with urban planning in Malaysia as the principles were applied without proper understanding. As such, it is appropriate to analyse in more detail the assumptions of the system and their applicability within a wider Malaysian socio-cultural, political and economic context. Therefore, in search of theoretical foundations, ones has to understand the current planning system, its assumptions and purposes, its evolution, past records and its future directions.

A1.0.1 Urban Planning Development in Malaysia

At the beginning of 20th century, Malaysia was already experiencing rapid urbanization due to the expansion of economic activities in urban centres especially in the industrial and construction sectors. As a result, the concentration of the urban population increased. Subsequent to the 1991 Population Census, this trend was further boosted by a redefinition of urban areas, together with their adjoining built-up areas of had a combined population of 10,000 or more, as gazetted areas (Report of Seventh Malaysia Plan 1996-2000, 1996). As a result, in 1980 the urban population was 4.75 million and had increased to 9.47 million by 1991. The rate of urbanization, too, increased from 34.2 in 1980 to 51.1 per cent in 1991 (refer to Table A1.0). Thus there was a increase in the number of urban towns falling within the above definition, from 67 in 1980 to 129 in 1991 and most of these towns continue to grow. The distribution pattern of the urban population remains stable with more than 70 percent of the urban population living in urban centres of more than 75,000 people. The rate of urban population grew from 4.5 per cent per annum during 1991-1995, increased from 10.8 million to 11.3 million in 1995.

In addition to the increasing level of urbanization, most of the major towns in Peninsular Malaysia have shown significant population growth (Seventh Malaysia Plan, 1996). For example, the population of Johore Bahru grew from 74,900 in 1957 to 144,600 in 1970 and 249,900 in 1980 (refer Table A1.1). The urban population enjoy higher income and better

life quality due to the expansion of urban economic activities. Average monthly urban household incomes increased at a rate of 8.1 per cent per annum, from RM1,617 in 1990 to RM2,596 in 1995 (Seventh Malaysia Plan, 1996).

State	Urbanization Rate (%)				Average Annual Growth Rate of Urban Population (%)	
	1980	1991 ¹	1995	2000	6MP	7MP
Johor	35.2	48.0	51.8	56.4	4.6	4.0
Kedah	14.4	33.1	36.9	42.1	4.7	4.2
Kelantan	28.1	33.7	35.7	39.4	4.3	4.5
Melaka	23.4	39.4	44.0	49.8	4.1	3.5
Negeri Sembilan	32.6	42.5	44.7	47.6	3.3	2.8
Pahang	26.1	30.6	31.9	33.7	3.5	3.2
Perak	32.2	54.3	60.5	67.8	3.6	2.8
Perlis	8.9	26.7	30.4	35.3	5.5	5.0
Pulau Pinang	47.5	75.3	80.6	86.1	3.1	2.3
Sabah ²	19.9	32.8	35.2	38.2	7.9	7.1
Sarawak	18.0	38.0	43.4	50.5	5.6	4.8
Selangor	34.2	75.0	82.6	89.4	6.1	4.6
Terengganu	42.9	44.6	45.1	45.7	3.5	3.1
Wilayah Persekutuan Kuala Lumpur	100.0	100.0	100.0	100.0	1.6	1.2
Malaysia	34.2	51.1	54.7	58.8	4.5	3.8

Table A1.0 Urbanization Rate by State (1980, 1991, 1995, and 2000).
Source: Report on Seventh Malaysia Plan 1996-2000, 1996 (pp.154).

Notes:

1. Based on Population and Housing Census, 1991.
2. Includes Wilayah Persekutuan Labuan.

Apart from more economic facilities, the urban centres offer a better quality of life as there are higher standards in education, medical facilities, telecommunications and services made available for their inhabitants. Other activities such as administrative, cultural, sports, recreational and leisure are also available in the city. Johore Bahru City, for instance has a vibrant city core which plays an important role in boosting the economy. However, the growth of this urban centre led to increases in traffic congestion, property values and wage costs, and environmental degradation (ISI, 1997). With regard to environmental problems, efforts were geared towards maintaining the quality of the urban environment through a proper approach in town planning. Town planning is responsibility of the Local Authorities. This is necessary in order to meet the increasing needs of the urban population, providing them with a better quality of life. Among other things the Local Authorities also provide wide range of public facilities, services, open spaces and general urban upgrading.

Metropolitan	1957	1970	1980	1980 (Adjusted)
Kuala Lumpur	316.2	648.3	937.8	1,156.*
George Town	234.9	332.1	250.0	466.1
Ipoh	125.8	257.3	300.3	300.3
Johore Bahru	74.9	144.6	249.9	249.9
Klang	69.8	113.6	196.2	196.2
Malacca	75.6	99.8	88.1	105.6
Petaling Jaya	16.6	93.4	218.3	-
Seremban	52.1	90.1	136.3	136.3
Kota Bahru	38.1	69.8	170.6	108.3
K. Terengganu	29.4	59.5	186.6	96.7
Taiping	48.2	54.6	149.3	55.3
Kuantan	23.0	43.4	136.6	75.6

Table A1.1 West Malaysia: Population Growth of Major Metropolitan Areas (in '000s).

Source: Lee (1991:15)

Note: * Kuala Lumpur-Petaling Jaya metropolitan area

The late 19th. century saw the influence and implementation of British urban planning in the Malay Peninsula through the establishment of British administrative and political influences. At that time, the practice of town planning emerged in Britain. The Garden City Association was formed in 1899 to promote a more organised and healthy living environment based on Ebenezer Howard's proposal of building 'Garden Cities.' In Malaysia, a very comprehensive urban planning act, the Town Planning Enactment was passed in 1923, incorporating provision for planning, development control and powers to implement town improvement schemes. The main reason for the introduction of town planning legislation was to protect the urban environment from negative consequences of rapid urbanization. It also had provisions to regulate buildings, including the extension of houses, and the acquisition, sale and leasing of land. At the same time, the act allowed the town planner to have tremendous executive powers in the planning and the development of land through the establishment of a Town Planning Committee to decide all town planning matters (Lee, 1991: p. 41-42).

Most of the studies on certain aspects of the cities or urbanization process in Malaysia were seen in a fragmented fashion which led to formulation of an *ad hoc* strategy in an attempt to solve urban issues and problems. Also the British intervention into the Malay States had a considerable impact on the urbanization process through the influence of capitalism on the socio-economic structure. One of the effects was on the pattern of land use. Business activities were mainly held in the urban areas. Less consideration was paid to the location of

other activities such as industries that eventually led to environmental problems. As Lee (1991) notes:

With increasing consciousness on environmental quality and the introduction of land use planning principles, which of these unsightly activities, have become unacceptable to certain sections of the society. The socio-economic system adopted and accepted by the Malaysian society, inevitably led to certain phenomena or chained activities in the urban areas that had both positive and negative effects.

Further development of urban planning in Malaysia saw the proposal of the Town Planning Enactment of 1923. The bill was passed and the General Town Plans became adopted as an instrument of urban planning. This General Town Plan prepared under the 1923 Enactment had various sets of objectives to ensure the improvement of traffic facilities; controlling new layout plans for undeveloped districts; buildings and development bylaws; and ensuring public safety and better sanitary and health conditions as well as improving public facilities. Under this General Town Plan, all aspects of planning were covered comprehensively inclusive of land use zones, provisions for roads and public facilities, building of lakes and rivers as well as acquisition, sale and exchange of land (refer Table A1.2).

Provision In The General Town Plan Under The Town Planning Enactment of 1923

1. Zones or districts to be set apart for use of residential, commercial, industrial, agricultural or other specified purposes;
2. Roads, building lines, including the opening, closing, widening, diversion or other alteration of roads or any reserves in connection therein;
3. The acquisition, sale, exchange, surrender or leasing of lands;
4. Opening, closing, altering, widening, rasing, lowering, improving, cleaning, or beautifying lakes, ponds, rivers, stream, drains or other tidal or non-tidal water courses, or reserves on or adjoining the same;
5. The excavations or the reclamation and improvement of any land, including foreshores, above or below high water mark or any reserves on or adjoining the same; and
6. Setting apart land for:
 - i. Public, municipal or private buildings; water supply, lighting, drainage, disposal of sewage, or of surface waters;
 - ii. Railways, tramways, harbour or the use by motor or other vehicles or by other public authority or person;
 - iii. Different kinds of agriculture or horticulture or for dairies, dhoby grounds, coolie lines, market gardens, squatters, cattle or other specified uses; or
 - iv. Any specific purposes not specified above.

Table A1.2 Town Planning Enactment 1923
Source : Lee, 1991.

Important past records have shown that the appointment of Charles Compton Reade as the town planning advisor to the Government of the Federated Malay States in February 1921 was the turning point for the development of urban planning in Malaya at that time. His urban planning was very much influenced by the 'Garden Cities' and the Town Planning Association of England even though the European concept of zoning was used in order to regulate and control the use and development of land (Lee, 1991). The Town Planning Enactment of 1923 was replaced by the Town Planning Enactment of 1927 which was a simpler version of the earlier one and basically just showed roads and land use zones. It was a comprehensive land management exercise for the community. The local authority, then known as the Sanitary Board became the governing body that shouldered the planning responsibilities. The enactment was later incorporated as part IX (also known as Cap 137) of the Sanitary Board Enactment 1929 (refer Table A1.3) and guided the urban planning in Malaysia before being replaced in early 1980's by the system of structure planning.

Urban planning in Malaysia later become more established with the formation of a Department of Town and Country Planning in each state. The headquarters in Kuala Lumpur was established much earlier in 1921. The Johore department in 1955; and the last state to establish a department was Perlis in 1979. The urban planning idea practised was very much similar to practice in the U.K especially with the establishment of the enactment of the Town and Country Planning Act of 1976. This act was adopted from the English Town and Country Planning Act of 1968. With this act, the two-tier planning system required a structure plan supported by a local plan. These were drafted to serve as the development plans in each area under the jurisdiction of that local authority. The structure plan normally consists of a written statement, together with policies and general proposals for the development whereas the local plan provides a detailed procedure of how each area is suppose to be developed.

Provision of the Development Plan under Cap 137 Part IX

- 1. Streets, railways or other main communications
 - 2. Zones or districts for residential, commercial, industrial or agricultural or other uses, and with such zones, the intensity of land use, calculated by reference to:
 - i. The number of houses or persons on any one acre
 - ii. The percentage of the area of any lot to be covered by building
 - iii. The total floor space of building
 - iv. Reserves for government purpose
 - v. Parks, recreation grounds and similar open spaces
 - vi. Building lines, and
 - vii. Regular lines for streets.
-

Table A1.3 Cap 137 Part IX Town Board Enactment.
Source: Lee, 1991.

There have been many factors like historical events and personalities that have shaped and influenced the scopes, forms and contents of urban planning. Needless to say that the influence of the 'Western' ideas have been prominent in the history of urban planning in Malaysia. However, the scope of the planning exercise was limited to the preparation of maps indicating the layout plan and land use backed up by legislation but its content was lacking in environmental considerations and was more concerned with urban design with social benefits.

Urban planning practice in Malaysia can be best traced by reviewing the planning laws since the laws define its statutory form, scope and content (Johar, 1989). Other than that, factors like financial, personnel and the socio-economic condition of the country have also influenced the planning practice. This paper will examine the urban planning practice, process and procedure at the local authority level.

A1.1 THE REQUIREMENTS OF STRUCTURE PLAN

The introduction of a structure plan system was the requirement set by the enactment of the Town and Country Planning Act of 1976. The Structure Plan is a statutory plan or policy plan prepared for the planning and development of local planning authority areas (Kuan, 1991). Essentially all aspects of urban development, urban form and structure, the functions of an urban centre and the surrounding regions need to be considered as well as the aspirations and the needs of the people. In order to provide some understanding behind the structure plan concept in Malaysia, its main features and the underlying assumptions need to be analysed together with a critical account of its preparation.

The early concept of structure plan was incorporated into the English Town and Country Planning Act of 1968. This system was adopted and then incorporated in the Malaysian Town and Country Planning Act of 1976. The concept of structure plan recognised the need for a two-tier planning system which underlines the difference between strategic decisions and tactical decisions. The structure plan covers strategic decisions in the form of a written statement together with maps and diagrams explaining the policies and general proposals of the planning authority for its area in the future. Local plans on the other hand contain tactical decisions in the form of maps, augmented with written statements in explaining detailed proposals on each parcel of the land.

Kuala Lumpur was the first city and local authority to prepare the structure plan as required by the Town and country Planning Act 1976 and it was approved in 1984 by the Minister of Federal Territory. Other towns too had initiated the preparation of their own structure plan projects as required by the act. The preparation of a structure plan can be divided into three

stages: the establishment of a planning development team, and preparation of a term of reference for the project; the compilation of a report of a survey on matters which were deemed likely to affect the development of the planning area; and the preparation of the structure plan.

Within each stage, a series of steps need to be followed as part of the procedures outlined by the Federal Town and Country Planning Department (Figure A1.0). The first task in the preparation of a structure plan was to establish a development team to carry out the project. The state planning committee (SPC) was at the very top of the administrative machinery structure and its existence is provided for in the Town and Country Planning Act to co-ordinate all planning activities within the state. The committee is to be chaired by the Chief Minister and the heads of relevant government departments are the members, with four additional appointed members chosen from the State Executive Council (EXCO) Members. Several roles of the committee as stated in the Act are expected to be performed in approving the structure plan of the local authorities within the state: to promote in the State, within the framework of the national policy, the conservation, use, and development of all lands in the state; to advise the State Government, either on its own initiative or in response to a request by the State Government, on matters relating to the conservation, use and the development of land in the State; and to undertake, assist in, and encourage the collection, maintenance, and publication of statistics, bulletins and monographs, and other publications relating to town and country planning and its methodology (town and Country Planning Act, Part II, Section 4).

The major roles of the SPC in the preparation of a structure plan were to provide general directions, to ensure local enquiries or public participation and finally to approve or to reject draft structure plans. In the preparation of the structure plan, a Steering Committee (SC) headed by the Director of the State Town and Country Planning Department or the Secretary of the Local Authority was also included to provide the overall direction of the structure plan project and monitor its progress. Other members of the committee were usually senior officers of the Local Authority, representatives of some important government agencies and a senior planners from the Federal Town and Country Planning Department.

The Core Planning Team is the body which is actually responsible for preparing structure plans and usually the town planners or urban planners and in certain cases economists and architects are members of this team. The roles of Core Planning Team are mainly conducting surveys, gathering data, holding public exhibitions of the findings of surveys and the draft structure plan to facilitate and encourage public participations, and finally preparation of structure plan. Sometimes, experts or consultants were taken on to help out

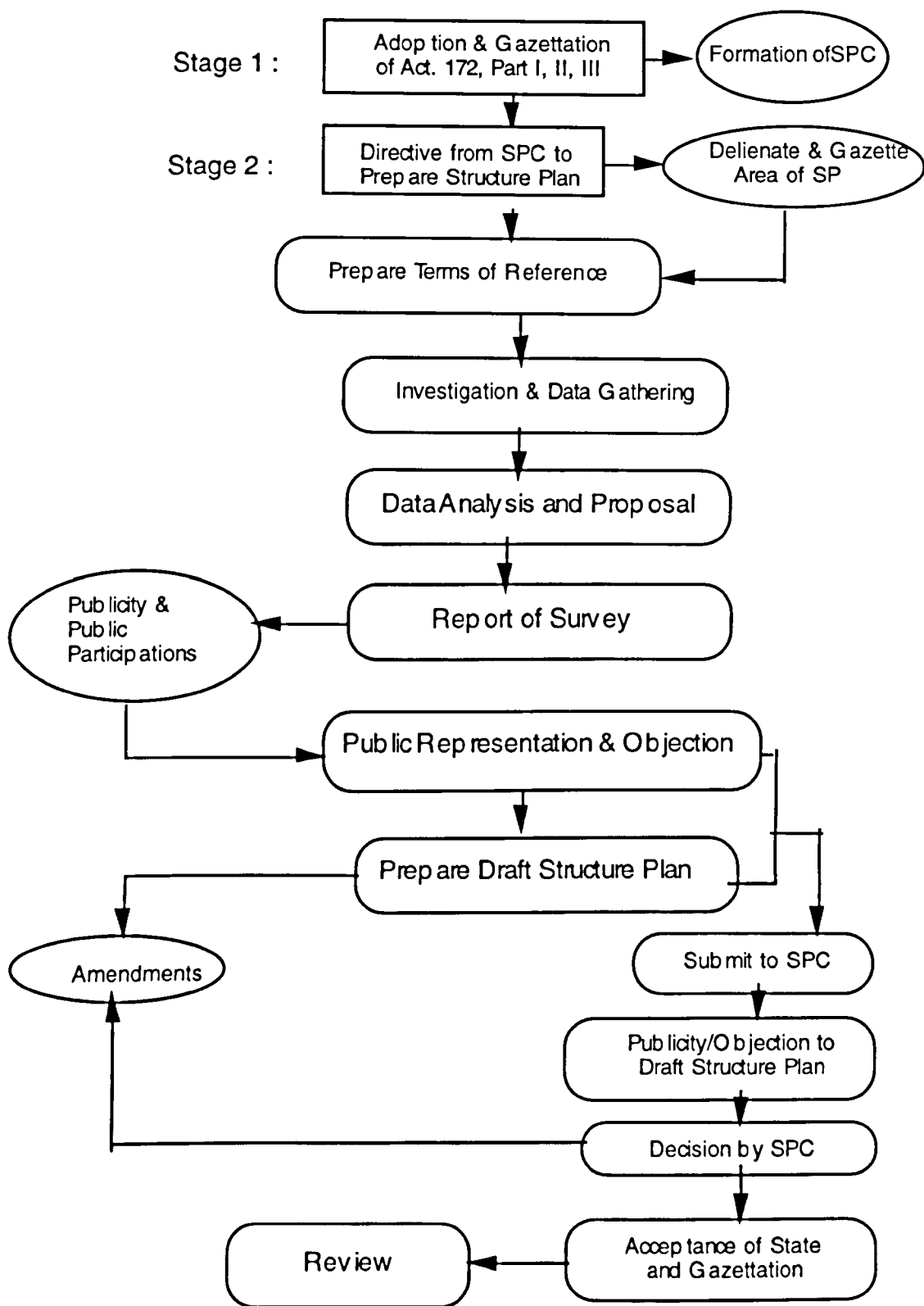


Figure A1.0: Process Involved in the Preparation of Structure Plan.

the Core Planning Team to carry out surveys or to undertake specific studies whenever the needs arise. Both the Steering Committee and the Core Planning Team are assisted in certain technical matters by a Technical Committee consisting of representatives of relevant government departments. The role of this committee is to vet and approve reports and drafts of the planning team and the technical reports prepared by the consultants. In an effort to thoroughly understand the determinants of urban development, structure and form and the roles of urban centre and the surrounding regions within the development of planning areas. There are about 15 or more aspects to be studied including: population and demography; housing; Industry; commerce; land use; environment; agriculture; urban form and townscape; shopping; transport; social and community facilities; recreation and leisure facilities; employment and income; transport and communication; Malay reserve land; conservation; tourism; and the use of ex-mining land.

All technical reports later become part of the Report of Survey (RoS) that contains the main goal of the planning exercise, data and information on the main characteristics of the planning area, and the role of the public in the planning process. The Report of Survey is made available to the public for comments and recommendations. The content of draft structure plan covers both the legal framework of the planning system and the established goals of the plan; the local authority's policies and main proposals on various aspects of planning. The councillors in the local council are later informed about the proposal in the draft structure plan for their recommendations before it is shown to the public for their comments. Finally the draft structure plan is supposed to be accepted or rejected by the highest body involved in the direction of urban planning at the state level which is the State Planning Committee (SPC).

There have been numbers of structure plans completed and approved for the past 18 years and many more at the stage of completion. Most of the structure plan project however takes quite a long time between 4 to 7 years to complete and this can lead to adverse repercussions: the towns under the preparation of structure plan will be left without planning guidance for development projects; the completed structure plan may be out-of-date as the socio-economic conditions change at a very fast pace; it increases the cost; preparation and approval of local plans has to be held back; and it jeopardises the image of the planning profession.

A1.1.0 Factors Affecting The Preparation of Structure Plan

Many factors contribute to the slow progress of the preparation of the structure plan in Malaysia. There is no doubt that a good structure plan requires a reasonable amount of time, with the planners needing to initiate a series of studies before being able to formulate

policies and proposals. A better understanding of the structure plan concept would eventually help to speed up the preparation process.

The provision and the legal interpretation of the Town and Country Act has to be followed closely since the structure plan is supposed to be a statutory plan. Before a plan is drafted, the Act requires the local authority to carry out a detailed survey of its areas, evaluating all aspects that might be expected to influence the development, or the planning of the development. All aspects or subject matter as stipulated by the Act to be examined and evaluated include: the principal physical, economic, environmental and social characteristics, including the principal land uses of the (planning) areas and neighbouring areas; the size, composition and distribution of the population of the area, whether residents will be affected; the communication, transport system, and traffic of that area; other matters as prescribed by the State Planning Committee.

As a matter of fact, most of the local authorities in Malaysia do not have complete information system and data base to rely on, therefore almost all data has to be acquired from the beginning. Certain procedures required by the Act are time consuming processes, for instance the need to inform the public, the need for the State Planning Committee to approve or reject the draft, all are necessary to ensure the validity of the structure plan.

The manual of functions, form and Content of Development Plan produced by the Federal Town and Country Planning Department (1981) served as a guide for a planner to select the subject matter that might affect the development of the areas. However, if every topic in the manual were to be covered, it would be a tedious exercise and too detailed whereas selective issues of strategic concern to the local authority's studied areas are more appropriate. Furthermore all detail planning matters should be incorporated into the local plans.

The other concern is the collection of a massive amount of data which required time and money. Unfortunately not all information is made available is used in the policy statement, as the main purpose of the report survey is to provide some documentary evidence to help all parties in the committees to understand planning areas and facilitate the formulation of the structure plan. The other thing is the formation of too many technical committees to vet almost every report including the technical reports delays the progress of the structure plan project. Although the formation of the technical committees is important in ensuring that they comply with the terms of reference and are factually correct, very often it is difficult to conduct committee meetings.

A1.2 URBAN PLANNING MACHINERY

The consolidation of urban planning in every state in Malaysia needs a comprehensive establishment of a system and development team through which urban planning can be implemented at all levels, Federal Government, the State Governments and the Local Authorities (see Figure A1.1).

The structure of the Malaysian Government can be best explained in a hierarchical manner: the Federal Government, the State Government and the Local Authorities as prescribed in the Constitution and Parliamentary Acts. As such, matters regarding foreign affairs, defence and education are left under the jurisdiction of Federal Government. Religion and land matters become the responsibility of the State Government, and finally both federal and state government are jointly and concurrently responsible for all matters pertaining to local government and urban planning. For instance, the federal government can pass legislation in urban planning matters to ensure standardization throughout, but the legislation becomes operative only and until they are agreed to be adopted by each of the State Government. In real terms, the state government and local authorities affairs are controlled by the Federal Government by means of the political system. The state government has the authority to recommend and appoint the Principal or Chairman and members of the local councils as to ensure the views of the state government are taken into consideration. The spatial areas and the power of the local authority to prepare the development plans and enforce them are specified by the state government.

A1.2.0 Hierarchy of Urban Planning

The Town and Country Planning Act of 1976 (Malaysia, 1976a) granted the State Government responsibility to prepare the general planning policies and the detailed plans for the Local Authority to prepare. Ironically various state governments have been very relaxed in adopting the Act for several reasons and this has contributed significantly to slow development and change in the planning practice in Malaysia. One of the reasons was that the newly introduced planning system failed to become a very important political agenda as urban planning could not solve the urban problems immediately. Other than that, more time was needed for the people to understand and familiarise themselves with the system to ensure efficiency in implementing all requirements of the Act.

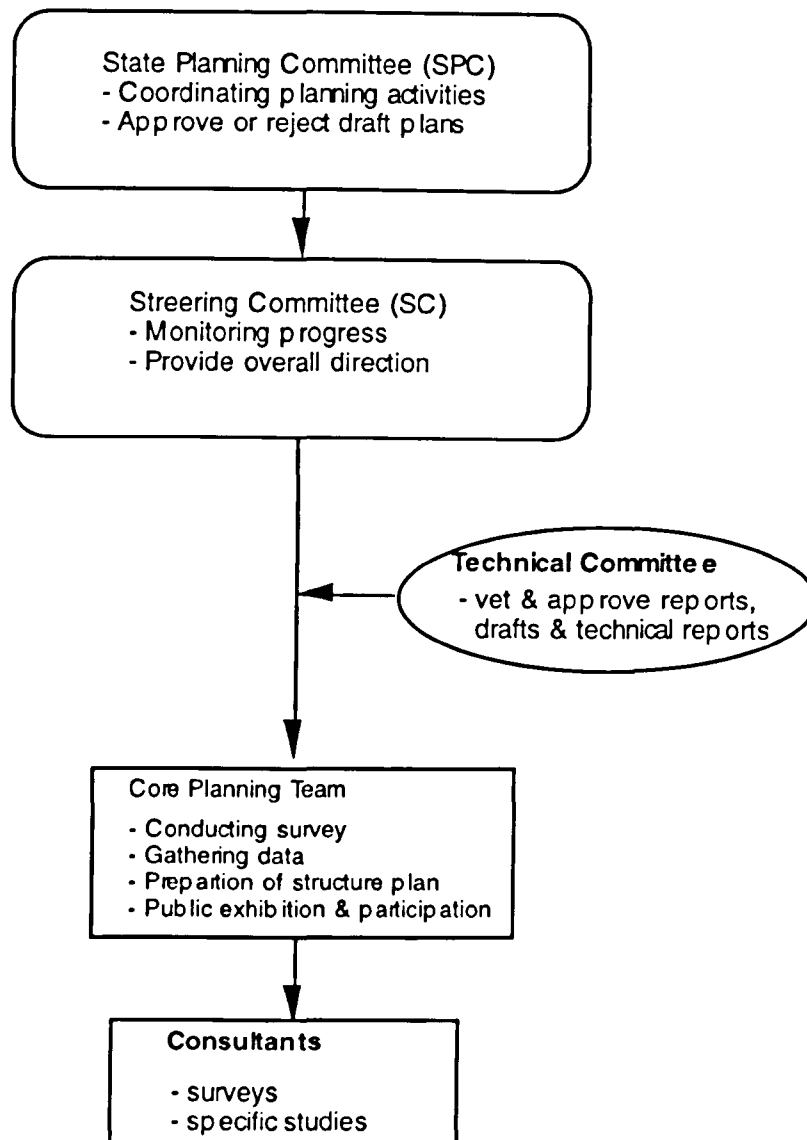


Figure A1.1 Planning Machinery in Malaysian Urban Planning System.

The Federal Government, even though they were not given any direct role in the planning of the urban area in Malaysia, under the Act (Section 8(4A)) they required the planning exercise to take into account the government policies in relation to social and economic planning, development and addressing environmental issues of the state and nation in order to be sensitive toward the needs and aspirations of the nation.

The concept construed by the Act was to allow closer links between the state government and the local authority and less important links between the federal government and the state government and the local authority. However, in the preparation of the local development plans the influence of the federal government is obviously strong as a result of grants given, and various plans prepared at the federal level, for instance the Seventh Malaysia Plan (1996

2000). This five-year thrust of the seventh development plan stated clearly among other thing, all programmes and strategies of National Development Policy (NDP) pertaining to environment and sustainable resource management, infrastructure and utilities, and quality of life. All of these programmes and strategies are required to be incorporated in all development plans (Seventh Malaysia Plan, 1996-2000, 1996). Other sectoral plans such as the Industrial Master Plan, The National Agriculture Policy, and National Policy on Biological Diversity, as well as the guidelines and policies of various regional plans formulated by the Federal Government, have a significant bearing on urban planning generally.

A1.3 GOVERNMENT PLANNING AGENCIES

The setting up of government planning agencies can be divided into four different levels, namely Federal, Regional, State and finally Local levels, each with a different, set of roles and responsibilities, more often interrelated and dependent on each other (Figure A1.2).

A1.3.0 Federal Level

A1.3.0.0 National Development Planning Committee (NDPC) and Economic Planning Unit (EPU)

The Federal Government instituted the National Development Planning Committee (NDPC) to be the highest bureaucratic body in the country involved in the formulation of policies and programmes in Malaysia. The Federal Cabinet established policies and goals to guide NDPC in the preparation of the overall socio-economic plans for the country. Under this committee, a unit called the Economic Planning Unit (EPU) is responsible for preparing the overall socio-economic plans for the country. In fact that the EPU does not really involve the preparation of the urban development plans, but somehow has a strong influence on the urbanization process and the pattern of urban development. By virtue of its role as co-ordinator, it has an impacts on terms of reference, selection of the planning teams or consultants and on the acceptance of the report when it comes to co-ordinating foreign assistance programmes concerning planning and research projects which have implications on urban development.

A1.3.0.1 Federal Town and Country Planning Department (FTCPD)

The Federal Town and Country Planning Department serves as co-ordinator for urban planning and as an advisor on urban planning matters to the Federal Government and various federal ministries in West Malaysia. With several divisions (national and spatial

planning, urban planning, rural planning, regional planning and special projects) and headed by a Director-General, assisted by two deputies, the departments' roles have been limited to co-ordinating urban planning activities, conducting research development programmes, and undertaking national spatial planning. The department also formed four Regional Offices strategically located in various states to give a better service to the government, and also to undertake requests from several Federal Government departments in preparing development plans.

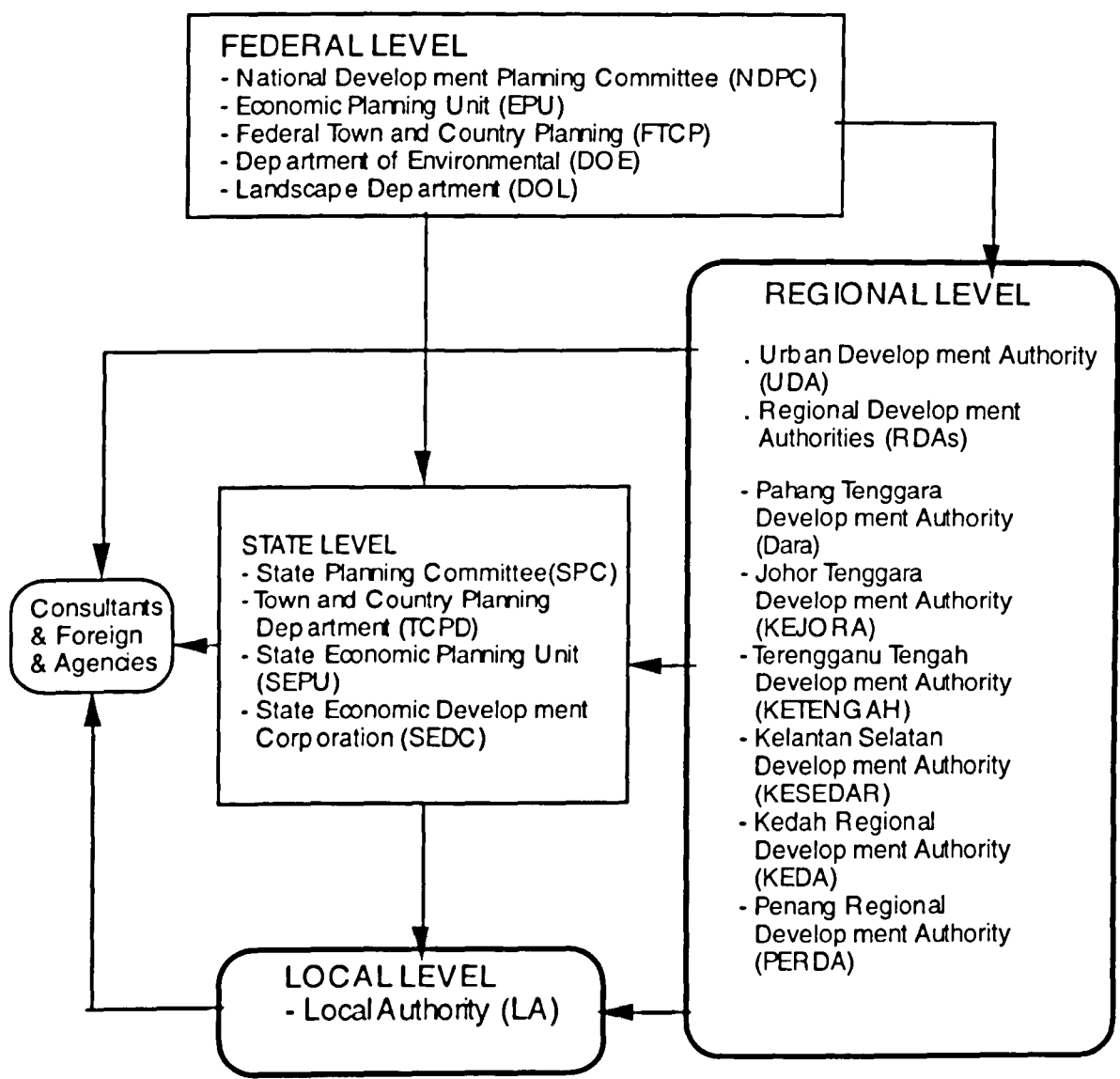


Figure A1.2 Different Levels of Government's Planning Agencies in Urban Planning System.

The Federal Town and Country Planning Department has also set up a specific tasks unit to help the Local Authority prepare their structure plans in an effort to promote and upgrade the standard of urban planning in the country. Other means include the publication of

booklets and manuals on planning methodologies, uniform development control guidelines, planning legends and planning standards, as well as conducting workshops and seminars. These in turn create an awareness of urban planning among the general public, and increase the skills and knowledge of the planners.

A1.3.0.2 Department of Environment (DoE)

Another department at the Federal Government level, under the Ministry of Science, Technology and Environment is also involved in the main stream of urban planning and development is the Department of Environment (DoE). The main roles of this department is to act as enforcement and preventive body in all aspects related to environmental quality. Certain guidelines have been prepared by the DoE on the requirement of land for playground and open space in urban development projects (Goh, 1991). Under the Environmental Quality Act (EQA) of 1974, the DoE has the legal power to enforce Environment Impact Assessment (EIA) mandatory for certain type of developments. The scope of work of the DoE somehow compliments the work of the Federal Town and Country Planning Department and sometimes overlaps considerably with it.

A1.3.0.3 Department of Landscape (DoL)

The Department of Landscape was formed in 1996 in an effort by Malaysian Government to 'landscape the nation.' It's main objective is to create "Garden Nation" through quality landscape developments in fulfilling the needs and wellbeings of the whole population. The many roles of the Landscape Department include: being advisor to various government agencies in planning, design and management of landscapes; to plan, coordinate, execute and manage in landscape development projects initiated by the government. The department is expected to commission and carry out research, initiate legislation (establishing standards, policies, procedures, and landscape planning and design guidelines); deliver training programs, carry out research together to respond to the information needs through a programme of creating information systems.

A1.3.1 Regional Level

A1.3.1.0 Statutory Development Agencies

In undertaking development projects, the Federal Government has established various development agencies, not to execute planning exercises but to implement certain government development projects. Since their constitution allows them to undertake planning for a designated areas within their control but outside any of local authority

jurisdiction, their roles as urban planning teams are equally worth mentioning. These agencies, include the Urban Development Authority (UDA), the Regional Development Authorities such as the Pahang Tenggara Development Authority (DARA), Johor Tenggara Development Authority (KEJORA), Terengganu Tengah Development Authority (KETENGAH), Kelantan Selatan DEvelopment Authority (KESEDAR), Kedah Regional Development Authority (KEDA), and Penang Regional Development Authority (PERDA) normally working closely with Local Authority to avoid any conflict that may arise in their planning policies and strategies.

A1.3.2 State Level

A1.3.2.0 State Planning Committee (SPC)

As has been mentioned earlier, the State Planning Committee is the highest body at the state level which is directly responsible for the direction of urban planning. Their co-ordinating role is provided for in the Town and Country Planning Act: to promote in the State, within the framework of the national policy, the conservation, use, and development of all lands in the state; to advise the State Government, either on its own initiative or in response to a request by the State Government, on matters relating to the conservation, use and development of land in the State; and to undertake, assist in, and encourage the collection, maintenance, and publication of statistics, bulletins and monographs, and other publications related to town and country planning and its methodology (Town and Country Planning Act, Part II, Section 4).

A1.3.2.1 Town and Country Planning Department (TCPD)

All matters related to land use development and urban planning are under the strong influence and directive of the Town and Country Planning Department and in a position to advise the Government and State Planning Committee. Besides being an advisory body, in many Structure Plan projects, the members of the Town and Country Planning Department has become the co-ordinators and members of the steering committee of the project. The Local Authorities normally seek advice from the Town and Country Planning Department on matters related to urban planning and planning submission procedures for land developments.

A1.3.2.2 State Economic Planning Unit (SEPU)

In each West Malaysia State, the State Economic Planning Unit is established to help the State Government to prepare socio-economic development plans and to co-ordinate all socio-economic planning activities. Its influence on urban development direction is through socio-economic development plan as this unit does not involve in urban planning directly.

A1.3.2.3 State Economic Development Corporation (SEDC)

The State Economic Development Corporation is the development arm for each state in West Malaysia. Each corporation prepares their own development plan for the state in areas where development will take place such as for new townships and industrial estates.

A1.3.3 Local Level

A1.3.3.0 Local Authority

The Local Authority is the lowest level of government in West Malaysia where its existence and power are provided for in the Local Government Act of 1976. It can be in the form of City Council, Municipal Council, or District Council and their roles are to provide municipal services, to control all aspects of land development, to enforce by-laws and to undertake land development directly. These roles are required as stated in the Town and Country Planning Act but not in the Local Government Act. Other urban planning activities and practice required by Town and Country Planning Act for Local Authority to perform include: to regulate, control, and plan the development and use of all lands and buildings within its area; to undertake, assisting, and encourage the collection, maintenance, and publication of statistics, bulletins, and monographs, and other publications relating to town and country planning and its methodology; and to perform such other functions as the State Authority or the Committee (SPC) may from time to time assign to it (Town and Country Planning Act, Part II, Section 6).

Both the structure and local plan were prepared by the Local Authority, the former approved by the State Planning Committee (SPC), but the latter approved by Local Authority itself. These plans become the instruments for the Local Authority to regulate, control and plan the development. The local plans provision give wide powers to the Local Authority in the direction and form of urban areas under its jurisdiction. The main problem with most of the Local Authorities was the inadequate number of qualified urban planners serving the town planning department or unit in the Local Authority. The Federal Town and

Country Planning Department and Town and Country Planning Department in turn helped to prepare development plans and processing applications for land development.

A1.3.3.1 Consultants and Foreign Aid Agencies

Since there are an insufficient number of planners in the public sector to prepare development plans, the professional services and expertise from the private consultants or foreign aid agencies have inevitably been utilised to produce development plans to regulate and control the urban development in Malaysia.

A1.4 CONCLUSION

As it has been discussed, there is already a proper placement and set up of a hierarchy of planning machinery to prepare development to guide and regulate the use and development of land and to improve the quality of life in urban Malaysia. The establishment of various departments at both federal and state level, for instance the Federal Town and Country Planning Department and Local Authority are appropriate. Other than that, the economic planning units, development agencies and committees enhance and complement each other in the processes, activities and actions. Nevertheless, there is a call to improve the number of urban planners at the planning departments, especially at the local authority level. More importantly, the establishment of planning department or unit with an adequate number of qualified planners to carry out the jobs. As a result of the lack of planners, there was an absence of development plans to guide the development projects in many local authorities. Many implementing agencies such as the Regional Development Authorities and the State Economics Development Authorities, in turn have been preparing their own development plans instead of local authorities. This eventually will lead to a confusion in the authority of planning for many areas.

At the local level, most of the local authorities have produced their structure plans (Peh, 1997). Even those local authorities with structure plans readily prepared, these plans have yet to be augmented with local plans otherwise without local plan, the structure plan policies will remain unimplemented. The Federal Town and Country Planning and Town and Country Planning Department are expected to play more effective roles in urban planning development as a whole. Their roles, functions and capabilities in the planning machine need to be consolidated especially in formulating national policies, to give more impact to matters related to urban planning. Main activities should also be focused more on research and development matters related to urban planning.

Generally, it can be said that the urban planning in Malaysia has been guided and regulated by comprehensive planning systems. All development plans at different levels are well co-ordinated and complement each other (Muhammad, 1994). At the federal level, there is a five-year development plan supported by various regional development plans, and at local authority level, both structure and local plans are well planned to ensure continuity in effort to achieve quality urban life and welfare of the people as a whole.

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Appendix II

NEWS PAPER CUTTINGS

Johor bars projects on town fields

By Valerie Ng

SEGAMAT, Wed. — The Johor Government will not entertain development projects on town fields in a move to preserve the fields as "green lungs" for recreational purposes.

Menteri Besar Datuk Abdul Ghani Othman said the State Government would preserve all open space available in every town as there were very few open areas left.

Speaking after launching the Segamat District Flying Club at the Segamat Golf and Country Club here, Ghani said the 62-hectare field and golf course in Segamat town would be preserved.

He said the area was the only available open space adjacent to the town centre.

"There was a proposal to commercialise the area, but we will not consider the idea. The land will be left as an open space for family as well as club activities."

"We will try to preserve open spaces in all towns."

Earlier, Ghani said that playgrounds in small towns and villages also played an important role in bringing people together.

Also present were Segamat District Flying Club



GHANI

... recreational purposes

chairman Datuk Johari Suratman, Segamat MP Datuk S. Subramaniam, State Executive Councillors and heads of department.

To date, the State Government had scrapped two development projects to maintain the areas as green lungs and for recreation.

One of them was a proposed privatised commercial project including condominiums and apartments on a 10-ha site in Taman Tasik, Johor Baru. A me-

morial park will be built on the site instead.

The decision to build the memorial park, to be called Taman Merdeka or Merdeka Park, was to commemorate the struggle for independence.

Besides serving as a memorial, the park would remain as a green lung for the city and become a recreational area for the public, in particular Johor Baru residents.

The other project is the proposed RM12-million shophots on a playground located in the heart of Tangkak town.

The proposed 95 three-storey shophots project in Tangkak, which was planned under Phase Two of the RM23.9 million urban redevelopment programme for the town, was scrapped to save the field.

Ghani said the State Government has also recently decided to preserve the fields (District Council field, tennis field and Batu Pahat High School field) in the district of Batu Pahat for recreational purposes.

He also expressed regrets that two open spaces in the Kluang and Muar districts were "sacrificed" for development projects.

Activities geared to balanced growth

SEGAMAT, Wed. — The activities which are being carried out in all the districts so far are geared towards bringing about a holistic development to enhance balanced growth and fair distribution of wealth for the people.

Menteri Besar Datuk Abdul Ghani Othman said from his visits to the Batu Pahat, Kota Tinggi and Segamat districts, he found that district officers and heads of department understood all aspects of Federal and State level programmes, to be implemented at district level.

Speaking after launching the Segamat District Flying Club at the Segamat Golf and Country Club yesterday, he said:

"The success of each programme not only depends on the function of the departments' directors alone, but also on the understanding and participation of the respective district office heads."

"The message has been put across to all department heads and in particular, district officers to implement all programmes as soon as possible."

"What we do is not only in terms of pronouncement at the point of launching, but proper planning to ensure that the policies are being translated into programmatic approach and action plan."

Ghani said the State Government would make sure there were follow-ups in terms of implementation so as to ensure continuity.

Johor scraps building project to save playground

By Chong Chee Seong

MUAR, Sun. — The State Government has opted to retain a playground in the heart of Tangkak town instead of giving it up for a proposed RM12 million project.

Menteri Besar Datuk Ab-

dul Ghani Othman said this was in line with the call by Prime Minister Datuk Seri Dr Mahathir Mohamad to make Malaysia a "Garden Nation".

"We are taking a second look at proposed development projects to ensure that the environment is not adversely affected," said Ghani at a Kongsil Bava cel-

ebation organised by the Lejang Barisan Nasional in Tangkak last night.

The proposed 95-unit three-storey shophot project was planned under Phase Two of the RM23.9 million urban redevelopment programme for Tangkak town.

The first phase, involving the construction of a district office, several houses

and flats at a nearby site is nearing completion.

The project, which started in 1995, is being carried out by Naufal Bersatu Sdn Bhd.

Ghani said "The State Government has decided that the second phase of the town's redevelopment project on the playground be scrapped to save the field."

"We need it to allow our youths to participate in sports and recreational activities, and to act as a green lung for urban dwellers," he added.

He said playgrounds in small towns and villages also played important roles in bringing the people together.

Ghani said he had also

directed local authorities to intensify ongoing tree-planting and landscaping activities.

"We need development to spur the State's economic growth. But we cannot allow such development to ruin our rich, green environment, which must be preserved for future generations."

Community vigilance important to protect urban green open spaces

THE rate of urbanization in China is the highest in the world. In 1949, the urban population of China was 54 million, or 13.2 per cent of the total population. By 1982, it had risen to 195 million, or 20.6 per cent. The rate of urbanization in China is the highest in the world. In 1949, the urban population of China was 54 million, or 13.2 per cent of the total population. By 1982, it had risen to 195 million, or 20.6 per cent.

[illegible]

Executive Council, land sub-division — a land matter — follows in accordance with the National Land Code. Titles to the sub-divided lots are then issued under the name of and forwarded to the developer, irrespective of whether the land is to be sold or surrendered to the State.

This, according to the Federal Land and Country Planning Department, is the first time that the Director General, Datuk Pehin Zaiman Mohamed, has taken the step which gives rise to the problems.

By saying that the land

ties, de-floccs for change in bulk or density, and designated as open space for years.

The 1980s are a mission to develop land and the United States. The 1980s are a mission to develop land and the United States. The 1980s are a mission to develop land and the United States.

NEWS ANALYSIS

By Leong Shen-li

Time's EP Delegation Chairman, Bid also the son of a Chinese tycoon, has been a three times to apply for permission to develop the area and although it was denied, he has made as the 10 per cent share of the space for Sui Ching as a

Without such clauses discrepancies are bound to happen. Town planners point out to troubling observations from these cases whereby the State Electricity Commission's approved development proposals cannot be resented although they

While ensuring the existence of open spaces, the

[illegible][illegible]

That statement has been interpreted in one way or another, but it is not true. The fact is that the company has been working on a plan to supply power to the city of New York, and it is not true that the company has been working on a plan to supply power to the city of New York.

The apartment bunch at Even Housing and Local Government Deputy Minister Datuk A.M. Khalid, who encouraged such vigilance in protecting open spaces, praised the communities' concern and participation.

"We have to educate the public and make them conscious of the fact that they have to be paid for the open spaces within housing projects," he said.

The Town and Country Planning Act actually allows for an Appeal Board to review decisions made

by local authorities which carry out the Act. However, other than in Perang, Central Malacca district, the provisions have not been adopted and are being adopted and interpreted to suit locally.

NEW STRAITS TIMES
LETTER OF THE DAY

Cry against high-rise plan at playground

THE reason read with dis-
taste by the people of the
NST March 6 of the plan
to disregard for labour
and the environment
in the development
of an economic zone
in the coastal district of
Jawa was carried in Page 2
of *Times Times* which high-
lighted the plan to put up a
factory plant to put up a
100-year old open road now
exists in Section 9 of Prah-
laja.

It is a good thing that
Minister Daryu Sri Dr. Yu-
nair Muhammad the Min-
ister of Housing and Local
Government of the State
New York District of
New York by publishing these is-
sues At least some of the
law that that law but I
think that the law is
says that those that
and cries of the ordinary
people

According to the report, the Government had never sanctioned the sale of land for any purpose. Only the State Government can answer this question. When more disturbing is when the Government's background was suddenly alienated to private dealing in public land being arbitrarily alienated. Where decision should be to "develop" public land for the private authority. Why did the Government in this case the Punjab and Jalandhar Municipal Corporation approve such a decision? The Government's community interest in favour of commercial development? Some can answer these questions.

PJP John
Punjab, India

LETTERS

**Losing
open
space to
office
complex**

THURSDAY, APRIL 3, 1997 13



FLASHBACK Our returns on March 28, 1997

LETTER OF THE DAY

Council's broken promises leave playgrounds empty

I AM in total agreement on the importance of playgrounds as a way to combat social ills.

The more time children spend on the playground, the less time they have to loiter or indulge in other unhealthy activities. Unfortunately, many of the playgrounds in our cities and towns are in a bad state.

This includes those in the so-called well-planned towns such as Petaling Jaya and Subang Jaya. As a result, children are put off from going there.

Alas, words remain words and a classic example is Hamizun Mohd Bar, Petaling District Council public relations officer. She was quoted in the

newspapers last July 4 giving an assurance that she would send the recreational department staff to repair the damaged playground equipment in USJ.

I recently visited the playgrounds in Jalan USJ 11/2D, Jalan USJ 11/7 and Jalan USJ 9/1E which are hardly five minutes from the council's office.

I found the swings at all three playgrounds had snapped chains. In one playground, the two playhouses linked to the slides needed repair as the wooden floors were missing and the railings had collapsed.

Exposed areas pose a danger to unruly children who dare to play there.

Apparently after nearly 10 months, Hamizun had

yet to send the recreational department staff to repair the damaged facilities. So it is not surprising to find them deserted.

I decided to visit another playground behind the row of shophouses opposite the Taman centre. It is a new one in an area where the rows of link houses have yet to be occupied.

To my surprise, I found many children playing there who were obviously from the other areas where the playgrounds were unusable.

I suggest the State Government direct their local authorities to allocate sufficient funds for the maintenance and repair of playgrounds.

This should be a part of

the comprehensive plan to combat social ills in their respective areas.

If this is not done, then the playgrounds will remain useless.

An unfortunate but predictable consequence will be that some enterprising and well-connected developer will go to the district council office with a proposal to convert and develop these "open spaces" into shopping complexes or offices.

At that point, the authorities will find the proposal "very tempting" on the pretext that the playgrounds are under-utilised anyway. What an excuse!

N.M. Amin
Petaling Jaya

Open spaces belong to house owners

THE Housing and Local Government Ministry has suddenly realised that it is more beneficial to maintain open spaces within built-up areas for recreational purposes than turning them over to developers.

It is left to be seen how serious the ministry is.

Open spaces and playgrounds within housing estates are by right the common property of the house-owners in the area for they are the ones who paid for the spaces to be left open for them and their children's recreation.

When developers hand over these open spaces to the local authorities upon completion of the project, it means the latter should maintain them, with part of the assessment collected.

The open spaces do not become the property of the local authorities. If that were so, why were the original developers of the housing estates required to set aside open spaces for recreation upon pain of their plans not being approved otherwise?

Take Taman Intan, for instance. In 1983, a company submitted to the Sungai Petani local authority a proposal to shift a temporary road into the playing field in Taman Intan so that houses could be built on the site of the then existing temporary road.

The council was firm in not allowing the developer to touch the playing field. But, three years later when another developer submitted the same plan to shift the temporary road into the field, it was approved.

Titles to the house plots affected have this express condition on them: a translation of which reads: Construction of any building on this plot is prohibited until such time there is a permanent road.

When the present developer bought these plots, the express condition was and is still on the titles. So why did the local authority now feel obliged to bend backwards?

Ravinder Singh
Sungai Petani

DONAL

THURSDAY, OCTOBER 17, 1996 19

Johor acts to keep green lungs

By Sharif Haron
JOHOR BAHRU, Wed. The State Government is taking tougher measures to maintain Johor's green lungs and parks, including those located in prime areas.

State Works and Public Utilities Committee chairman Datuk Zainalabidin Zin said the State was determined not to convert the status of such land however strategic its location might be.

"We are finding ways to keep the open spaces, including gazetted them for recreational purposes like jogging, and for landscaping."

"We are also talking to our legal adviser on the possibility of turning them into national parks," he told reporters after a State

Exco meeting chaired by Menteri Besar Datuk Abdul Ghani Othman in Senai.

Zainalabidin said if parks and green lungs were gazetted as national parks, then their conversion would not be easy and would require approval from the State Legislative Assembly.

"This means we can retain parcels in towns for recreational and other purposes."

"The State Government will not change their status although they may be strategically located," he said.

Zainalabidin added that the State Government was getting in touch with local authorities for more information on open and vacant land under their jurisdiction.

He noted that in the past, there were cases whereby such land had their status converted by district and municipal councils.

"The State Government feels that this should not continue."

The State's commitment towards keeping green lungs in the city and towns is also reflected in a directive issued to developers of new housing projects early this year.

Each developer is now required to reserve 10 per cent of the total project area as open space for recreational and other activities.

"For example, if the project is 3,200 hectares, 320 hectares must be reserved for this, of which a big portion should be in one location."

Zainalabidin also commented on the installation of billboards at flyovers and overhead bridges which may pose a danger to motorists and the public.

He said the erection of structures for billboards should be referred to the Public Works Department while the materials used must be of suitable quality.

Meanwhile, State Housing, Small and Medium-Scale Industries and Local Government Committee chairman Adam Hamid said the issue had been brought up at the Exco meeting.

He said it was proposed that billboards at overhead bridges would be removed once the contracts with the advertisers had lapsed.

NEIGHBOURHOOD

Kajang play area left in state of neglect



MUD PATCH ... the path to the playground is muddy and overgrown with weeds.

WITHOUT proper maintenance by the Hulu Langat District Council, the children's playground at the Kajang District Council Sports Complex has become idle.

The playground, which is next to the hall, is one of two children's playgrounds in Kajang.

The other is at the Children's Activity Centre in Jalan Timur.

The council had spent more than RM50,000 in 1994 to build swings, see-saws, monkey climbing bars and slides.

It also planted flowers, built walkways and placed benches in the recreational area where Kajang folk can sit and relax.

Kajang Rukun Tetangga, concerned about the playground's state of neglect, had organised a gotong royong to clear the area.

However, lack of maintenance has resulted in it becoming overgrown with grass while play equipment became rusty.

Residents said due to lack of publicity and action in maintaining the playground, the playground had been left idle.

They said the council did

not take action to prevent the breeding of red ants there, which was the main reason why parents did not take their children there.

Parents were also worried about their children's safety as the playground was near the Sungai Langat.

However, that problem had been solved with the building of a fence by the Drainage and Irrigation Department under its recent riverbank beautification programme.

The residents said the situation worsened after the playground recently became flooded due to overflowing of the Sungai Langat and Sungai Merbau.

The flood left mud all over the area.

As the council did not clear the mud and the grass had not been cut, the field is now muddy and overgrown with tall grass.

A recent visit to the playground showed that there was mud on the swings and pathways while the slides were rusty.

Chairs and the climbing beams were also covered with *halang*.

Fallen branches had also not been cleared.

All States to have parks by year 2000

KUANTAN, Mon - The Federal Government has allocated about RM200 million for public parks and beautification projects under the Seventh Malaysia Plan.

Landscape Department deputy director general Mohamad Taib Zain said today a park costing about RM2.5 million would be developed in every State and it would have recreational and public facilities such as fountains, pedestrian malls and rest huts.

"The idea to have the parks in all the States was mooted by Prime Minister Datuk Seri Dr Mahathir Mohamad about a year ago. We hope to be able to complete them before the year 2000," he said after the opening of a one-day workshop on guidelines on the national landscape by Menteri Besar Tan Sri Mohamed Khalil Yacob.

Mohamad Taib said the State Government, through the local authorities, would liaise with the department on the project.

The park will be built in major towns on an area of between eight and 20 hectares.

He said the Federal Government would concentrate on beautifying other parts of the States with the cooperation of the local authorities once the projects had been completed.

On the national landscaping guidelines, he said the department had come up with a book which will be distributed to all State Governments.

Mohamad Taib said landscaping in Malaysia had not been successful.

"Efforts to beautify the areas are done mainly on an ad hoc basis."

"The quality of landscaping leaves much to be desired, be it in terms of design, management or implementation."

He said the State Governments and local authorities should follow the guidelines that had been worked out by the department, Forestry Research Institute of Malaysia,

Drainage and Irrigation Department, Local Government Department, Forestry Department, Public Works Department, Agriculture Department, Universiti Pertanian Malaysia, Institut Teknologi Mara and National Landscape Architects Institute.

Mohamad Taib said the guidelines were aimed at providing quality landscaping in line with the Government's efforts to turn Malaysia into a garden country.

He said the private sector could help the Government beautify the cities and major towns by participating in the projects.

Mohamad Taib said the right method of planting trees or flowering plants should be practised if quality landscaping was to be achieved.

"The State Governments should be able to identify suitable areas for landscaping purposes. Even government buildings should be included."

He said the local authorities should be able to come up with a master plan on their landscaping projects for development purposes.

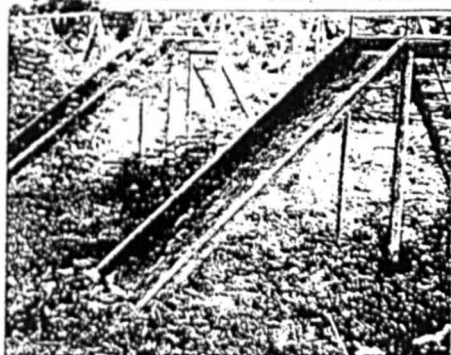
To help expedite efforts to landscape the country, Mohamad Taib said the authorities should select straight trunk, quick-growing forest trees to be planted on all available land.

He said they should not plant different kinds of trees along a road. "Only one species for each road and at least for a 20-kilometre stretch."

"They must be in line, following the curve of the road and not be too close to the road."

Mohamad Taib said willow trees should be planted on river banks as they tended to droop over the river.

"At picnic sites, trees which have spreading branches should be planted. This will give picnickers more shade," he added.



DANGEROUS PLAYTHINGS ... the rusty slides are a threat to life and limb.

Playgrounds in sad state of affairs

WHEN Malay states learnt of Siti Aifah Md Dhan's death which resulted from her being flung out from a slide in the country's premier theme park, the country was shocked and there was an outcry over the safety of our theme parks.

Yet, when five-year-old Mohd Azwan Abidin, his twin brother, died in November when a steel rod from a swing he was on fell on him, breaking his neck, nothing much was heard of the case aside from the usual promise by the police to conduct investigations.

Although the swing which killed Mohd Azwan was in his kindergarten and not in a multi-million ringgit theme park, his and Siti Aifah's deaths were similar as far as cause was concerned.

Their deaths, which were both unexpected and preventable, served to highlight the appalling safety standards of many of the country's recreational facilities.

And Mohd Azwan's death especially pointed out the sad condition of the humble neighbourhood playgrounds.

His was the worst playground accident so far. Other non-fatal but serious accidents occur with horrifying regularity, although statistics on such accidents are almost impossible to obtain.

It was only in January last year that an eight-year-old boy from Taman Perling, Johor Bahru lost his index and middle fingers because he had placed his right hand against the rusty metal sides of a slide while sliding down.

The cause of the incidents are an embarrassing embarrassment that, as Professor Dr. Sunish of Universiti Putra Malaysia said, one does not really need to be an expert to see them.

A letter sent to the *Nir Sreets Times* by a Dr. KH. Sing of Kuala Lumpur in response to Mohd Azwan's death said it all.

He said, "Broken and rusty entrapments with sharp ends, lost rungs on steps and missing planks turn playground facilities into hazards to children."

"Even from the beginning, many devices that are newly installed are not safe. A lot of slides appear to be made with a acute stop at the end and a child may twist an ankle or sustain a fracture in such a situation."

"Most swings are without a harness and are not suitable for very small children."

"Gaps exist on many raised platforms, potential traps for children to fall from when nudged or pushed."

A check with several residents' associations has further confirmed the well-known fact.

"The grass is hardly cut and lighting is very poor, which makes the place dangerous for people who

ALREADY short of recreational places, neighbourhood playgrounds were built for children to have fun. Yet, neglect has made them some of the most dangerous places. LEONG SHEN-IL looks at the reasons why this has happened.

use them after sundown," said Dimansara Jaya Residents Association president Wong Kah Yee of the four playgrounds in his area.

Anthony Hays, chairman of the Taman Sentosa Residents Association also expressed similar grievances over the playgrounds in his housing estate in Klang.

"The grass is as high as a golf field and they are haunted by animals, cockroaches and snakes," he said.

According to Sunish, who had conducted research on playground safety, the equipment and the playground surfaces are the major causes of accidents.

In his research paper "Recreational Impact Prevention Concept Research and Priorities for the Future" which was written with ten other researchers, he said the general surface of five playgrounds in Petaling Jaya was of earth covered with grass which was often denuded and waterlogged in some areas.

The under-edges of the areas where the equipment were installed was a severely eroded except for one which used concrete blocks.

The surface's inability to absorb the impact of falls, Dr. Sunish said, usually was the cause of injuries.

Specially prepared impact absorbing surfaces like rubber mats, wood chips and wet packed sand are superior to natural surfaces like packed earth, dirt and grass when it came to absorb impact, while natural surfaces, in turn are safer than asphalt and concrete, he said.

He added that the threshold for serious head injury when a child's head hits the ground in a free fall has been determined at 50cm, and the threshold for fatalities at 100cm.

Even a one-foot fall can cause serious enough injuries, he said.

As for playground equipment, the report said monkey bars, roundabouts and tube slides, were present in all the playgrounds.

All these equipment were specifically not recommended by the Child Accident Prevention Foundation of Australia.

Swings were made on non-impact absorbing materials like metal or heavy wood.

They were also placed too close to each other at the frame while chains and metal rungs used to suspend the swings were large enough for fingers to get trapped.

Slides and see-saws were also constructed in a manner which was far from being safe.

Rod design aside, poor maintenance has made playgrounds extremely dangerous places.

While the job of construction of playgrounds within housing estates is belongs to the housing developer, Housing Development Corporation deputy president Loh Chen said local councils become the responsible parties, one year after certificates of fitness are issued for a particular project.

At that time, we transfer all responsibility, such as rubbish collection and maintenance of roads and other public areas, including playgrounds, to the local council," he said.

He said the construction of playgrounds are part of the Government's requirement and local councils have the duty to enforce it.

If we do not follow CTA will not be granted for that particular project," he said.

According to Dr. Sunish, the reason for the poor state of playgrounds is basically due to the low priority local authorities and other responsible bodies give to playgrounds.

Locusts, Professor Phang Seng Nod of Universiti Malaysia's Economics and Administration Faculty added that with local councils already finding it difficult to cover the cost of carrying out their usual duties, maintenance of playgrounds would rate at the very bottom of a council's list of priorities.

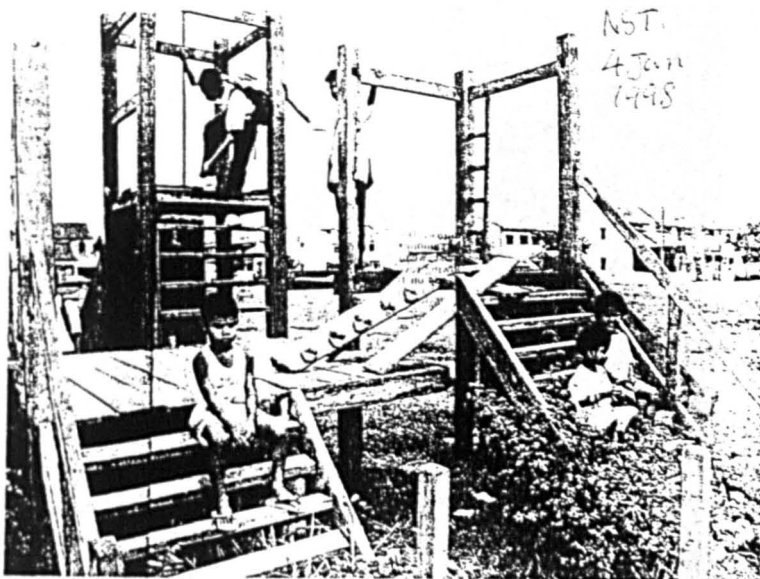
"Especially, district councils, which get less funding but have larger areas to look after, it is not at all surprising that playgrounds do not get any attention at all," she said.

The contention that neglect increases as one moves further away from big cities is shared by the residents of the affected areas.

"Just because we are not in Kuala Lumpur or Petaling Jaya, we have to put up with bad quality, inadequate and poorly maintained facilities. Playground are only one example," said Anthony Hays, chairman of the Taman Sentosa Residents Association in Klang.

Besides, the smaller budgets of district councils, then also said one reason could be due to developers in urban areas previously being more aware of their responsibility to build playgrounds compared to those in rural areas.

Furthermore, playground accidents, he said, the result of bad design or poor maintenance



DEPLORABLE ... Broken and rusty entrapments with sharp ends, lost rungs on steps and missing planks turn playground facilities into hazards to children.

happen purely because the attitude of making safety a priority is absent from the people responsible for them.

The lack of a safety culture manifests in poor design, shoddy inspection and bad maintenance, said the chairman of the National Institute of Occupational Safety and Health Datuk Lee Lam Tye.

"Children play at these places all the time and you cannot compromise on safety."

Playground accidents and deaths clearly show that safety is not at all a priority, he said.

If those responsible consider using the defence that playground equipment should be properly used try anything or twice.

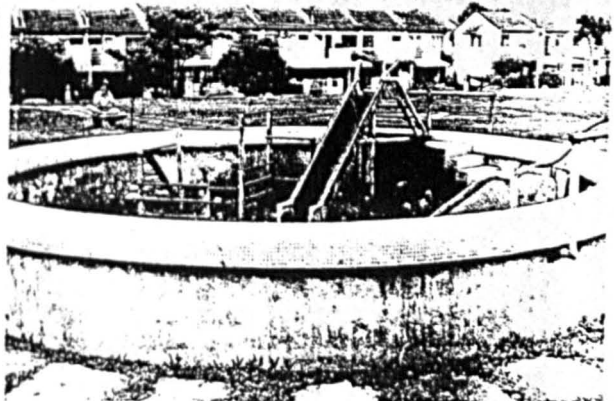
As playgrounds are for children to have fun, Dr. Sunish said they should be specifically designed for rough and improper use.

"They should be made to withstand all kinds of treatment," he said.

The solutions, like the source of the problem, are obvious and simple, especially when there are loads of literature and qualified consultant ready to dish out expertise.

As responsible bodies local councils have to ensure that playgrounds are in good condition by conducting regular inspections and maintenance.

Low budgets, Lee added, should never be used as an excuse for not carrying out proper maintenance.



SHAMEFUL ... Neglected equipment is left to rust and deteriorate, creating a safety hazard

Of course, they should also keep the place clean and not vandalise the equipment.

Several solutions like privatisation have been suggested by local councils but have largely been rejected by the public as it is seen as a violation of their basic right to open spaces and recreation.

Both Lee and Dr. Sunish said the onus was on the public to ensure that proper attitudes must be adopted by all.

While local councils should be given a pat on the back for constructing playgrounds for the public, they should also realise that their good intentions and efforts would amount to nothing, if even become damaging, if these places were not properly maintained.

Lev suggested that community groups such as Rotary Clubs could instead adopt playgrounds and work together with the residents of a particular area when it came to maintenance.

Both Lee and Dr. Sunish said the onus was on the public to ensure that proper attitudes must be adopted by all.

While local councils should be given a pat on the back for constructing playgrounds for the public, they should also realise that their good intentions and efforts would amount to nothing, if even become damaging, if these places were not properly maintained.

LETTER OF THE DAY

Playgrounds better place to nurture young

I APPLAUD the Johor State Government in taking a firm stand on not allowing the conversion of a playing field into a commercial complex in Tangkak town.

This exemplifies a commitment enough about the social needs of the people rather than a developer's.

I also agree with S. Aha Ismail (Newspaper) on March 13 that we need more fields for our youths. Let us get down to basics and compare the facilities that go on at the field or playground or any sports facility with that of a commercial and shopping complex.

On the playing field, children of all ages, no matter what games they are up to, expend their boundless energy and, in the process, learn to make friends with the rest on the field.

There is not only tolerance, but a give and take attitude especially when a facility such as a see-saw or swing is limited in number. Here is where neither religion nor race matters

as everyone is out to enjoy themselves. Children and teenagers can scream and shout to their hearts' content and when someone is hurt all odds to help.

Should there be disagreement there is always someone among them to help settle issues, and again children learn to settle disputes amicably so that the game will go on.

On the playing field, leadership and the urge to win are qualities enhanced or learnt. Children aim to do their best, the spirit of wanting to win for their team is aroused, even the little toddler at the playground wants to be the first to reach the top of the slide or first at the swing.

There is no dress code and the young ones wear their scruffiest so that their good clothes will not be spoilt. There is no class distinction on the playing field.

Parents who spend time at the field, sports complex or playground gain more interaction with their children.

They make friends with

other parents without racial religious or social consciousness.

Compare that with the scene at shopping centres. I have observed that shopping centres are always full on weekends. Is there mothers also taken for families and children to play? All there seems to be is shopping and more shopping.

A shopping centre's children are always demanding for something or other, giving rise to a build up of tension in their parents who then shout to the children, "No, you can't have that" or they modify the offering to promises of getting them better items.

Parents tell themselves, I have to work harder, earn more money to get what I and the children want.

At shopping complexes, parents do not talk with their children except to refuse or give in when more demands are made. Children do not interact with others nor do parents easily smile and make friends with other parents.

There is always the com-

parison between them, school and others, the clothes they wear, the car they drive, the type and brand of things they buy. The chase for more material wealth continues.

Children cannot expend their energy in shopping complexes unlike their counterparts on the playing fields. No doubt there are now many indoor games and activity centres within complexes, but imagine the price parents have to pay to get their children to play there?

It is time our leaders wake up and even admit that they may have been, to some extent, responsible for the playing social problems of our youths.

How many developers have been allowed to reduce the open space on their project just so as to get as much profit per square foot as possible?

Then there are the many privatised and semi-privatised projects with the Government where, in order to reap as much profit as possible, the provision of community facilities such as

open spaces and community centres is disregarded or kept to a minimum.

Many organisations recently have called for more community facilities in housing areas. There are already standards for the provision of nurseries, open spaces, community halls, even burial grounds. But these should have been incorporated in the planning and design of housing areas in the first place.

The Minister of Housing and Local Government should not just urge State Governments to not allow conversion of open spaces to commercial complexes, but should strongly urge developers to be more responsible and caring in providing a built environment that is conducive to social development.

Fields, playgrounds and open spaces may not be the entire solution to solving our social woes, but once the family unit is strong, happy and united, the nation will as well.

T. Kerys
Shah Alam

LETTER OF THE DAY

15/2/95

Children of yesteryear had much fuller lives

LOOKING back over the years and gazing into the crystal ball of the future, we cannot help but realise that an exciting era we live in. We have seen man soar into the primitive aircraft of the early days of flight to the sophisticated Challenger space shuttle of today. In not more than 60 years of flight, you have reached the moon. We have witnessed the tremendous progress in medicine - from the discovery of penicillin to the turn of the century to advanced therapies, such as organ transplants. The amazing progress in technology of communications leaves us awestruck, wondering how we had limits there, as if we, to men's potential and capabilities.

Taking a turn to see what this has done to us, especially in respect "quality", the obvious assumption is that the young generations are having better quality of life today compared to us and our relatives. However, are we really having a much finer time now in comparison with us then? Are they happier, lot more than us, as we were young? I read

"I wonder" I say this with reference to our childhood years.

Three decades ago, in the 1960s, I remember clearly that my family did not own a car, we did not have a television set of had just arrived on the Malay Peninsula, no telephones and no telephone. If there were any, they were of "quality" of life, then we were certainly living below that level for all we had then was a simple radio. You can imagine the excitement and excitement when we bought a record player.

Any teenager reading this must be puzzled how we managed. Was life boring? Did we have any fun at all? You bet we did. And we had a whole of a time with not a single dull day. In fact, we hardly had time to pour and grumble or sulk, and I cannot recall ever pestering my parents for any toys or luxuries.

How did we spend our time outdoors and outdoors? For one, we knew what to do with our time. We not only knew how to spend our leisure, nature was our

playground and a vast one it was. The plains and fields were put to good use for football, marbles, hockey, cricket or athletics, and the shops in the school and neighbourhood were used for "buying in whatever our imaginations were, improvised. Flowers and baskets were our hide and seek havens. Our energy seemed boundless for besides the regular school, sports and our company and sports we had our share of household chores. We helped maintain the garden including the flowers, fruit trees, bushes and fruiting bushes, being used to "dig" and "plant" in the house. Kids these days, in contrast, seem easily "exhausted" when given the slightest chore at home.

"Good job" or "Good job" is an uncommonly uttered by today's youth.

We had plenty of fun and hobbies: from top spinning, kite flying, marbles, spider catching and catpouncing. The more sophisticated among us may collect butterflies or do wood carving and carpentry. We never dreamed of electronic games, or radio controlled

cars and planes. Yet, each made our own toys from gum to a wisp of sorts.

When indoors, we were no less active. With no television to distract us, we "mastered" Scrabble and Monopoly. Magazines like Beano or Dandy gave us a lot of laughter. Many of us found the joy of escapism via reading as we consumed volumes of Enid Blyton before progressing to Agatha Christie and Gardner P. Perry. Even the legendary lawyer.

Life did not just end there. There were "luxuries" too, in the form of visits to the cinema or an outing to "dine" at the hawkers' stalls or a quiet "snooze" for a while in the nearby natural pool. During holidays, we made trips to various in the neighbourhood, towns. Overcrowded holidays were unbroken of not having been on a plane or train did not mean having a lesser holiday. There were always new adventures during the holidays from climbing a mountain, tree, fishing and catching crabs to "battling" with water-filled balloons.

Are children of these days

having as much fun? I don't know. There seem to be a lot of dependence on toys off the shelves, electronic games and being glued to the TV screen. I get the feeling that not as much time is spent with one's peers in the fields interacting with each other. One cannot seem to have fun without the multimedia computer, without the electronic games, without the roller blades and without the weekly visits to fast food joints.

Yes, we can readily acknowledge the benefits of modern technology, whether it be the telephone, computer, television and we need them all. Life now will certainly be tough without them. But looking back again, I have no doubts in my mind at all that if I had a choice between then and now, I would still readily choose the yesteryears because life then not only quality it gave us fun. It taught us friendship and competitiveness, it kept us fit and above all it helped us grow up into balanced and well rounded people.

Sug Kim Hock
Kuala Lumpur

<p>THE QUESTIONNAIRES FORMAT</p>

QUESTIONNAIRES

**Department of Landscape
The University of Sheffield
3rd Floor, Art Tower, Sheffield, S10 2TN
South Yorkshire
ENGLAND**

November, 1999

SECTION A

BACKGROUND INFORMATION

In this section I would like to start by collecting your personal and family details as the following :

A.1 Sex (Mark X in the circle)

- Boy ☐
Girl ☐

A.2 How old are you? (Mark X in the circle)

- 9 years old ☐
10 years old ☐
11 years old ☐
12 years old ☐

A.3 What is your ethnic group? (Mark X in the circle)

- Malay ☐
Chinese ☐
Indian ☐
Others (Specify) ☐
.....

A.4 What is your parents' or guardian's highest education level? (Mark X in the circle)

	Father	Mother	Guardian
Primary School	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Secondary School	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polytechnic/College	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
University	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others (Please Specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
.....			

A.5 What is your parents' total household income, from all sources, before tax for the last twelve months? (Mark X in the circle. Get a help from teacher for this information)

- | | | |
|-----------------|---------|-----------------------|
| Less than ----- | RM500 | <input type="radio"/> |
| RM501 ----- | RM1000 | <input type="radio"/> |
| RM1001 ----- | RM2000 | <input type="radio"/> |
| RM2001 ----- | RM3500 | <input type="radio"/> |
| RM3501 ----- | RM5000 | <input type="radio"/> |
| RM5001 ----- | RM7500 | <input type="radio"/> |
| More than ----- | RM10000 | <input type="radio"/> |

A.6 What type of residence you live in? (Mark X in the circle)

- Bungalow ☐
Semi-detached ☐
Terraced house ☐
Village house ☐
Low-cost house ☐
Condominium ☐
3- 5 storeys flat ☐
More than 5 storeys flat ☐
Others (Please specify) ☐
.....

A.7 Which district or area do you live in? (If unsure or do not know, please write your home address below)

.....
.....

SECTION B

ENVIRONMENTAL SETTINGS

This section deals with information regarding various type, location and contextual aspect of an ideal environment you dreamed or preferred.

B.1 Where would you prefer to live? Why? (Mark X in the circle). Why?

Area	Reason
In an urban area	<input type="radio"/>
In sub-urban area	<input type="radio"/>
In a village	<input type="radio"/>
In a rural area	<input type="radio"/>
In plantation estate area	<input type="radio"/>
Others (Please specify)	<input type="radio"/>
.....	

B.2 What kind of surrounding would you prefer closed to your ideal home environment? (Mark X in the circle). Why? (Write in the space below)

Preferred Environment	Reason
Urban environment	O
Housing area	O
Park and garden	O
Village environment	O
Communal space	O
Forest	O
River front	O
Mountain/ Hilly area	O
Beach front	O
Plantation estate	O
Others (Please specify)	O
.....	O

B.3 If you were to design your ideal home environment, what would it be? (Mark X in the circle) Why? (Write in the space below)

Nature or Period of Environment	Reason
Futuristic	O
Present	O
Traditional	O
Others (Please specify)	O
.....	O

B.4 How do you rate the following spaces if they were be part of your ideal external home environment? (Mark X in the circle)

	Very Important	Important	Less Important	Not Important
Road side	O	O	O	O
Entrance gate	O	O	O	O
Car porch	O	O	O	O
Front garden	O	O	O	O
Back garden	O	O	O	O
Space in between the building	O	O	O	O
Service yard	O	O	O	O
Back alley	O	O	O	O
Swimming pool area	O	O	O	O
Pond area	O	O	O	O
Space under the tree	O	O	O	O
Grass area	O	O	O	O
Sheltered area	O	O	O	O
Play yard	O	O	O	O
Pet corner	O	O	O	O
Flower area	O	O	O	O
Outdoor seating area	O	O	O	O
Others (please specify)	O	O	O	O
.....O	O	O	O	O

SECTION C

IMAGINARY CONCEPTS OF HOME ENVIRONMENT

In this section I would like to elicit an imaginary concepts of your ideal home environment that you may have. You are free to express ideas either based on your imigation, experience and creative thinking.

C.1 Imagine that you have magical power to turn your ideal home environment into any kind of spaces you wish. What would it be? Why?

Kind of spaces wished	Reason for selection
.....
.....
.....

C.2 How would you represent ideal external home environment? Why?

(Mark X in the circle)

Representation

Reason

Heaven like environment	<input type="radio"/>
Natural environment	<input type="radio"/>
Symbolic environment	<input type="radio"/>
Mysterious environment	<input type="radio"/>
Adventurous environment	<input type="radio"/>
Others (Please specify)	<input type="radio"/>
.....	<input type="radio"/>

C.3 Imagine, what object would you rather be transformed into, in an ideal external home environment? (Mark X in the circle) Why?

Object for transformation

Reason

Car	<input type="radio"/>
Rock	<input type="radio"/>
Seating	<input type="radio"/>
Play equipment	<input type="radio"/>
Statue	<input type="radio"/>
Fountain	<input type="radio"/>
Sculpture	<input type="radio"/>
Ghost	<input type="radio"/>
Flower	<input type="radio"/>
Fruit tree	<input type="radio"/>
Park/ garden	<input type="radio"/>
Bird nest	<input type="radio"/>
Play equipment	<input type="radio"/>
Pond	<input type="radio"/>
Praying/ Worship feature	<input type="radio"/>
Fish	<input type="radio"/>
Insect	<input type="radio"/>
Green grass	<input type="radio"/>
Bicycle	<input type="radio"/>
Pet	<input type="radio"/>
Motorcycle	<input type="radio"/>
Others (Please specify)	<input type="radio"/>
.....	<input type="radio"/>
.....	<input type="radio"/>

C.4 How important are the following characteristics to your Ideal home environment ? (Mark X in the circle)

Characteristic	Very Important	Important	Less Important	Not Important
Comfort	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pleasure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Caring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Defensible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dominance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Familiarity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Boundaryless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Privacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fun	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Freedom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beautiful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others (Please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

C.5 How would you like your space in ideal home environment to be protected? (Mark X in the circle)

Protection	
Underground	<input type="radio"/>
By doors	<input type="radio"/>
By hidden access	<input type="radio"/>
By fence	<input type="radio"/>
By wall	<input type="radio"/>
By planting	<input type="radio"/>
Surrounded by water	<input type="radio"/>
Above the water	<input type="radio"/>
Above the ground	<input type="radio"/>
Floating in the air	<input type="radio"/>
By changed of level	<input type="radio"/>
Others (Please specify)	<input type="radio"/>
.....	<input type="radio"/>

C.6 Describe the spaces you would prefer most in your ideal home environment in order of preference. (Write in the space below)

Preferred space	Rank/ Order
.....	1
.....	2
.....	3
.....	4

C.7 What rules would you set for others allowed to be in your ideal home environment? (Write in the space below)

i).

ii).

iii).

iv).

C.8 What do you need to provide in order to protect your ideal home environment from:

i). Rain ? (Write in the space below)

.....

.....

ii). Heat ? (Write in the space below)

.....

.....

iii). Strong wind ? (Write in the space below)

.....

.....

C.9 What would you prefer your Ideal home environment to be made of ? Why? (Write in the space below)

Made of	Reason for selection
i).
ii).
iii).

C.10 What name would you give to describe your Ideal home environment? Why? (Write in the space below)

Name chosen	Reason for selection
.....
.....
.....

SECTION D

TRANSFER OF EXPERIENCE AND ENVIRONMENTAL DYNAMICS

In this section I like to know how your past experience has been transferred into the conception of environment. This section will also consider the dynamic use of spaces in the ideal home environment. The objective is to understand the dynamic conception of ideal external home environment spaces other than the normal one, for instance the sign of exploration and quest for adventure.

D.1 Where would the design ideas for your ideal external home environment come from? (Write in the space below)

- i).
ii).
iii).

D.2 What is the use or purpose of your ideal external home environment? (Write in the space below)

- i).
ii).
iii).

D.3 Who would be your favourite people allowed to share the spaces in your ideal external home environment? (Write in the space below)

- i).
ii).
iii).

D.4 What would your favourite animals be in your ideal external home environment? (Write in the space below)

- i).
ii).
iii).

D.5 What favourite objects would be part of your ideal external home environment? (Write in the space below)

- i).
ii).
iii).

D.6 Name the spaces you dislike most in your present external home environment in order of preference. (Write in the space below)

Disliked space	Rank/ Order
.....	1
.....	2
.....	3

D.7 What colours are important for your ideal external home environment in order of preference? (Write in the space below)

Important colour	Rank/ Order
.....	1
.....	2
.....	3
.....	4

D.8 What things would you like to see most in your ideal external home environment in order of preference? (Write in the space below)

Things like to see	Rank/ Order
.....	1
.....	2
.....	3
.....	4

D.9 What sound would you like to hear most in your ideal external home environment in order of preference? (Write in the space below)

Sound	Rank/ Order
.....	1
.....	2
.....	3
.....	4

D.10 What things would you like to touch or hold most in your ideal external home environment in order of preference? (Write in the space below)

Things to touch or hold	Rank/ Order
.....	1
.....	2
.....	3
.....	4

D.11 What kind of smell would you like most in your ideal external home environment in order of preference? (Write in the space below)

Smell	Rank/ Order
.....	1
.....	2
.....	3
.....	4

SECTION E

THE DESIRABILITY OF BASIC AMBIVALENCE IN THE SPATIAL CONFIGURATION OF THE IDEAL EXTERNAL HOME ENVIRONMENT.

In this section I like to explore your preference between two opposite impulses.

E.1 Which of these following values do you prefer most as part of your ideal external home environment? (Select the code and mark in the circle)

Code to select

Highly preferred	000
Preferred	000
Less preferred	000
Not preferred	000

Value or space character

Open vast space	000
Concentrated body of space	000
Static space	000
Free non-barrier space	000
Independent space	000
Protective space	000
Initiative and discovery	000

Symbolically functionable	000
Others (Please specify)	

.....	000
-------	-----

Value or space character

Secure self-enclosed space	000
Continuous space	000
Dynamic space	000
Controlled space	000
Dependent space	000
Unprotective space	000
Passive and complacent	000

Practical and rational	000
------------------------	-----

.....	000
-------	-----

E.2 How would you prefer to connect the movement between spaces in your ideal home environment? (Select the code and mark in the circle).

Code to select

Highly preferred	000
Preferred	000
Less preferred	000
Not preferred	000

Change of different level	000
Underground	000
On the ground	000
Others (Please specify)	

.....	000
-------	-----

Flat surface	000
On the ground surface	000
Above the ground	000

.....	000
-------	-----

SECTION F

CONCEPT OF PERMANENCE AS AFFECTED BY THAT OF EFFICIENCY

This section is interested to find out your values, and definitions of certain aspect of ideal external home environment.

F.1 How do you rate the importance of these space values to your ideal external home environment? (Select the code and mark in the circle).

Code to select

- Very important ☐ ☐ ☐
- Important ☐ ☐ ☐
- Less important ☐ ☐ ☐
- Not important ☐ ☐ ☐

Character of space/area	Rating of importance
Clean	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Fresh	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Tidy	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Quiet	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Functional	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Noisy	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Complete	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Well preserved	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Pleasant	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Reassuring	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Secure	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Frightful	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Fantasy	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Adventurous	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Messy	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Beautiful	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Colourful	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Conducive	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Peaceful	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Stimulating	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Comfortable	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Exposed	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Others (Please specify)	
.....	<input type="radio"/> <input type="radio"/> <input type="radio"/>

F.2 How would you like to arrange and display items/features in your ideal external home environment? (Write in the space below)

.....

.....

.....

.....

SECTION G

ACTIVITY SETTINGS

This section deals with information regarding various type, location and contextual aspects of activity you prefer in ideal environment.

G.1 In what kind of ideal environment setting would you prefer for your favourite activities? Why? (Mark X in the circle and write for the reason)

Kind of setting	Reason for selection
Urban environment	<input type="radio"/>
Sub-urban environment	<input type="radio"/>
Housing neighbourhood	<input type="radio"/>
Village environment	<input type="radio"/>
Rural environment	<input type="radio"/>
Plantation estate	<input type="radio"/>
Others (Please specify)	
.....	<input type="radio"/>

G.2 What would your favourite activities be in your ideal home environment? Why? (Write with the activity you like most first, and give a reason for activity chosen)

Favourite activity	Reason
.....	1.....
.....	2.....
.....	3.....
.....	4.....

G.3 What kind of space would you prefer for the above activities? Why? (Write in the space below)

Space for activity	Reason for selection
.....	
.....	
.....	

G.4 What would make spaces in your ideal home environment good and suitable for activity? (Write in the space below)

.....

.....

.....

SECTION H
IMAGINARY CONCEPTS OF ACTIVITY

This section serves to know your imaginative concept of activity.

H.1 How would you rate the following environmental values for your activities in ideal home environment? (Mark X in the circle)

Characteristic	Very Important	Important	Less Important	Not important
Safe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comfortable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Freedom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beautiful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Orderly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Messy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clean	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visually hidden	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Open	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Privacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Changeable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others (Please specify)				
.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H.2 What rules would you set for those who like to participate in your activity? (Write in the space below)

i)

ii).....

iii).....

H.3 Imagine If you were to be transformed into play equipment in home environment, what would you be? Why?

Type of play equipment	Reason for selection
.....	
.....	
.....	

SECTION I
CONCEPT OF PERMANENCE

The purpose of this section is to understand your requirement for certain forms or characters of activity in context of time.

I.1 How would you rate the following activity values in your ideal home environment? (Mark X in the circle).

Characteristic	Very important	Important	Less important	Not important
Satisfaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Winning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Individual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adventure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exploration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relaxation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Play/ Game	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voluntary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Freedom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Peace of mind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Peace of emotion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mystery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Release energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Socialising	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exercise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Active	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recreation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fun	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Happiness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stimulation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fantasy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Healthy development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In natural environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others (Please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I.2 How would you rate the following types of activity in your ideal home environment? (Mark X in the circle)

Types of activity	Most Preferred	Preferred	Less Preferred	Not Preferred
Individual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Futuristic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Modern	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Traditional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION J
TRANSFER OF EXPERIENCE

The purpose of this section is to understand and learn how your past experience and knowledge influence the perception of activities in home environment.

J.1 Where do the ideas of your preferred activities in ideal home environment come from? (Write in the space below).

- i)
- ii).....
- iii).....

J.2 Who would be your favourite people allowed to participate in your activities in ideal home environment? Why? (Write in the space below).

Favourite people	Reasons
i)
ii)
iii)

J.3 What favourite animals would you take while doing activity in your ideal home environment? (Write in space below).

i).....
ii).....
iii).....

J.4 What objects would you prefer for in your activity in ideal home environment? (Write in space below).

i).....
ii).....
iii).....

J.5 At what time would you prefer spend for your favourite activities in ideal home environment? (Mark X in the circle)

<i>Morning (8-a.m. -12 p.m)</i>	<input type="radio"/>
<i>Afternoon (2 p.m. - 4 p.m.)</i>	<input type="radio"/>
<i>Late afternoon (4 p.m. - 7 p.m.)</i>	<input type="radio"/>
<i>Night time (8 p.m. - 10 p.m.)</i>	<input type="radio"/>
<i>Others (Please specify)</i>	<input type="radio"/>
.....	<input type="radio"/>

J.6 How long would you spend for your favourite activities in ideal home environment? (Mark X in the circle)

<i>Less than 10 minutes</i>	<input type="radio"/>
<i>11 - 30 minutes</i>	<input type="radio"/>
<i>More than one hour</i>	<input type="radio"/>

J.7 How often would you do your favourite activities in ideal home environment? (Mark X in the circle).

<i>Everyday</i>	<input type="radio"/>
<i>Three times a week</i>	<input type="radio"/>
<i>Week end</i>	<input type="radio"/>
<i>Once a week</i>	<input type="radio"/>
<i>Others (Please specify)</i>	<input type="radio"/>
.....	<input type="radio"/>

J.8 Which spaces or areas you are not allowed to go for your favourite activities in present home environment? Why? (Write in the space below).

Space or areas not allowed to go	Reasons
i)
ii)
iii)

J.9 What are the reasons that prevent you from doing your favourite activities in home environment? (Mark X in the circle)

<i>Weather (raining/ hot day)</i>	<input type="radio"/>
<i>Houseworks</i>	<input type="radio"/>
<i>School home works</i>	<input type="radio"/>
<i>Unsafe home environment</i>	<input type="radio"/>
<i>Unsafe facilities</i>	<input type="radio"/>
<i>Lack of space outdoor</i>	<input type="radio"/>
<i>Others (please specify)</i>	<input type="radio"/>
.....	<input type="radio"/>
.....	<input type="radio"/>

J.10 What are the things you like most about activities at your present home environment? (Write in the space below).

.....
.....
.....
.....

J.11 What are the things you dislike about activities at your present home environment? (Write in the space below).

.....
.....
.....
.....

J.12 What are the things you like to be provided or added for your activities in your present home environment? (Write in the space below).

.....
.....
.....
.....

J.13 What is your opinion about the provision of facilities that support your favourite activities in your present home environment? (Write in the space below).

.....
.....
.....
.....

THE ESSAYS FORMAT

ESSAY

Department of Landscape
The University of Sheffield
3rd Floor, Art Tower, Sheffield, S10 2TN
South Yorkshire
ENGLAND

November, 1999.

"MY DESIGN OF IDEAL HOME ENVIRONMENT."

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Name of Author:
Age: Year: Class:
Name of School:
Date:

"MY FAVOURITE ACTIVITIES IN IDEAL HOME ENVIRONMENT."

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Name of Author:
Age: Year: Class:
Name of School:
Date:

**DETAIL OF STATISTICAL
ANALYSIS CARRIED OUT FOR CHAPTER 8**

Vegetation Analysis: Children's Drawings

Type of Vegetation	Malay Children Percentage(%)	Chinese Children Percentage(%)	Indian Children Percentage(%)
Tree	55	58	40
Fruit tree	21	24	42
Plant in pot	34	37	58
Forest	5	5	0
Shrubs	42	37	42
Plantation	18	3	8
Grass	53	66	84
Flowers	21	58	42
Aquatic plants	8	21	16
Vegetables	3	5	0

Type of Vegetation	Boy Percentage(%)	Girl Percentage(%)	All Children Percentage(%)
Tree	53	57	58
Fruit tree	30	28	29
Plant in pot	35	49	43
Forest	2	4	4
Shrubs	22	53	40
Plantation	9	9	9
Grass	59	74	68
Flowers	22	53	40
Aquatic plants	13	12	15
Vegetables	4	3	3

Waterbody Analysis

Type of Waterbody	Malay Children Percentage(%)	Chinese Children Percentage(%)	Indian Children Percentage(%)
Fountain	11	18	13
Aquarium	5	5	0
Pond	40	37	63
Pool	16	24	18
River	13	16	8
Waterfall	5	5	3
Sea/beach	0	8	3
Lake	0	3	0
Well	5	0	5

Type of Waterbody	Boy Percentage(%)	Girl Percentage(%)	All Children Percentage(%)
Fountain	17	12	14
Aquarium	2	4	4
Pond	52	43	47
Pool	13	24	28
River	20	7	12
Waterfall	4	4	4
Sea/beach	2	4	4
Lake	2	0	1
Well	4	3	4

Climatic Aspect Analysis

Climatic Elements	Malay Children Percentage(%)	Chinese Children Percentage(%)	Indian Children Percentage(%)
Sun	84	53	87
Cloud	74	55	82
Wind		16	11
Snow		3	
Lightening		3	
Rainbow			
Moon (Night)			

Child-animals

CHILDREN'S RELATIONSHIP WITH ANIMALS AND WILDLIFE

Analysis of Children's Drawings (Malay Children) - N=38

ANIMALS	DRAWINGS FREQUENCY	DRAWING TOTAL NO.	SPATIAL/ LOCATION	THEMATIC ASPECT/REASON
Fish	11	29	river-1(5), pond-1(0), 3(4)	compositional component
Bird	17	45	tree-2(9), cage-2(2), sky-12(47)	compositional component
Chicken	4	11	compound-4(12)	compositional component
Duck	4	11	compound-1(1), pond-3(7)	compositional component
Cat	1	3	compound-1(1)	behavioural comp. appearance
Farm animal	1	3	field-1(1)	compositional component
Tortoise	1	3	compound-1(1)	behavioural comp. appearance
Rabbit	1	3	rabbit house-1(1)	behavioural comp. appearance
Dog	0	0		
Frog	1	3	pond-1(1)	compositional component
Crab	0	0		
Butterfly	0	0		
Bee	0	0		

Note: Number after spatial location represents number of spatialization and the number in bracket represents number of animal drawn

CHILDREN'S RELATIONSHIP WITH ANIMALS AND WILDLIFE

Analysis of Children's Drawings (Chinese Children) - N=38

ANIMALS	DRAWINGS FREQUENCY	DRAWING TOTAL NO.	SPATIAL/ LOCATION	THEMATIC ASPECT/REASON
Fish	13	34	river-2(9), pond-4(32), aqua-2(8)	compositional, behavioural
Bird	8	21	tree-2(4), sky-9(32)	compositional, behavioural
Chicken	4	11	compound-3(9), farm-1(2)	compositional component
Duck	4	11	river-1(1), pond-3(8)	compositional, comp. behaviour
Cat	3	8	compound-2(2), farm-2(2)	compositional, comp. behaviour
Farm animal	1	3	sky-1(1)	compositional
Tortoise	1	3	pond-1(1)	compositional component
Rabbit	2	5	compound-2(3)	behavioural comp. appearance
Dog	3	8	house-1(1), comp-1(1), sky-1(1)	behavioural comp. appearance
Frog	1	3	river-2(4)	compositional, comp. behaviour
Crab	2	5	compound-3(8)	compositional, comp. behaviour
Butterfly	3	8	compound-1(1)	compositional comp. behaviour
Bee	1	3	compound-1(1)	compositional comp. behaviour

CHILDREN'S RELATIONSHIP WITH ANIMALS AND WILDLIFE

Analysis of Children's Drawings (Indian Children) - N=38

ANIMALS	DRAWINGS FREQUENCY	DRAWING TOTAL NO.	SPATIAL/ LOCATION	THEMATIC ASPECT/REASON
Fish	16	42	river-1(5), pond-15(105)	compositional, behavioural
Bird	22	58	pond-1(1)	compositional, behavioural
Chicken	2	5	compound-2(2), sky-2(1), cage-1(1)	compositional component
Duck	0	0	compound-3(3)	compositional component
Cat	0	0		
Farm animal	0	0		
Tortoise	0	0		
Rabbit	0	0		
Dog	0	0		
Frog	0	0		
Crab	0	0		
Butterfly	0	0		
Bee	0	0		

Sat: 11/9/2000

Gender-animals

ATTACH-PEOPLE

CHILDREN'S RELATIONSHIP WITH ANIMALS AND WILDLIFE

Analysis of Children's Drawings - Gender difference Boys=46, Girls=68 Total N=114

ANIMALS	BOY FREQUENCY	GIRL FREQUENCY	TOTAL	BOY FREQUENCY	GIRL FREQUENCY	TOTAL	BOY FREQUENCY	GIRL FREQUENCY	TOTAL
Fish	17	25	42	37	37	70	137	207	
Bird	18	31	49	39	46	43	178	213	391
Chicken	5	8	12	13	9	11	18	12	30
Duck	1	7	8	2	10	7	3	14	17
Cat	2	2	4	4	3	4	3	2	5
Farm Animal	2	0	2	4	0	4	2	0	2
Tortoise	1	1	2	2	2	1	1	1	2
Rabbit	2	2	4	4	3	4	4	2	6
Dog	1	1	2	2	2	2	1	2	3
Frog	1	1	2	2	2	2	1	1	2
Crab	1	1	2	2	2	2	2	2	4
Butterflies	0	5	5	0	7	4	0	9	9
Bees	1	1	2	2	2	2	1	1	2

Animals	Drawings %	Malay Children	Chinese Children	Indian Children
Fish	29	34	42	37
Bird	45	21	58	39
Chicken	11	11	5	13
Duck	11	11	5	2
Cat	3	8	0	4
Farm Animal	3	3	0	4
Tortoise	3	3	0	2
Rabbit	3	5	0	4
Dog	0	8	0	2
Frog	3	3	0	2
Crab	0	5	0	2
Butterflies	0	8	0	7
Bees	0	3	0	2

Animals	Drawings %	Malay Children	Chinese Children	Indian Children
Fish	37	37	37	
Bird	39	46	43	
Chicken	13	9	11	
Duck	2	10	7	
Cat	4	3	4	
Farm Animal	4	0	4	
Tortoise	2	2	2	
Rabbit	4	3	4	
Dog	2	2	2	
Frog	2	2	2	
Crab	2	2	2	
Butterflies	0	7	4	
Bees	2	2	2	

Wed 20 Sept 2000

Analysis of Children's Drawings - Attachment to people

PEOPLE	MALAY CHILDREN FREQUENCY	CHINESE CHILDREN FREQUENCY	INDIAN CHILDREN FREQUENCY
Adults	11	18	29
Girls	1	18	17
Boys	80	11	71
Happy smiling face	34	33	67
Undifferentiated figure			
Total figures in all drawings			452
Total differentiated figures			367

Analysis of Children's Drawings - Attachment to people

PEOPLE	ALL CHILDREN PERCENTAGE
Adults	9
Girls	15
Boys	77
Happy smiling face	34

Analysis of Children's Drawings - Attachment to people

PEOPLE	ALL CHILDREN PERCENTAGE
Adults	25
Girls	15
Boys	60
Happy smiling face	57

Analysis of Children's Drawings - Setting for People

FIGURE SETTINGS	MALAY CHILDREN FREQUENCY	CHINESE CHILDREN FREQUENCY	INDIAN CHILDREN FREQUENCY
Natural Settings	12	5	17
Home Compound	23	36	59
Playground/ play area	0	2	2
Street	9	2	11
Indoor	5	1	6

Analysis of Drawings

DIMENSION OF QUALITATIVE ASPECTS	ALL CHILDREN		TOTAL
	Boy	Girl	Boy & Girl
	%	%	%
A: SPACE DYNAMIC			
1. Environmental settings			
urban	20	13	16
rural/ village	33	28	30
compound	47	59	54
2. Scale/ size of elements			
to scale	67	74	71
out of scale	33	26	29
3. Topographical connection			
flat land	32	47	41
steps/ stairs/ ramp	7	4	5
slope	3	3	3
bridge	6	2	3
fencing	22	18	20
street	11	7	9
pedestrian path	18	19	19
4. Exploration/ adventurous			
hills/ mountain	56	51	65
river/ waterbody	29	21	26
forest	15	21	19
sea/ beach	0	7	5
B: ASPECT OF PERMANENCE			
1. Environmental category			
man-made	65	70	68
nature	35	30	32
2. Efficiency			
clean	50	38	44
orderly/ organised	34	35	33
cluttered	16	27	23
3. House character			
traditional/ vernacular	17	20	18
modern (typical urban house)	81	77	79
fancy/ fantasy	2	3	3

Analysis of Drawings

DIMENSION OF QUALITATIVE ASPECTS	MALAY	CHINESE	INDIAN
	Total	Total	Total
	%	%	%
A: SPACE DYNAMIC			
1. Environmental settings			
urban	21	19	8
rural/ village	34	38	18
compound	45	43	74
2. Scale/ size of elements			
to scale	82	76	55
out of scale	18	24	45
3. Topographical connection			
flat land	34	50	40
steps/ stairs/ ramp	6	7	5
slope	3	3	3
bridge	4	6	1
fencing	25	16	16
street	16	1	8
pedestrian path	13	17	26
4. Exploration/ adventurous			
hills/ mountain	47	47	64
river/ waterbody	28	29	15
forest	25	15	15
sea/ beach	0	9	6
B: ASPECT OF PERMANENCE			
1. Environmental category			
man-made	65	66	74
nature	35	34	26
2. Efficiency			
clean	54	50	49
orderly/ organised	36	39	32
cluttered	10	11	19
3. House character			
traditional/ vernacular	26	8	16
modern (typical urban house)	74	84	84
fancy/ fantasy	0	8	0

Analysis of Essay : ENVIRONMENTAL CONCEPTS (Gender difference)

ENVIRONMENTAL CHARACTER	All Children		
	Boy	Girl	Boy & Girl
	%	%	%
Aesthetically beautiful	29	29	29
Comfortable	4	13	10
Relax & Peaceful	24	21	22
Defensible	4	6	5
Openness and Freedom	4	5	4
Happy environment	12	7	9
Landscape dominance	16	15	16
Active environment	7	4	5
Total	100	100	100

Analysis of Essay

DIMENSION OF QUALITATIVE ASPECTS	MALAY	CHINESE	INDIAN
	%	%	%
	%	%	%
A: SPACE DYNAMIC			
1. Environmental settings			
urban	17	27	34
rural/ village	37	33	24
compound	46	40	42
2. Exploration/ adventurous			
hills/ mountain	12	0	21
river/ waterbody	39	56	66
forest	37	29	0
sea/ beach	12	15	13

Analysis of Questionnaire

DIMENSION OF QUALITATIVE ASPECTS	MALAY	CHINESE	INDIAN
	%	%	%
	%	%	%
2. Exploration/ adventurous			
hills/ mountain	11	18	11
river/ waterbody	41	34	47
forest	0	11	7
sea/ beach	48	36	36

Analysis of Essay

DIMENSION OF QUALITATIVE ASPECTS	BOY	GIRL	BOY & GIRL
	%	%	%
	%	%	%
A: SPACE DYNAMIC			
1. Environmental settings			
urban	28	24	26
rural/ village	30	32	31
compound	42	44	43
2. Exploration/ adventurous			
hills/ mountain	8	15	12
river/ waterbody	70	50	57
forest	14	15	14
sea/ beach	8	20	16

Analysis of Questionnaire

DIMENSION OF QUALITATIVE ASPECTS	BOY	GIRL	BOY & GIRL
	%	%	%
	%	%	%
2. Exploration/ adventurous			
hills/ mountain	7	21	14
river/ waterbody	42	35	39
forest	12	0	7
sea/ beach	39	44	40

Analysis of Drawings : ENVIRONMENTAL CONCEPTS

ENVIRONMENTAL CHARACTER	MALAY	CHINESE	INDIAN
	Total	Total	Total
	%	%	%
Aesthetically beautiful	10	20	15
Comfortable	18	15	16
Relax & Peaceful	20	11	17
Defensible	9	12	12
Openness and Freedom	17	14	16
Happy environment	8	9	5
Landscape dominance	13	9	10
Active environment	6	10	8

Analysis of Drawings : ENVIRONMENTAL CONCEPTS

ENVIRONMENTAL CHARACTER	ALL CHILDREN		
	BOY	GIRL	TOTAL
	%	%	%
Aesthetically beautiful	14	17	16
Comfortable	14	18	16
Relax & Peaceful	14	16	15
Defensible	12	11	11
Openness and Freedom	16	15	16
Happy environment	8	6	7
Landscape dominance	11	10	10
Active environment	10	7	8

Analysis of Essay : ENVIRONMENTAL CONCEPTS (Ethnic difference)

ENVIRONMENTAL CHARACTER	MALAY	CHINESE	INDIAN
	Total	Total	Total
	%	%	%
Aesthetically beautiful	29	23	36
Comfortable	20	4	3
Relax & Peaceful	15	29	25
Defensible	2	5	10
Openness and Freedom	6	5	1
Happy environment	11	13	2
Landscape dominance	13	14	20
Active environment	4	7	3
Total	100	100	100

17-Oct-00 Note: F.R is a Frequency Rate

Analysis of Children's Drawings									
SPATIAL RELATIONSHIP									
12 JULY 2001									
SPATIAL LOCATIONS	MALAY			CHINESE			INDIAN		
	FREQ			FREQ			FREQ		
	Boy	Girl	%	Boy	Girl	%	Boy	Girl	%
HOUSE LOCATION									
Centre	5	12	47	2	11	37	9	14	82
Left	2	3	13	4	9	37	0	1	3
Right	4	4	21	5	3	23	4	5	24
Back	4	3	19	1	0	3	2	2	11
	16	22		12	23		15	22	
FRONT									
Waterbody	10	8	12	4	4	5	10	11	11
Barner/ Linkage	15	4	12	5	14	14	12	10	12
Vegetation	16	28	28	13	34	35	20	40	33
Open space	14	11	16	7	18	10	12	20	17
Facilities	4	9	8	5	11	11	8	16	13
Vehicle	5	2	5	0	2	1	2	0	1
Figure	7	8	10	3	8	8	8	9	18
Animals	5	3	7	5	5	7	2	3	3
	80	71		45	96		74	106	
BACK									
Waterbody	2	1	9	3	0	9	0	0	0
Barner/ Linkage	3	4	20	2	3	15	5	2	39
Vegetation	7	15	63	10	15	76	1	10	61
Figure	1	2	8	0	0	0	0	0	1
	13	22		15	18		6	12	
LEFT									
Waterbody	8	5	15	3	3	11	4	5	1
Barner/ Link	7	5	16	1	0	2	3	14	21
Vegetation	8	10	25	8	16	46	12	15	33
Facilities	2	8	13	1	2	6	3	2	6
Vehicles	1	0	1	0	0	0	0	1	1
Figure	2	2	5	2	2	8	5	1	7
Open space	5	8	18	4	4	15	8	4	15
Animals	2	2	5	1	5	12	2	2	5
	33	40		20	32		37	44	
RIGHT									
Waterbody	2	4	12	5	9	15	1	1	4
Barner/Link	4	3	15	0	0	0	2	4	13
Vegetation	3	15	38	5	19	25	12	11	50
Open space	3	4	14	3	36	41	3	5	18
Facilities	1	1	4	3	9	12	1	2	6
Figure	4	3	14	1	5	6	2	1	6
Vehicle	0	1	2	0	0	0	1	2	0
	17	31		17	78		21	26	
BACKGROUND									
Hills	5	8	75	3	6	84	4	7	55
Sun	4	2	25	3	2	36	3	6	45
	9	8		6	8		7	13	
SIZE SIMILARITY									
Barner/ Link	1	4	9	0	3	8	0	1	2
Vegetation	11	15	46	5	16	52	7	11	35
Facilities	3	3	5	0	2	5	6	5	21
Figure	8	12	35	5	9	35	9	13	42
	23	34		10	30		22	30	
GROUPING									
Waterbody	1	1	7	0	0	0	0	0	1
Vegetation	8	7	45	5	14	45	3	9	15
Facilities	2	0	7	0	2	5	7	4	13
Figure	4	2	21	3	9	29	7	11	22
Animals	4	2	21	3	6	21	17	24	50
	17	12		11	31		34	48	

Animal-Spatial

CHILDREN'S RELATIONSHIP WITH ANIMALS AND WILDLIFE									
Analysis of Children's Drawings									
ANIMALS	SPATIAL LOCATION (%)								
	BOYS					GIRLS			
	pond	river	aquas	sky	nest	cage	comp	field	shelter
Fish	35	4	2					31	3
Bird				63	11	9	7		60
Chicken					20		2		9
Duck	2							7	2
Cat					2		2		4
Farm animal					2		2		2
Tortoise	4							2	
Rabbit						11			2
Dog								2	
Frog	2							2	
Crab	2								2
Butterflies									7
Bees						2			2
TOTAL	43	6	2	63	11	9	31	2	17

Wednesday 20 Sept. 2000

Climatic Elements	Boy		Girl		All Children	
	Percentage(%)		Percentage(%)		Percentage(%)	
Sun	70		57		62	
Cloud	61		59		60	
Wind	11		7		9	
Snow	0		2		1	
Lightening	2				1	
Rainbow						
Moon (Night)						

Analysis of Children's Drawings									
SPATIAL RELATIONSHIP									
12 JULY 2001									
SPATIAL LOCATIONS	MALAY			CHINESE			INDIAN		
	FREQ			FREQ			FREQ		
	Boy	Girl	%	Boy	Girl	%	Boy	Girl	%
HOUSE LOCATION									
Centre	47	37	82	40	55	49			
Left	13	37	3	14	19	17			
Right	21	23	24	30	45	23			
Back	19	3	11	16	24	11			
									100
FRONT									
Waterbody	12	5	11	14	10	11			
Barner/ Linkage	12	14	12	19	12	15			
Vegetation	28	35	33	29	38	35			
Open space	16	10	17	11	12	12			
Facilities	8	11	13	10	14	12			
Vehicle	5	1	1	4	2	3			
Figure	10	8	9	10	9	10			
Animals	7	7	3	2	3	2			
									100
BACK									
Waterbody	9	9	0	15	2	7			
Barner/ Linkage	20	15	39	29	17	22			
Vegetation	63	78	61	53	77	67			
Figure	8	0	0	3	4	4			
									100
LEFT									
Waterbody	15	11	1	14	12	13			
Barner/ Link	15	2	21	12	8	10			
Vegetation	25	46	33	31	39	35			
Facilities	13	6	6	7	11	9			
Vehicles	1	0	1	1	1	1			
Figure	5	8	7	10	5	8			
Open space	18	15	15	19	15	17			
Animals	5	12	5	6	8	7			
									100
RIGHT									
Waterbody	12	15	4	15	13	14			
Barner/Link	15	0	13	11	7	8			
Vegetation	38	25	50	36	43	41			
Open space	14	41	18	16	14	15			
Facilities	4	12	6	9	12	11			
Figure	14	6	6	13	9	10			
Vehicle	2	0	2	0	2	1			
									100
BACKGROUND									
Hills	75	64	55	55	66	61			
Sun	25	36	45	45	34	39			
									100
SIZE SIMILARITY									
Barner/ Link	9	8	2	2	9	8			
Vegetation	49	52	35	42	45	43			
Facilities	5	5	21	16	11	13			
Figure	35	33	42	40	36	38			
									100
GROUPING									
Waterbody	7	0	0	1	1	1			
Vegetation	45	45	15	23	37	32			
Facilities	7	5	13	15	6	10			
Figure	21	29	22	20	23	21			
Animals	21	21	32	40	33	36			

HOUSE LOCATION			
Boy	Girl	All %	
40	55	49	
14	19	17	
30	45	23	
16	24	11	
			100

ATTACH-PEOPLE

Analysis of Children's Drawings: SETTINGS for people			
FIGURE SETTINGS	ALL CHILDREN		
	PERCENTAGE		
	Boy	Girl	TOTAL
Natural Settings	8	4	6
Home Compound	51	56	90
Playground/ play area	32	23	27
Street	5	1	3
Indoor	4	4	4
Analysis of Children's Drawings: SETTINGS for people			
FIGURE SETTINGS	ALL CHILDREN		
	PERCENTAGE		
	M	C	I
Natural Settings	18	4	1
Home Compound	82	72	46
Playground/ play area	2	22	47
Street	12	0	0
Indoor	5	2	4
WEDNESDAY 25 JULY 2001			

Drawing Analysis: Elemental Colour Preference

COLOURS ELEMENTS	MALAY %	CHINESE %	INDIAN %	COLOURS ELEMENTS	BOY %	GIRL %	ALL %
GREEN				GREEN			
Planting	56	50	56	Planting	48	56	53
Hills	8	3	7	Hills	4	6	6
Compound	23	19	24	Compound	26	19	22
Features	6	11	6	Features	14	5	8
Barrier	3	2	1	Barrier	3	1	2
Linkage	1	1	1	Linkage	1	1	1
Building comp.	4	8	4	Building comp.	3	7	6
Rainbows	0	1	1	Rainbows	1	1	1
Animal/Insect	0	5	0	Animal/Insect	0	3	2
BROWN				BROWN			
Building comp.	15	16	22	Building comp.	20	17	18
Linkage	13	8	9	Linkage	9	9	9
Barrier	8	7	16	Barrier	10	11	10
Feature	18	29	28	Feature	27	25	26
Compound	10	10	5	Compound	7	8	8
Tree trunk	28	21	17	Tree trunk	21	21	21
Waterbody	4	1	0	Waterbody	2	1	1
Sun	3	1	0	Sun	2	1	2
Hills	3	2	1	Hills	2	2	2
Animal	2	5	2	Animal	2	4	3
BLUE				BLUE			
Waterbody	33	30	35	Waterbody	37	30	33
Building comp.	22	27	12	Building comp.	18	21	20
Sky/cloud	33	33	31	Sky/cloud	32	33	32
Barrier	2	1	0	Barrier	2	0	1
Linkage	4	1	1	Linkage	2	1	2
Animal	2	1	4	Animal	3	2	2
Feature	4	5	14	Feature	15	9	8
Planting	0	3	3	Planting	6	4	2
YELLOW				YELLOW			
Barrier	10	17	26	Barrier	11	12	11
Feature	27	23	20	Feature	25	25	25
Flower	17	17	8	Flower	13	17	15
Sun	19	18	16	Sun	25	17	20
Linkage	6	7	4	Linkage	7	6	6
Compound	10	1	6	Compound	4	6	5
Building comp.	8	10	14	Building comp.	11	12	12
Hills	2	0	0	Hills	0	1	1
Waterbody	0	1	0	Waterbody	2	0	1
Animal	0	5	4	Animal	4	4	4
BLACK				BLACK			
Linkage	28	25	29	Linkage	28	28	28
Building comp.	17	12	34	Building comp.	22	28	26
Feature	24	50	24	Feature	31	24	27
Barrier	31	13	2	Barrier	13	15	14
Compound	0	0	2	Compound	3	0	1
Animal	0	0	7	Animal	3	4	4
RED				RED			
Building comp.	60	25	19	Building comp.	18	34	28
Feature	28	16	23	Feature	28	16	20
Barrier	4	1	0	Barrier	4	1	2
Linkage	4	4	2	Linkage	4	3	3
Flower	4	35	46	Flower	29	35	33
Rainbow	0	12	8	Rainbow	14	7	9
Animal	0	7	2	Animal	4	5	5

Drawing-Col/Element

ORANGE		ORANGE	
Feature	22	7	23
Sun	39	46	42
Flower	17	22	7
Building comp.	22	10	12
Barrier	0	7	2
Linkage	0	2	5
Insect	0	5	9
VIOLET		VIOLET	
Building comp.	17	30	35
Feature	83	41	31
Hills	0	7	0
Rainbow	0	4	0
Barrier	0	11	4
Flower	0	4	19
Waterbody	0	4	0
Linkage	0	0	12
GREY		GREY	
Compound	34	0	0
Barrier	33	0	0
Feature	33	38	50
Building comp.	0	24	25
Sky	0	3	0
Linkage	0	28	25
Waterbody	0	3	0
Animal	0	3	0
PINK		PINK	
Linkage	20	6	0
Flower	40	33	11
Building comp.	20	22	45
Feature	20	17	22
Hills	0	6	0
Animal	0	11	0
Barrier	0	6	0
Sky/sun	0	0	22

Analysis of Drawing CHILDREN'S COLOUR PREFERENCE FOR LANDSCAPE ENVIRONMENT

COLOURS	MALAY Element %	CHINESE Element %	INDIAN Element %	COLOURS	BOY Element %	GIRL Element %	ALL Element %
Green	22	19	20	Green	20	20	20
Brown	22	20	21	Brown	21	20	20
Blue	15	17	18	Blue	19	17	18
Yellow	14	13	7	Yellow	10	11	11
Red	7	12	7	Red	8	10	9
Black	5	1	8	Black	5	5	5
White	5	0	0	White	2	1	1
Orange	5	6	8	Orange	6	7	7
Violet	2	4	5	Violet	4	4	4
Pink	2	5	3	Pink	2	4	3
Grey	1	3	1	Grey	3	1	2
	100	100	100		100	100	100

Analysis of Drawing DOMINANT COLOURS FOR LANDSCAPE ENVIRONMENT

COLOURS	MALAY Element %	CHINESE Element %	INDIAN Element %	COLOURS	BOY Element %	GIRL Element %	ALL Element %
Green	28	29	53	Green	35	32	33
Brown	23	24	19	Brown	20	20	20
Blue	23	23	14	Blue	22	25	22
Yellow	14	15	10	Yellow	7	18	13
Red	3	3	2	Red	5	1	3
Black	3	3	0	Black	3	1	2
White	1	0	0	White	0	1	1
Orange	3	0	2	Orange	3	2	2
Violet	1	2	0	Violet	4	1	2
Pink	1	0	0	Pink	0	1	1
Grey	0	1	0	Grey	1	0	1
	100	100	100		100	100	100

Saturday 27 October 2000

EXPRESSIVE QUALITY

Analysis of Children's Drawings: Expressive Qualities

EXPRESSIVE QUALITIES	MALAY CHILDREN FREQUENCY	CHINESE CHILDREN FREQUENCY
	Boy Girl Total %	Boy Girl Total %
Main Themes		
Trees	14 18 32 11	10 4 14 9
Garden	12 18 30 11	5 15 20 13
Flowers	12 14 26 9	10 3 13 8
Waterbody	11 14 25 9	2 4 5 3
Spacious Compound	10 11 21 7	13 6 19 12
Big House	10 11 21 7	10 0 10 5
Barrier	10 8 18 6	8 3 13 9
Sunny Day	10 7 17 6	7 5 12 8
House at the centre	8 9 17 6	3 2 5 3
Linkage	10 6 16 6	6 0 6 4
Hills	7 8 15 5	4 4 8 5
Traditional/Village	5 9 14 5	1 1 2 1
Natural Setting	4 7 11 4	3 3 6 4
Play Equipment	6 3 9 3	7 3 10 5
Vehicle	4 1 5 2	2 0 2 1
Technology	3 0 3 1	6 5 11 4
Animal	3 2 5 2	1 1 2 1
Indoor	0 0 0 0	1 1 2 1
Meaningful Context		
Play	11 11 22 42	13 12 25 43
Recreation	9 7 16 31	5 7 12 21
Crowd	1 3 4 8	8 6 12 2
Presence of Animal	1 1 2 4	2 5 7 12
Gardening	2 6 8 15	0 2 2 3
Figure		
Doing Activity	10 10 20 47	11 15 26 48
Happy	9 14 23 53	13 15 28 52
Emotional Content		
Oversize figure/ head	6 6 12 32	8 5 14 37
Spatial Matter		
At Play/ activity area	7 8 15 40	5 7 12 32
Infront of Compound	11 12 23 50	4 8 12 32

EXPRESSIVE QUALITIES	INDIAN CHILDREN FREQUENCY	ALL CHILDREN FREQUENCY
	Boy Girl Total %	Boy Girl Total %
Main Themes		
Trees	6 9 15 8	30 31 61
Garden	2 2 4 2	19 35 54
Flowers	4 7 11 6	25 34 60
Waterbody	3 6 9 5	16 24 40
Spacious Compound	8 14 22 12	24 20 44
Big House	4 9 13 7	22 25 45
Barrier	5 8 13 7	22 25 47
Sunny Day	10 10 20 12	18 16 32
House at the centre	5 5 10 5	27 18 45
Linkage	11 12 23 12	14 17 31
Hills	3 5 8 4	9 12 19
Traditional/Village	1 2 3 2	3 12 15
Natural Setting	2 2 4 2	22 18 40
Play Equipment	9 12 21 11	7 4 11
Vehicle	2 2 4 2	5 0 5
Technology	0 0 0 0	11 10 21
Animal	2 3 5 3	1 2 3
Indoor	0 1 1 1	
Meaningful Context		
Play	8 2 10 32	22 25 47
Recreation	2 5 7 23	16 19 35

Analysis of children's drawings																
CHILDREN'S ACTIVITY PREFERENCE																
ACTIVITY	MALAY CHILDREN				CHINESE CHILDREN				INDIAN CHILDREN				ALL CHILDREN			
	Boy	Girl	Tot		Boy	Girl	Tot		Boy	Girl	Tot		Boy	Girl	Tot	All
	Freq	Freq	Freq	%	Freq	Freq	Freq	%	Freq	Freq	Freq	%	Freq	%	Freq	%
1. GENERAL OUTDOOR PLAY/GAMES																
playing game on grass/trees/forest	3	5	8		1	1	2						4	5		
traditional games																
skipping		2	2		2	1	3						2	3		
hide-and-seek		1	1		2	2							2	1		
hop-skip					1	1	2						1	1		
kite flying		2	2		5	3	8		5	2	7		10	7		
spinning-top					2	1	3						2	1		
watching/reading	8	13	21		8	8	16		7	12	19		23	33		
		34	23			36	23			26	15		44	21	52	20
1. PLAYING ON EQUIPMENT																
traditional play apparatus	1	5	6		1	13	14		27	18	45		29	36		
contemporary play apparatus	1	1			2	3	5						3	3		
		7	5			19	12			45	27		32	15	39	15
3. BALL PLAY/BALL GAMES																
ball related activity	4	1	5		1	5	6		8	5	13		13	11		
pickup around home					1	2	3						1	2		
badminton	1	2	3		1	1	2		4	4	8		5	7		
table tennis									1	1				1		
		8	5			11	7			22	13		20	9	21	8
4. ADVENTURE PLAY																
climbing tree/climbing about	2	2	4		2	4	6		1	1			3	7		
water play																
fishing	5	3	8		3	2	5		1	1	2		10	6		
swimming	3	6	9		3	7	10		5	6	11		11	19		
making fires		2	2											2		
making camps		1	1		1	1							1	1		
picnics									1	1				1		
play in sand	1	1											1			
animal play/feeding	7	9	16		12	13	25		3	11	14		22	33		
ballooning					1	1								1		
play with natural materials	1	1	2										1	1		
play in tree house	1	1			1	1							1	1		
play in maze									1	1				1		
		45	30			49	31			30	18		51	24	72	27
5. MOBILE PLAY																
walking					1	1								1		
cycling	2	2	4		1	1							2	3		
roller-skating	4	4											4			
running		2	2						4	4	8		4	6		
racing remote-controlled cars					1	1							1			
robot games					1	1							1			
making phone calls									3	3				3		
		10	7			4	3			11	7		12	6	13	5
6. OUTDOOR HOUSEHOLD ACTIVITIES																
gardening/planting/related activities	14	14	28		8	17	25		10	14	24		32	46		
washing car	3	1	4						1	1			4	1		
picking fruits/flowers	1	4	5		3	7	10		2	2	4		5	13		
sweeping rubbish/litter		2	2						2	2			2	2		
		40	27			35	22			31	18		46	22	62	23
7. INDOOR ACTIVITIES																
watching television	3	1	4		2	2			1	1			5	2		
helping parents		1	1						1	1			1	1		
reading/writing/drawing		1	1		1	1			1	1						
playing around		1	1						1	1				1		
playing video games					2	2							2			
		6	4			5	3			4	2		9	4	7	3
		150	100			150	100			160	100		214	264	100	100

4 July, 2001

Analysis of Questionnaires: ENVIRONMENTAL CONCEPTS (Ethnic difference)

ENVIRONMENTAL CHARACTER	MALAY		CHINESE		INDIAN	
	%	%	%	%	%	%
Aesthetically beautiful	14	9	17			
Comfortable	41	41	34			
Relax & Peaceful	11	12	10			
Defensible	13	17	16			
Openness and Freedom	2	1	2			
Happy environment	9	12	13			
Landscape dominance	8	6	5			
Active environment	2	2	3			
Total	100	100	100			

19-Oct-00 Note: F.R. is a Frequency Rate

Analysis of Questionnaires: ENVIRONMENTAL CONCEPTS (Gender difference)

ENVIRONMENTAL CHARACTER	BOY		GIRL		BOY&GIRL	
	%	%	%	%	%	%
Aesthetically beautiful	12	13	13			
Comfortable	39	39	39			
Relax & Peaceful	11	10	11			
Defensible	14	17	16			
Openness and Freedom	1	2	1			
Happy environment	14	11	12			
Landscape dominance	7	6	6			
Active environment	2	2	2			
Total	100	100	100			

Child-Activity-4

Analysis of children's drawings															
CHILDREN'S ACTIVITY PREFERENCE															
ACTIVITIES	Malay		Chinese		Indian		All Children								
	Child	Child	Child	Child	Child	Child	Boys	Girls	All						
	%	%	%	%	%	%	%	%	%						
General outdoor play/ games	23	23	15	21	20	20									
Playing on equipment	5	12	27	15	15	15									
Ball play/ ball games	5	7	13	9	8	9									
Adventure play	30	31	18	24	27	26									
Mobile play	7	3	7	6	5	5									
Outdoor household activity	27	22	18	22	23	22									
Indoor activity	4	3	2	4	3	3									
Analysis of questionnaires															
CHILDREN'S ACTIVITY PREFERENCE															
ACTIVITIES	Malay		Chinese		Indian		All Children								
	Child	Child	Child	Child	Child	Child	Boys	Girls	All						
	%	%	%	%	%	%	%	%	%						
General outdoor play/ games	23	30	24	29	24	26									
Playing on equipment	0	0	0	0	0	0									
Ball play/ ball games	32	24	13	23	24	23									
Adventure play	16	20	37	22	25	24									
Mobile play	18	16	16	20	15	17									
Outdoor household activity	8	9	11	5	11	0									
Indoor activity	2	1	0	1	1	1									
Analysis of children's essays															
CHILDREN'S ACTIVITY PREFERENCE															
ACTIVITIES	Malay		Chinese		Indian		All Children								
	Child	Child	Child	Child	Child	Child	Boys	Girls	All						
	%	%	%	%	%	%	%	%	%						
General outdoor play/ games	28	66	44	33	44	40									
Playing on equipment	2	0	1	0	2	1									
Ball play/ ball games	13	21	16	20	12	15									
Adventure play	12	27	17	18	16	23									
Mobile play	16	7	4	10	6	8									
Outdoor household activity	23	16	16	15	16	16									
Indoor activity	8	7	2	5	4	5									

Child-Activity-4

5 July, 2001

Analysis of Drawings

ACTIVITIES

	Boys	Girls	All
	%	%	%
General outdoor play/ games	21	20	20
Playing on equipment	15	15	15
Ball play/ ball games	9	8	9
Adventure play	24	27	26
Mobile play	6	5	5
Outdoor household activity	22	23	22
Indoor activity	4	3	3

Analysis of Questionnaires

ACTIVITIES

	Boys	Girls	All
	%	%	%
General outdoor play/ games	29	24	26
Playing on equipment	0	0	0
Ball play/ ball games	23	24	23
Adventure play	22	25	24
Mobile play	20	15	17
Outdoor household activity	5	11	0
Indoor activity	1	1	1

Analysis of Essays

ACTIVITIES

	Boys	Girls	All
	%	%	%
General outdoor play/ games	33	44	40
Playing on equipment	0	2	1
Ball play/ ball games	20	12	15
Adventure play	18	16	23
Mobile play	10	6	8
Outdoor household activity	15	16	16
Indoor activity	5	4	5

EXPRESSIVE QUALITIES	ALL CHILDREN PERCENTAGE			EXPRESSIVE QUALITIES	ALL CHILDREN PERCENTAGE		
	Boy	Girl	Total		M	C	I
Main Themes				Main Themes			
Trees	10	9	9	Trees	11	9	8
Garden	6	11	8	Garden	11	13	2
Flowers	8	10	9	Flowers	9	8	6
Waterbody	5	7	6	Waterbody	9	3	5
Spacious Compound	10	9	10	Spacious Compound	7	12	12
Big House	8	6	7	Big House	7	5	7
Barrier	7	7	7	Barrier	6	8	7
Sunny Day	9	8	12	Sunny Day	8	8	12
House at the centre	5	5	8	House at the centre	6	3	5
Linkage	3	5	7	Linkage	6	4	12
Hills	4	5	5	Hills	5	5	4
Traditional/Village	2	4	3	Traditional/Village	5	1	2
Natural Setting	3	4	3	Natural Setting	4	4	2
Play Equipment	7	5	6	Play Equipment	3	8	11
Vehicle	2	1	2	Vehicle	2	1	2
Technology	2	0	1	Technology	1	1	0
Animal	4	3	3	Animal	2	7	3
Indoor	0	1	0	Indoor	0	1	1
Meaningful Context				Meaningful Context			
Play	38	34	36	Play	42	43	32
Recreation	28	26	27	Recreation	31	21	23
Crowd	16	14	15	Crowd	8	21	10
Presence of Animal	9	12	11	Presence of Animal	4	12	18
Gardening	10	14	12	Gardening	15	3	18
Figure				Figure			
Doing Activity	70	60	64	Doing Activity	47	48	64
Happy	63	63	64	Happy	53	52	64
Emotional Content				Emotional Content			
Over-size figure/ head	40	22	28	Over-size figure/ head	32	37	28
Spatial Matter				Spatial Matter			
At Play/ activity area	37	28	32	At Play/ activity area	40	32	32
Infront of Compound	44	46	45	Infront of Compound	50	32	45

EXPRESSIVE QUALITY

EXPRESSIVE QUALITIES	INDIAN CHILDREN FREQUENCY			EXPRESSIVE QUALITIES	ALL CHILDREN FREQUENCY		
	Boy	Girl	Total		Boy	Girl	Total
Main Themes				Main Themes			
Trees	6	9	15	Trees	30	31	61
Garden	2	2	4	Garden	19	35	54
Flowers	4	7	11	Flowers	26	34	60
Waterbody	3	8	11	Waterbody	16	24	40
Spacious Compound	8	14	22	Spacious Compound	31	31	62
Big House	4	9	13	Big House	24	20	44
Barrier	5	8	13	Barrier	22	23	45
Sunny Day	10	13	23	Sunny Day	27	25	52
House at the centre	5	5	10	House at the centre	16	18	32
Linkage	11	12	23	Linkage	27	18	45
Hills	3	5	8	Hills	14	17	31
Traditional/Village	1	2	3	Traditional/Village	7	12	19
Natural Setting	2	2	4	Natural Setting	9	12	21
Play Equipment	9	12	21	Play Equipment	22	18	40
Vehicle	2	2	4	Vehicle	7	4	11
Technology	0	0	0	Technology	5	0	5
Animal	2	3	5	Animal	11	10	21
Indoor	0	1	1	Indoor	1	2	3
Meaningful Context				Meaningful Context			
Play	8	2	10	Play	22	25	47
Recreation	2	5	7	Recreation	16	19	35
Crowd	2	1	3	Crowd	9	10	19
Presence of Animal	2	3	5	Presence of Animal	5	9	14
Gardening	4	2	6	Gardening	6	10	16
Figure				Figure			
Doing Activity	11	15	26	Doing Activity	32	41	73
Happy	7	14	21	Happy	29	43	73
Emotional Content				Emotional Content			
Over-size figure/ head	3	3	6	Over-size figure/ head	17	15	32
Spatial Matter				Spatial Matter			
At Play/ activity area	5	4	9	At Play/ activity area	17	19	36
Infront of Compound	5	11	16	Infront of Compound	20	31	51

EXPRESSIVE QUALITY

MAIN THEMES	ALL CHILDREN PERCENTAGE			MAIN THEMES	ALL CHILDREN PERCENTAGE		
	Boy	Girl	Total		M	C	I
Natural environment				Natural environment			
Waterbody	5	8	13	Waterbody	9	3	12
Outdoor range of space	10	10	10	Outdoor range of space	7	12	12
Play facilities	7	6	6	Play facilities	3	8	11
Dominant house image	15	15	15	Dominant house image	18	11	14
Bright sunny day	9	8	8	Bright sunny day	6	8	13
Pet animal	4	3	3	Pet animal	2	7	3
Vehicles	2	1	2	Vehicles	2	1	2
Secured territory and accessible environment	16	13	14	Secured territory and accessible environment	12	12	20
Meaningful context				Meaningful context			
Play	38	34	36	Play	42	43	32
Recreation	28	26	27	Recreation	31	21	23
Group of people/ Crowd	16	14	15	Group of people/ Crowd	8	21	10
Presence of animal	9	12	11	Presence of animal	4	12	18
Gardening	10	14	12	Gardening	15	3	18

Table # Meaningful context of landscape environment in relation to children's emotions

Q-Set C.D/G/I

Questionnaire Analysis C7

Rules and Regulations	Malay Children Frequency			Chinese Children Frequency			Indian Children Frequency			All Children Total Freq			All Children Total %		
	Boy	Girl	Total	Boy	Girl	Total	Boy	Girl	Total	Boy	Girl	Total	Boy	Girl	Total
Activity restriction	14	22	36	35	8	15	23	29	16	24	40	47	38	61	99
Keep environ clean	8	14	22	22	12	16	28	35	13	12	25	29	33	42	28
Caring for Plants	6	4	10	10	6	13	19	24	10	7	17	20	22	24	19
Noise restriction	11	3	14	14	0	0	0	0	0	3	3	3	11	6	9
Against Graffiti	2	3	5	5	1	3	4	5	0	0	0	0	3	6	3
Damage to property	6	9	15	15	3	3	6	8	1	0	1	1	10	12	8
	102			80			85			117			256		
Rules and Regulations	M			C			I			%					
Activity restriction	35			29			47								
Keep environ clean	22			35			29								
Caring for Plants	10			24			20								
Noise restriction	14			0			3								
Against Graffiti	5			8			1								
Damage to property	15			8			1								
Rules and Regulations	All Children			%											
Activity restriction	32			40			37								
Keep environ clean	28			28			28								
Caring for Plants	19			16			17								
Noise restriction	9			6			5								
Against Graffiti	3			2			3								
Damage to property	8			5			8								

Analysis of Essay Animals and People and Duration of Activity

Mention of Animal	Malay Children Frequency			Chinese Children Frequency			Indian Children Frequency			All Children Total Freq			All Children Total %		
	Boy	Girl	Total	Boy	Girl	Total	Boy	Girl	Total	Boy	Girl	Total	Boy	Girl	Total
Fish	5	13	35	11	17	28	45	21	9	30	65	39	32	48	51
Bird	10	1	11	3	2	5	8	4	1	5	11	17	4	21	6
Cat	3	2	5	14	4	2	6	10	1	1	2	4	8	5	10
Rabbit	2	2	4	11	0	6	6	10	0	1	1	2	2	9	2
Dog	1	0	0	0	3	0	6	10	2	1	3	7	8	1	10
Other animals	1	3	4	11	3	7	10	16	3	2	5	11	7	12	9
Insects	0	0	0	0	1	0	1	2	0	0	0	0	1	0	1
Total No. of species	5	8	9	29	9	11	13	42	7	7	9	29	11	12	48

Mention of Animal	M	C	I
	Percentage		
Fish	35	45	65
Bird	30	8	11
Cat	14	10	4
Rabbit	11	10	2
Dog	10	16	7
Other animals	11	16	11
Insects	0	2	0
Total No. of species	29	42	29

Mention of Animal	All Children %		
	Boy	Girl	All
Fish	48	51	49
Bird	21	6	15
Cat	10	8	9
Rabbit	2	14	8
Dog	10	2	6
Other animals	9	9	13
Insects	1	0	1
Total No. of species	48	52	100

Analysis of Essay: Mention of People													
Mention of People													
	Malay Children			Chinese Children			Indian Children			All Children			All Children
	Frequency			Frequency			Frequency			Total Freq			Freq
	Boy	Girl	Total %	Boy	Girl	Total %	Boy	Girl	Total %	Boy	Girl	Total %	%
Friend	13	3	16	26	9	14	23	32	8	11	19	37	31
Mother and Father	12	2	14	23	3	7	10	14	2	0	2	4	14
Sister and Brother	9	7	16	26	4	4	8	11	3	5	8	15	17
Family and Relative	4	4	8	13	3	4	7	10	2	3	5	10	11
Neighbour	0	0	0	0	1	2	3	4	4	0	4	8	7
Other People	1	6	7	12	16	5	21	29	2	12	14	27	23
	61			72			52			95			185
Mention of people													
	M	C	I	Percentage									
Friend	26	32	37										
Mother and Father	23	14	4										
Sister and Brother	26	11	15										
Family and Relative	13	10	10										
Neighbour	0	4	8										
Other People	12	29	27										
Mention of people													
	All Children			Boy			Girl			All			
Friend	31	32	31	18			10			14			
Mother and Father	18	10	14	17			18			17			
Sister and Brother	9	12	11	5			2			4			
Family and Relative	9	12	11	5			2			4			
Neighbour	5	2	4	20			26			23			
Other People	20	26	23										
Analysis of Essay: Frequency of activity													
	Malay Children			Chinese Children			Indian Children			All Children			All Children
	Frequency			Frequency			Frequency			Total Freq			%
	Boy	Girl	Total %	Boy	Girl	Total %	Boy	Girl	Total %	Boy	Girl	Total %	Freq
Everyday	0	3	3	41	7	6	13	29	8	12	20	37	45
Every weekend	1	2	3	14	2	3	5	11	1	1	2	7	9
Sometimes	3	4	7	32	5	3	8	18	0	2	3	7	14
Free time	1	2	3	14	4	15	19	42	3	3	6	20	15
	4			61			80			86			28
Analysis of Essay: Duration of activity													
	Malay Children			Chinese Children			Indian Children			All Children			All Children
	Frequency			Frequency			Frequency			Total Freq			%
	Boy	Girl	Total %	Boy	Girl	Total %	Boy	Girl	Total %	Boy	Girl	Total %	Freq
Morning	2	3	5	39	0	4	4	21	0	2	2	18	26
Afternoon	2	0	2	15	0	0	0	0	1	1	2	18	3
Evening	3	3	6	46	3	8	11	58	0	7	7	58	56
At night	0	0	0	0	1	3	4	21	0	0	0	0	9
	7			64			66			72			94
Frequency activity													
	M	C	I	Percentage									
Everyday	11	29	45										
Every weekend	14	11	7										
Sometimes	32	18	7										
Free time	14	42	20										
Frequency activity													
	All Children			Boy			Girl			All			
Everyday	50			43			49						
Every weekend	9			10			9						
Sometimes	18			13			14						
Free time	18			33			28						
Thursday 23 Nov. 2000													

Analysis of Questionnaire D4: Favourite Animals reared																
Favourite animal																
	M	C	I	Percentage												
Fish	11	18	18													
Bird	21	7	7													
Cat	30	20	20													
Rabbit	25	19	13													
Dog	0	28	28													
Other animals	13	9	9													
Insects	0	0	0													
Total No. of species	29	34	37													
Favourite animal																
	All Children															
	Boy	Girl	All													
Fish	13	10	11													
Bird	15	16	16													
Cat	27	22	22													
Rabbit	20	28	25													
Dog	21	9	14													
Other animals	8	12	10													
Insects	1	3	2													
Total No. of species	44	58	100													
Analysis of Questionnaire D2: Purpose of home environment																
	Malay Children				Chinese Children				Indian Children				All Children			
	Frequency				Frequency				Frequency				Total Freq			
Purpose of home Environment	Boy	Girl	Total	%	Boy	Girl	Total	%	Boy	Girl	Total	%	Boy	Girl	Total	%
Activity	10	17	27	44	12	17	29	45	1	4	5	11	23	38	33	37
Protection & comfort	6	6	12	19	8	10	18	28	1	2	3	7	15	18	22	18
Aesthetic/Functional	5	8	14	23	5	5	10	16	15	20	35	76	26	33	38	32
Expression/Emotion	3	6	9	15	1	6	7	11	1	2	3	7	5	14	7	13
	82				54				46				89			
													100			
Purpose of home Environment																
	M	C	I	Percentage												
Activity	44	45	51													
Protection & comfort	19	28	7													
Aesthetic/Functional	23	18	76													
Expression/Emotion	15	11	7													
Purpose of home environment																
	All Children															
	Boy	Girl	All													
Activity	33	37	36													
Protection & comfort	22	18	19													
Aesthetic/Functional	38	32	34													
Expression/Emotion	7	13	11													

Analysis of Questionnaire D10: Thing like to touch														
Things like to touch	Malay Children			Chinese Children			Indian Children			All Children			All Children	
	Frequency			Frequency			Frequency			Total Freq	Total %	% Freq		
	Boy	Girl	total	Boy	Girl	total	Boy	Girl	total	Boy	Girl	Boy	Girl	
Plants	16	21	37	36	18	25	43	35	10	25	33	33	35	115
Waterbody	3	7	10	10	8	4	12	10	5	5	10	9	10	32
Animals	14	12	26	26	24	52	44	12	28	40	37	54	64	39
Features	5	9	14	14	0	0	0	0	6	4	10	9	11	24
Play facilities	3	4	7	7	1	5	6	5	5	4	9	8	9	22
House & associate	1	4	5	5	0	6	6	5	2	2	4	3	12	5
	99			115			108			137			189	
													325	
Things like to touch	M	C	I											
	Percentage													
Plants	36	36	33											
Waterbody	10	10	9											
Animals	26	44	37											
Features	14	0	9											
Play facilities	7	5	8											
House & associate	5	5	4											
Things like to touch	All Children													
	Boy	Girl	All											
Plants	32	38	35											
Waterbody	12	9	10											
Animals	39	34	36											
Features	8	7	7											
Play facilities	7	7	7											
House & associate	2	6	5											

Analysis of Questionnaire D11: Thing like to smell																		
Things like to smell	Malay Children			Chinese Children			Indian Children			All Children								
	Frequency	%	Freq	Frequency	%	Freq	Frequency	%	Freq	Total Freq	Total %	% Freq						
Boy	Girl	Total	%	Boy	Girl	Total	%	Boy	Girl	Total	%	Boy	Girl					
Plants	12	14	26	39	13	27	45	68	30	39	69	74	62					
Animals	2	5	7	10	2	2	4	6	0	0	0	4	5	5				
Food	1	12	15	24	3	4	7	11	0	1	1	7	17	8				
Fragrance	7	1	8	12	0	1	1	1	6	15	21	23	12	3				
Chemical	1	3	4	6	0	2	2	3	1	7	1	5	4	8				
Natural env. source	4	2	6	9	1	6	7	11	0	0	0	5	9	6				
	67			66			93			90			137					
	227																	
Things like to smell	M	C	I															
	Percentage																	
Plants	39	58	74															
Animals	24	11	1															
Food	12	1	23															
Fragrance	6	3	3															
Chemical	9	11	0															

Analysis of Questionnaire D11: Thing like to smell												
Things like to smell	Malay Children			Chinese Children			Indian Children			All Children		
	Frequency	%	Freq	Frequency	%	Freq	Frequency	%	Freq	Total Freq	Total %	% Freq
Plants	57	59	62									
Animals	4	5	5									
Food	8	12	13									
Fragrance	1	5	4									
Chemical	1	5	4									
Natural env. source	5	7	6									

Analysis of Questionnaire D3: Space preferred for activity												
Space for activity	Malay Children			Chinese Children			Indian Children			All Children		
	Frequency	%	Freq	Frequency	%	Freq	Frequency	%	Freq	Total Freq	Total %	% Freq
Spacious space	0	0	0	24	4	5	9	23	1	2	3	8
Fieldpark ground	5	4	10	30	3	2	5	13	0	2	15	9
Grass compound	2	2	4	12	8	9	17	43	7	5	12	32
Playground	1	1	2	6	0	0	0	0	0	1	1	3
Shady area	1	2	3	9	0	3	3	8	0	0	0	1
Flat area	0	2	2	6	0	0	0	0	0	0	2	0
Indoor	0	3	3	9	0	1	1	0	2	3	13	2
Mountain (high area)	0	0	0	0	0	1	1	3	8	2	2	4
Waterbody	0	1	1	3	2	2	4	10	3	6	9	24
Street	0	0	0	0	0	0	0	0	3	3	8	0
	33			40			46			54		

Analysis of Questionnaire D3: Space preferred for activity												
Space for activity	M	C	I									
	Percentage											
Spacious space	24	23	8									
Fieldpark ground	30	13	15									
Grass compound	12	13	32									
Playground	6	0	3									
Shady area	9	8	0									
Flat area	6	0	0									
Indoor	9	0	13									
Mountain (high area)	0	3	3									
Waterbody	3	10	24									
Street	0	0	8									

Analysis of Questionnaire D3: Space preferred for activity												
Space for activity	All Children											
	Boy	Girl	All									
Spacious space	20	2	10									
Fieldpark ground	20	15	17									
Grass compound	37	29	33									
Playground	2	4	3									
Shady area	2	9	6									
Flat area	0	4	2									
Indoor	4	11	8									
Mountain (high area)	4	4	4									
Waterbody	20	17	14									
Street	7	5	3									

Analysis of Questionnaire J5: Time for favourite activity												
Time for favourite activity	Malay Children			Chinese Children			Indian Children			All Children		
	Frequency	%	Freq	Frequency	%	Freq	Frequency	%	Freq	Total Freq	Total %	% Freq
Morning (8-12p.m)	7	8	15	36	5	6	11	26	2	1	3	7
Afternoon (2-4p.m)	3	2	5	12	1	3	4	10	4	9	13	33
Evening (4-7 p.m)	3	13	21	50	9	15	24	57	7	11	18	45
At Night (8-10 p.m)	0	1	1	2	3	0	3	7	3	3	6	15
	42			42			40			52		

Analysis of Questionnaire J5: Time for favourite activity												
Time for favourite activity	M	C	I									
	Percentage											
Morning (8-12p.m)	36	26	7									
Afternoon (2-4p.m)	12	10	33									
Evening (4-7 p.m)	50	57	45									
At Night (8-10 p.m)	2	7	15									

All Children		
Time for favourite activity	Boy	Girl
Morning (8-12 p.m)	27	21
Afternoon (2-4 p.m)	13	20
Evening (4-7 p.m)	46	55
At Night (8-10 p.m)	12	4