

36154

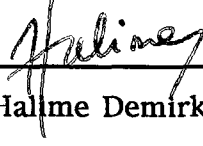
**DESIGN CONSIDERATIONS
IN MULTIPURPOSE SPACE OF
PRESCHOOL EDUCATIONAL ENVIRONMENTS**

**A THESIS
SUBMITTED TO THE DEPARTMENT OF
INTERIOR ARCHITECTURE AND
ENVIRONMENTAL DESIGN
AND INSTITUTE OF FINE ARTS OF BİLKENT UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF FINE ARTS**

**T.C. YÜKSEKÖĞRETİM KURULU
DOKÜMANTASYON MERKEZİ**

**By
Elçin Özyurt
June, 1994**

I certify that I have read this thesis and in my opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Fine Arts.



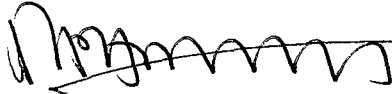
Assist. Prof. Dr. Halime Demirkan (Principal Advisor)

I certify that I have read this thesis and in my opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Fine Arts.



Prof. Dr. Mustafa Pultar

I certify that I have read this thesis and in my opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Fine Arts.



Assist. Prof. Mehmet Asatekin

Approved by the Institute of Fine Arts.



Prof. Dr. Bülent Özgüç, Director of the Institute of Fine Arts

ABSTRACT

DESIGN CONSIDERATIONS IN MULTIPURPOSE SPACE OF PRESCHOOL EDUCATIONAL ENVIRONMENTS

Elçin Özyurt

M. F. A. in

Interior Architecture and Environmental Design

Supervisor: Assist. Prof. Dr. Halime Demirkan

June, 1994

Design requirements of preschool educational environments that support all aspects of child development are examined in this study. In order to determine the design criteria for preschool educational environments, the characteristics and the properties of early childhood are investigated. Additionally, educational philosophy and psychological influences of environment which affect the physical organization are stated. Within this framework, design considerations of preschool educational environments are discussed under the issues of activity places, alternative organizations, and items of furniture which build up the environment. Finally, general design criteria which are necessary for a comfortable education environment are pointed out.

Keywords: Preschool Educational Environments, Ergonomics, Space Planning, Design Criteria, Furniture.

ÖZET

OKUL ÖNCESİ ÇOK AMAÇLI EĞİTİM ORTAMLARINDA TASARIM KRİTERLERİ

Elçin Özyurt

İç Mimarlık ve Çevre Tasarımı Bölümü

Yüksek Lisans

Tez Yöneticisi: Yrd. Doç. Dr. Halime Demirkan

Haziran, 1994

Bu çalışmada okul öncesi eğitim ortamlarının, çocuk gelişimini destekleyen tasarım şartları tüm yönleri ile incelenmiştir. Okul öncesi ortamları için gerekli tasarım kriterlerini belirleyebilmek amacıyla erken çocukluk dönemi özellikleri araştırılmıştır. Ayrıca, mekan planlamasını etkileyen eğitim felsefesi ve çevrenin çocuk üzerindeki psikolojik etkileri de belirtilmiştir. Bu yapı içerisinde, okul öncesi eğitim ortamlarının tasarım şartları; etkinlik alanları, plan seçenekleri, ve ortamı oluşturan mobilya birimleri başlıkları altında incelemiştir. Son olarak, uygun bir eğitim ortamı için gerekli genel tasarım kriterleri belirlenmiştir.

Anahtar sözcükler: Okul Öncesi Eğitim Ortamları, Ergonomi, Alan Planlama, Tasarım Kriterleri, Mobilya.

ACKNOWLEDGEMENTS

Doing a master thesis is one of the few enjoyable studies I have ever done. Foremost, I would like to thank Assist. Prof. Dr. Halime Demirkan for her endless patience, support, and sensitiveness which show me the way I should be on. I appreciate Ms. Demirkan for her guidance without which this thesis wouldn't have been completed.

Secondly, I would like to appreciate İlkin Genceli, my sister, for her endless patience in helping me when I have been in trouble. I would also like to thank Özyurt's who have always been confident with my successes.

Finally, I would like to thank Dr. Feyzan Beler and Yaprak Sağdıç, who have given me critics and help for this study which let it worthy.

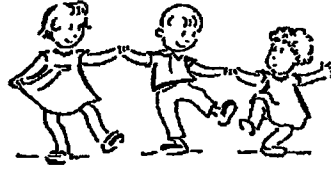


TABLE OF CONTENTS

	Page
Signature Page _ _ _ _ _	ii
Abstract _ _ _ _ _	iii
Özet _ _ _ _ _	iv
Acknowledgements _ _ _ _ _	v
Table of Contents _ _ _ _ _	vi
List of Tables _ _ _ _ _	ix
List of Figures _ _ _ _ _	x
1. INTRODUCTION	1
1.1. Problem _ _ _ _ _	1
1.2. Object and Methodology _ _ _ _ _	1
1.3. Structure of Thesis _ _ _ _ _	4
2. CHILDREN AND ENVIRONMENT	7
2.1. Characteristics and Properties of Potential Age Group _ _ _ _ _	8
2.1.1. Physical and Motor Development in Early Childhood _ _ _ _ _	9
2.1.2. Cognitive Development in Early Childhood _ _ _ _ _	10
2.1.3. Social Development in Early Childhood _ _ _ _ _	16
2.1.4. Emotional Development in Early Childhood _ _ _ _ _	17
2.1.5. Linguistic Development in Early Childhood _ _ _ _ _	19
2.2. Perceptual and Evaluative Approach of Preschool Children to Built Environment _ _ _ _ _	20

3. CHILDREN AND PRESCHOOL EDUCATION 23

3.1. Need and Purpose of Preschool Education _ _ _ _ _	24
3.2. Multipurpose Space and Learning in Preschool Education _ _ _ _	25
3.2.1. Role of Interest Centers in Development of Preschool Children _ _ _ _ _	26
3.2.2. Aspects of Activity in Learning _ _ _ _ _	29
3.2.2.1. Play _ _ _ _ _	30
3.2.2.2. Discovery _ _ _ _ _	41
3.3. Major Philosophies in Preschool Education _ _ _ _ _	42
3.3.1. Behavioristic Learning Theory Approach _ _ _ _ _	43
3.3.2. Piagetian Cognitive-Developmental Approach _ _ _ _ _	45
3.3.3. Developmental-Interaction Approach _ _ _ _ _	47

4. PSYCHOLOGICAL ASPECTS OF PRESCHOOL EDUCATIONAL ENVIRONMENTS 52

4.1. Psychological and Behavioral Influences of Environment on Preschool Children _ _ _ _ _	52
4.1.1. Personal Space _ _ _ _ _	53
4.1.2. Privacy _ _ _ _ _	57
4.1.3. Territoriality _ _ _ _ _	64
4.1.4. Crowding _ _ _ _ _	66
4.2. Researches Conducted on Psychology and Space Characteristics of Preschool Educational Environments _ _ _ _ _	69

5. PHYSICAL ASPECTS OF PRESCHOOL EDUCATIONAL ENVIRONMENTS 73

5.1. Activities and Learning Areas in Multipurpose Space _ _ _ _ _	74
5.1.1. Activity Places with High Physical Mobility and Noise _ _ _	74
5.1.1.1. Music and Physical Exercise Area _ _ _ _ _	75
5.1.1.2. Dramatic Play Area _ _ _ _ _	76
5.1.1.3. Block Area _ _ _ _ _	81
5.1.1.4. Art and Craft Area _ _ _ _ _	89
5.1.2. Audiovisual Interaction Activity Place _ _ _ _ _	91
5.1.3. Noiseless Activity Places _ _ _ _ _	94

5.3.3.1. Reading and Listening Corner	94
5.3.3.2. Manipulative Toy Area	96
5.1.4. Other Areas Related with Multipurpose Space	96
5.2. Items of Furniture	101
5.2.1. Work Surfaces	102
5.2.2. Sitting Units	102
5.2.3. Storage and Display Units	103
5.2.4. Partitions	109
5.2.5. Platforms	109
5.3. Organization of Multipurpose Space	115
5.3.1. Structured Space Plan	117
5.3.2. Open Space Plan	118
5.3.3. Modified Open Plan	119
6. GENERAL CRITERIA FOR THE DESIGN OF A MULTIPURPOSE SPACE	123
6.1. Basic Requirements	123
6.2. Health and Safety Requirement	125
6.3. Maintenance	128
6.4. Environmental Requirements	129
6.5. Ergonomic Considerations	131
7. CONCLUSION	138
REFERENCES	143
SELECTED BIBLIOGRAPHY	148
APPENDIX	

LIST OF TABLES

	Page
Table 2.1. Piaget's Stages of Cognitive Development _____	9
Table 2.2. Milestones of Motor Development During Early Childhood _____	11
Table 2.3. Conservation Tasks Investigated by Piaget _____	15
Table 2.4. Stages in the Development of Self Awareness _____	16
Table 3.1. Some Good Toys and Play Materials for Young Children _____	36
Table 3.2. Stage Theories of Play: Piaget, Smilansky & Parten _____	39
Table 5.1. Suggested Equipment for Block Building _____	83
Table 5.2. A Summary of Space Requirements _____	99
Table 5.3. Representative Partitioning Systems for Enclosed Space _____	110
Table 5.4. Furnishings in the Flexible Plan _____	113

LIST OF FIGURES

	Page
Figure 5.1. Various Shapes of Unit Blocks and Two Sample Constructions _ _ _ _ _	82
Figure 5.2. Preschool Hollow Blocks and Associated Equipment _ _ _ _ _	86
Figure 5.3. A View from Block Corner _ _ _ _ _	87
Figure 5.4. Children Playing with Block _ _ _ _ _	88
Figure 5.5. Storages on Wheel, Work Surfaces, Platforms _ _ _ _ _	105
Figure 5.6. Sitting Units, Shelves, and Other Furnishings _ _ _ _ _	106
Figure 5.7. Partitions, and Some Storage Units _ _ _ _ _	107
Figure 5.8. U-shaped Work Area Formed with Combination of Various Storage Units _ _ _ _ _	108
Figure 5.9. Three Types of Toy Storage Cabinets in Combinations _ _ _ _ _	108
Figure 5.10. Platforms _ _ _ _ _	112
Figure 5.11. Various Organizations of Multipurpose Space in Different Architectural Patterns _ _ _ _ _	121
Figure 5.12. Comparison of Organizations of Multipurpose Space in Usage _ _ _ _ _	122
Figure 6.1. Two Scales Prevalent throughout Playroom of the Stanford Day Care Center _ _ _ _ _	133
Figure 6.2. Average Dimensions of 3 Year-olds _ _ _ _ _	135
Figure 6.3. Average Dimensions of 6 Year-olds _ _ _ _ _	136

1. INTRODUCTION

1.1. Problem

Recognition of the importance of early years in the life of a child is not new. From the works of Comenius (1592-1670), Rousseau (1712-1778), Pestalozzi (1746-1827), and Froebel (1782-1852) modern early childhood education evolved. After the World War II., social works to improve the welfare of family gave rise the idea of enhancing young children's development through social organizations. Advances in science, especially in the pediatrics, mental health, education, psychology, and rapid industrialization have appeared as general reasons of public concern being focused in the healthy growth and development in early childhood (Christianson, Rogers & Ludlum, 1961) Besides, the source of drastic increase in the number of preschool educational settings depends on employment of mothers because of economic reasons (Scarr & Weinberg, 1986). As early childhood education have become an almost universal experience, there is a need to think the concepts and environmental conditions which provide the early childhood education most beneficial for all aspects of child development.

1.2. Object and Methodology of the Study

Children's contribution to the design of the built environment that they

inhabit is less than adults. Actually, children may be very active users of facilities, and often the facilities they use the most are little used or unused by adults. Sometimes children's usages are in conflict with those of adults; more often they are simply separate. The conflict between these two groups comes from the differences in dimensions that are critical for environmental design such as physical size, cognitive development, social competency, personal mobility, autonomy, and control. Preschool educational environments are places in which children are the main active users. Therefore, the decisions about the design of these environments should be made by the consideration of young children entity as the primary user while still regarding the existence of adults. The aim of this study is to point out the main design principles which are consistent with the need and expectations of young children in preschool educational environments.

Firstly, characteristics and properties of children should be examined in order to be familiar with the attitudes and expectations of the potential age group. Depending on this; physical and motor, cognitive, social, emotional, and linguistic development of children should be studied. Perceptual and evaluative approach of children to built environment should be pointed.

Determining the role of preschool education in a child's life as a new environment is the second step. All concepts related with preschool educational environments such as multipurpose space, and interest centers are discussed. While doing this, the aspects of learning are stated as play and discovery. Play has been categorized differently by various authorities.

These categories should be investigated in order to point out the necessity of activities determined in a preschool educational environment. Another point which should be discussed is that the major philosophies in preschool education and their reflectance to the built environment.

Thirdly, psychological and behavioral influences of environment on preschool children should be examined while supporting the issues with researches conducted on psychology and space characteristics of preschool educational environments. Discussing psychological aspects of preschool educational environments is compulsory. Because, it's a known fact that psychology and social behavior of preschool children are affected by physical character of the environment.

Fourthly, under the scope of all information above, major activity places, items of furniture which constitute these activity places, and the alternatives of organization in a preschool educational environment are investigated.

As a final step, general criteria for the design of a preschool environment should be explained so that the requirements of a comfortable and appealing indoor environment for the education of preschool children are clarified.

All these researches are done in order to determine the alternative requirements of a healthy preschool educational environment which contribute to the development of children positively.

1.3. Structure of the Thesis

There are five main chapters which examine the problem and give information in various aspects excluding the introduction and conclusion chapters. The first chapter is an introduction to the thesis and the seventh chapter is the conclusion part.

In the second chapter, characteristics and properties of the potential age group are discussed from physical and motor, cognitive, social, emotional, and linguistic development points of view. Perceptual and evaluative differences of preschoolers in comparison with adults are discussed in the second part of the chapter.

In the first part of the third chapter, the need and purpose of preschool education are stated. At this respect, preschool educational settings have two functions: to educate and to socialize the children. In the second part, multipurpose space and learning in preschool education are discussed. Multipurpose space refers to the environment where various activities related with education take place and the children be cared. Five particular themes; environmental, creative, educational, emotional, and social development are discussed to emphasize the role of multipurpose space in learning. The aspects of learning are discussed as play and discovery. The meaning and value of play is stated, and the varieties of play are examined from three authorities' point of view. Discovery and its relation with play are also discussed as a learning method. In the third part of the chapter, philosophies in preschool education and their influence on the organization of multipurpose space are examined. These philosophies are

Behavioristic Learning Theory Approach, Piagetian Cognitive Developmental Approach, and Developmental Interaction Approach.

The concern of the fourth chapter is to analyze the psychological aspects of preschool educational environments and to make inferences on physical dimensions. In the first part of the chapter, psychological and behavioral properties of the environment and their effects on physical dimensions are pointed out in detail. Psychological and behavioral properties of environment are reflected in the concepts of personal space, privacy, territoriality, and crowding. In the second part, how social behavior of children is affected by the certain arrangements of multipurpose space is discussed. The advises pertained from researches to shape the behavior of young children is stated.

The fifth chapter of the thesis refers to the physical aspects of preschool educational environments. The activities and play areas are grouped according to their mobility and noise level. Activity places with high physical mobility are composed of music and physical exercise area, dramatic play area, block area, and art and craft area. In audiovisual interaction activity place, the usage of computers by children, and exposition of video and slides are stated. With the requirements of this activity center, the appropriate placement of this place in a multipurpose space is also discussed. The activity centers where basically a noiseless environment is required and personal activity is dominant rather than group participation are grouped under noiseless activity places. Reading and listening corner, and manipulative toy area constitute this category. Other areas which support or control the function of multipurpose space

are tutoring booth, storage space, and observation space. In the second part of the chapter, the main items of furniture are presented as work surfaces, sitting units, storage and display units, partitions, and platforms. When discussing them, the main purpose is to point out the characteristics of furniture that best serve for the needs of activity centers, and create flexible environments. In the last part of the chapter, organization of multipurpose spaces which refer to structured, open, and modified open plan are discussed with respect to architectural alternatives.

In the sixth chapter, general criteria for the design of a multipurpose space are classified as basic requirements, health and safety requirements, maintenance, environmental requirements, and ergonomic considerations.

2. CHILDREN AND ENVIRONMENT

The understanding and prediction of children's spatial perceptions and behavior have been profoundly investigated by the researchers. Piaget's investigations of children's spatial understanding (Piaget & Inhelder, 1967) have strongly influenced what is believed about children's environmental context (Ziegler & Andrews, 1987).

As Piaget (1963) stated, **assimilation** and **accommodation** are the two basic functions used by young children to perceive and learn the environment. According to Piaget, in case the experience, perception, or information fits to previously structured knowledge of one's mind, that experience, perception, or information is accepted-it is assimilated. If it does not fit, the mind may change the previous knowledge to the new one which is able to accept -or accommodate- the information or experience. Accommodation occurs when a previously learned response fails to work in a new situation. When the balance occurs between these two functions, the development of intellect takes place. Therefore, the relation of a young child with environment is a process of assessment and construction (Craig, 1989).

The concern of this chapter is to examine the approach of young children to environment. The question of 'how does a young child perceive and understand his environment?' is aimed to be answered. In order to

understand the children's evaluation of environment, it seems necessary to investigate the characteristics and properties of the potential age group. Under this title; physical and motor, cognitive, social, emotional, and linguistic development of the preschool children will be stated. Perceptual and evaluative differences of preschoolers in comparison with adults will be discussed in the second part.

2.1. Characteristics and Properties of Potential Age Group

While children grow up, their needs and expectations change according to their physical and psychological development. Children have different pleasures, performance and properties in every developmental period. Therefore, it is important to consider the characteristics of children in different age groups when making inferences about the quality and property of their environment.

The researchers studying development of children , generally divide the childhood period into four groups (Clarke-Steward & Friedman, 1987; Fogel & Melson, 1988; Craig, 1989); infancy, early childhood/young child (preschool period), middle childhood, adolescence. These stages which are shown in Table 2.1. are Piaget's stages of cognitive development. According to Piaget's theory, children are ready to adapt and to learn the world by birth. They don't have to be taught deliberately to walk or that objects have to obey certain physical laws and people have to obey moral rules. In his opinion, children build up knowledge as they mentally organize information from the environment.

Children actively participate in their own development. They manipulate and explore their world, guided by mental structures or mental representations of how things work (Clarke-Steward & Friedman, 1987).

Stage	Activities and Achievements
Sensorimotor Birth to two years	Infants discover aspects of the world through their sensory impressions, motor activities, and coordination of the two.
Preoperational 2 to 7 years	Child can not yet think by operations, by manipulating and transforming information in basic and logical ways. They can think in images, symbols and form mental representations of objects and events.
Concrete Operational 7 to 11 years	Children can understand logical principles that apply to concrete, external objects.
Formal Operational Over 11 year	Adolescents and adults can think abstractly. Their thinking is no longer constrained by the given of the immediate situation but can work in probabilities and possibilities.

Table 2.1. Piaget's Stages of Cognitive Development.
(From CLARKE-STEWARD, A., & FRIEDMAN, S. *Child Development: Infancy Through Adolescence*. New York: John Wiley and Sons, 1987. p. 19)

In order to give more detailed information about the properties of early childhood, the characteristics of physical and motor, cognitive, social, emotional, and linguistic development of this period will be examined in detail under the following subtitles.

2.1.1. Physical and Motor Development in Early Childhood

During the preschool years, substantial changes in size, shape, and body proportions are occurring. However, compared to the dramatic transformations of the first two years, the growth rate has slowed down.

Children grow twice as fast in the period from about 1 to 3 years as they do from the period about 3 to 6 years. Differences in heights of children tend to remain moderately stable during the preschool years. Although boys and girls develop at approximately the same rate, girls tend to be slightly shorter and lighter than boys.

Motor coordination in young children develops along with muscular strength and speed. This refers to the skills involved in coordinating physical movements. Through active play, young children learn to channel strength and the speed into smooth, accurate movements. Children of this period are curious, energetic and eager and they love to climb, run, and jump. This vitality in the movements provide the children to master the ability to regulate their behavior. These gains in self-regulation in movement are part of a general trend toward greater self- control in all areas of development. The major milestones of motor development from age two to age six are summarized in Table 2.2.

2.1.2. Cognitive Development in Early Childhood

Thinking typical of early childhood is a blend of impressions, intuition, and partial logic. Piaget describes this period as the stage of preoperational thought. By "preoperational," he meant "before the ability to perform logical mental operations" (Fogel & Melson, 1988: 243).

Children in the period of early childhood gain the symbolic representation which means the ability to represent people, places, and ideas as symbols.

Age		Selected Behaviors
Early Childhood	2 years	Walking rhythm stabilizes and becomes even Jumps crudely with 60 cm takeoff Will throw small ball 120-150 cm True running appears Can walk sideward and backward
	3 years	Can walk a line, heel to toe, 3 m long Can hop from two to three steps, on preferred foot Will walk balance beam for short distances Can throw a ball about 3 m
	4 years	Running with good form, leg-arm coordination apparent, can walk around periphery of a circle Skilful jumping is apparent Can walk balance beam
	5 years	Can broad-jump from 60-90 cm Can hop 15 m in an about 11 seconds Can balance on foot for 4-6 seconds Can catch large playground ball bounced to him or her
	6 years	Girls superior in movement accuracy; boys superior in forceful, less complex acts. Skipping acquired. Throwing with proper weight shift and step.

Table 2.2. Milestones of Motor Development During Early Childhood
(From CRATTY, BRYANT J., *Perceptual and Motor Development in Infants and Children*, 1979. p. 222)

A symbol bears some resemblance to the thing signified. For example, a road sign with a curved line symbolizes the fact that the road ahead is curved. In contrast, a sign, such as the word cat, is arbitrary and has no resemblance to its referent. During the preoperational period, both symbols and signs are evident in many aspects of children's behavior. Imitating the adult roles, using the objects resembling the real thing, entertaining mental images of absent people, places, and things are the results of symbolic thought.

On the other hand, preoperational thinking has the deficiencies in many ways (Fogel & Melson, 1988):

Egocentrism is the inability to understand the world except from one's own point of view. When a three-year-old child picks out a toy truck for Daddy's birthday shows the inability to consider the preferences of his father because of the limitations of thinking.

Centration means centering or concentrating on only one aspect of a situation. According to Piaget, preschoolers cannot assess the multiple elements and the relations among them. As a result of this approach, egocentric thinking and other mistakes in preoperational thinking come out.

Cause-and-Effect Reasoning involves preschoolers centration on only one aspect of a situation at a time, which they have frequently in trouble grasping how one event causes another. For example, when watching a television program interrupted by commercials, preschool children have difficulty linking events shown before and after the breaks.

In case the preschool children identify cause-and-effect sequences, they use **transductive reasoning** which leads the preschool children to incorrect interpretations. Through transductive reasoning, young children link two specific events that occur close together. For example, supposing that it rained in the first day of nursery school, a preschool might interpret this to mean that school started because it rained.

Finalism is another difficulty that preschool children have in

understanding causality, refer to the belief that every event must have a specifiable cause and that nothing happens by chance. Thus, preschoolers ask endless questions beginning with "Why?" to the adults.

Animism can be described as "preschoolers' tendency to explain the behavior of natural phenomena, inanimate objects, or mechanical devices as though they were alive" (Fogel & Melson, 1988: 247). For example, a preschooler thinks that moon is hiding when it is behind a cloud and a room is lonely when it is empty.

Artificialism, which is related with animism, is "the belief that everything that exists has been created by humans or divine plan" (Fogel & Melson, 1988: 247). Thus, according to Piaget (1967), preschoolers believe that "Mountains grow because stones have been manufactured and then planted; and lakes have been hollowed out" (Fogel & Melson, 1988: 247).

Because of the preoperational thinking, preschoolers have **reasoning problems**. They make inferences and logical deductions poorly. **Classifying problems** also appear in the period of early childhood. Centration makes it difficult for preoperational children to understand that people and objects can be classified in more than one way. For example, it's difficult for a preoperational child to consider a collie as a dog, a mammal, and an animal in a hierarchy of subordinate and superordinate categories.

Children in the preoperational stage also tend to group objects together differently than do older children. If preoperational children are given a

variety of objects of different sizes and colors, and asked to classify them, preschoolers are likely to use inconsistent and shifting categories. Instead of consistently using specific dimensions or color to group the objects, they put some objects together since they are near each other, or “because one can make a man out of them”. This approach is an example of **syncretic reasoning** that refer to “idiosyncratically connecting unrelated ideas or elements into a whole” (Fogel & Melson, 1988: 247).

Seriation refers to the ordering of items from largest to smallest or smallest to largest. When sticks of differing lengths are given to four and five year old children and asked to arrange them from smallest to largest in a row, they are unable to complete the task successfully. Children of ages five and six, on the other hand, can do the task with a considerable effort and frequent errors.

Conservation is defined by Piaget as understanding the invariance of certain properties, such as number, length, surface, and quantity in spite of apparent changes in objects. Piaget argued that because of centration, preoperational thinkers have difficulty grasping the conservation of liquid, volume, length, mass, and number (Table 2.3.).

Another problem preschoolers have with conservation is understanding the **reversibility** of operations. Thus, a preoperational child is likely to think that the amount of liquid poured from a container to another in different dimensions, and then back, would not be the same amount.

Preschooler's attention gradually becomes more selective with age, but

preschoolers are more able to be distracted than older children. They also tend to perceive objects globally rather than in terms of specific dimensions. Another characteristic of preschoolers is that they don't use specific strategies to scan or remember objects, and they are less aware of what memory or problem-solving techniques should be used in different situations.

Task Acquired	Procedure	Age
Conservation of substance	Two identical balls of clay are presented. Child admits they have equal amounts. The shape of one ball is changed. The child is asked whether the two balls still contain the same amount of clay.	6-7 years
Conservation of length	Two parallel sticks are shown to the child who admits they are equally long. One of the sticks is moved. The child is asked if the sticks are still the same length.	6-7 years
Conservation of number	Two rows, each containing the same number of beads, are placed in one-to-one correspondence. The spaces in the beads in one of the rows are changed. The child is asked whether each row still has the same number of beads.	6-7 years
Conservation of liquids	Two identical beakers are filled to the same level with liquid. The child sees that they contain the same amount. The liquid from one beaker is poured into a differently shaped beaker (so that the water level changes). The child is asked if the beakers still contain the same amount of liquids.	6-7 years
Conservation of volume	Two glasses of water with equal balls of clay inside them are shown to the child. One of the balls is changed in shape. The child is asked if each piece of clay still displaces the same volume of water.	9-10 years
Conservation of area	The same number of small squares are placed in the upper left corner on two identical sheets of cardboard. The child sees that the same amount of space remaining on each sheet. On one sheet, the squares are scattered. The child is asked if the same amount of space remains on each sheet.	9-10 years

Table 2.3. Conservation Tasks Investigated by Piaget
(From FOGEL A., & MELSON G. F. *Child Development: Individual, Family, and Society*. New York: West Publishing Company, 1988. p. 249)

2.1.3. Social Development in Early Childhood

When preschool children enter the environment of early childhood education, they experience new social relationships other than that of parents. These new relationships help develop the prosocial behavior in children which refers to being fully human such as helping, sharing, giving to those in need, and cooperating. Children behave more prosocial, when they feel that they are expected to be so and to understand how to help or share effectively.

In preschool educational environments, children influence each other in many ways. They support each other in various situations and behave as a team to solve the problems they face with. These peer relations promote the feeling of socializing and help children understand social concepts and rules which is a process called internalization.

As a result of social interaction, preschool children develop the self-awareness which is different from that of older children (Table 2.4.).

Level	Age in Years	Description
0	Birth-3	No difference between perspective of self and other.
1	3-7	Knows others feel differently but no understanding that they observe how self feels.
2	7-12	Appreciates that others know how self could be feeling.
3	10-15	Observes self as actor ("I") and as object ("me") simultaneously.
4	15+	Aware of unconscious processes in self and others.

Table 2.4. Stages in the Development of Self Awareness
(From FOGEL A. & MELSON G. F. Child Development: Individual, Family, and Society. New York: West Publishing Company, 1988. p. 274)

Preschoolers begin to realize that their actions evoke reactions in others, and they become more self-aware and behave in ways that anticipate the responses of others. They discover how they are similar to and different from the others. As a result of this discovery, they understand the sex and age differences among the people. Gradually, they realize that gender is a stable and consistent property of human.

2.1.4. Emotional Development in Early Childhood

When preschool children begin to interact with other persons, events, or ideas, they begin to live emotional experiences. The expression of specific emotions, such as fear, anger, distress, and enjoyment appear to change in preschool years.

Preschool children begin to use both distress and enjoyment as social signals, since they occur primarily in interaction with others. In general, preschoolers cry less and laugh more frequently than younger children.

Since young children have difficulties in understanding that transformations in appearance do not change identity, they can become alarmed when the appearance of the people around, or of their own suddenly alters. Thus, young children are frightened when seeing the familiar people with a haircut or with masks. The distinction between fear and anxiety is that the fear has a specific source whereas anxiety has a more vague or generalized source. A sudden change in parental expectations, or a move to a new neighborhood can become the source of anxiety.

As a reaction against the feeling of anxiety, young children develop the strategies called **defense mechanisms**. At the age of 5 or 6, many children have learned to hide their feelings with defense mechanism.

The following list summarizes the most common defense mechanisms learned by children:

Withdrawal. A common defence mechanism in which the young child physically runs away from or, mentally withdraws from, unpleasant situations.

Identification. This mechanism refers to the process of incorporating into oneself to values, attitudes, and beliefs of others. For example, children adopt the attitudes of powerful figures, like parents, to reduce the anxiety that children feel about their own relative helplessness.

Projection. Young children use this defence mechanism to attribute his or her own undesirable thoughts or actions to someone else.

Displacement. A defence mechanism in which a less threatening person or object is substituted for the actual source of anger or anxiety.

Denial. The refusal to admit that an anxiety-producing situation exists or that an anxiety-producing event happened.

Repression. An extreme form of denial in which the individual completely erases an anxiety-producing event or situation from consciousness.

Regression. Coping with a anxiety-producing situation by reverting to an earlier, more immature behavior such as beginning to tumb-sucking.

Reaction formation. This occurs when children have thoughts or desires that make them anxious and cause them to react against such thoughts by behaving in a contradictory way.

Rationalization. Young children explain unacceptable thoughts or behavior by inventing a socially acceptable reason for them (Craig, 1989).

Preschool children begin to feel self-worth or self-esteem through the realization of their characteristics. They represent individual differences in their emotional lives and the way to respond to the events.

The development of self-control is another property acquired by children in this period. Physical and verbal aggression increase from early childhood, but over the preschool years, most children learn the ways of resolving conflicts with others. Self-control help children to control the aggression, and eventually becomes a way to adapt to the environment (Fogel & Melson, 1988).

2.1.5. Linguistic Development in Early Childhood

A dramatic increase is observed in average vocabulary during the preschool years, from under 400 words at age two to over 2500 at age six. Children understand many more words at each age (**receptive vocabulary**), though they cannot use all of them effectively in conversation (**productive vocabulary**). Preschoolers often pick up some words they

hear around them, even though they may not know the meaning of them. The grammatical development in the language is also evident in this period. Children begin to use the grammatical rules stage by stage in the nature of an approximation to adult usage. Gradually, children learn to use language as a social instrument in communication (Fogel & Melson, 1988).

2.2. Perceptual and Evaluative Approach of Preschool Children to Built Environment

A child's physical environment is formed by few basic spaces: home, surroundings of home such as playground, street, shop, and preschool environment. The child, as the youngest member of the society, develops in this environment. A child's physical environment, which is mostly created by adults with adult understanding, is the world of small objects within a world of bigger objects. Broad imagination capability of the child uses every object as a raw material to recreate his own world whether the environment has been well-prepared or half-prepared by adults (Tunçel, 1981).

Observations show that children use the built environment in an amazingly different manner than adults. "Young children, so imaginative in their own spheres of actions, may look matter-of-factly on places than to adults are haunted by memories" (Tuan, 1977: 33). Children may perceive their environment realistically as a necessity or experience, but their use of environment may depend on their unlimited imagination. For example, a child may use an environment just like a play material as the designer never planned. Environments for children, to live in, learn in, and play

in should give opportunities for children to make their own decisions. Otherwise, children find out ways against the limitations with their imagination. Children are often able to adapt themselves to the existing environment and change the environment according to their desires.

Children and adults differ as regards the critical entities for environmental design including not only physical dimensions but also cognitive development, social competency, personal mobility, autonomy, and control. Thus, actions of children are different from those of adults within and upon the built environment. Secondly, reactions of children are different from those of adults. Thirdly, certain environments are designed explicitly for children's activities or for children as users. Because of the reasons stated above, the quality of children's interactions with the world around them should be assessed according the characteristics of children (Ziegler & Andrews, 1987).

When the design of an environment requires the consideration of the data related to children, the problem becomes even more complex. If the potential users of an environment are different groups of people such as children and adults, design solutions should satisfy the needs of both groups. It is obvious that children have special psychological and physical needs and these needs may not always be identical to those of adults. Moreover, it is a difficult design process to develop an environment precisely answers the expectations of both age group together.

According to environmental researchers, physical environment influence the development of children. Thus, in order to create an effective

environment, the needs of the children have to be considered in any setting. The young child has a right to develop and to grow according to his inner dictates; he needs to play, to socialize with other children and adults, and to explore the world around him. Thus, the child should be considered as an active learner, the physical environment as a living-learning environment, and the child's life as a development cycle. If designer is aiming at physical congruence between the child and the physical environment, information has to be obtained about his spatial requirements, and this information has to be usable in the design process (Pollowy, 1974).



3. CHILDREN AND PRESCHOOL EDUCATION

Early years in the life of a child has great importance, since the development is very rapid. In this period of life, being in a developmentally supportive environment and being cared by the able persons provide a healthy progress in the overall development of children.

In this chapter, the need and purpose of preschool education will be explained in the first part. In the second part, the meaning of a multipurpose space and its general contributions to the development of children will be stated. Five particular themes; environmental, creative, educational, emotional, and social development will be discussed to emphasize the role of a multipurpose space in learning. The aspects of activity in learning will be examined under the titles of play, and discovery. After the meaning and values of play are stated, three authorities' point of views on the varieties of play will be examined. The criteria that should be taken into consideration for a high quality of play in child development will be summarized considering time, change, challenge, and suitability. Discovery is defined as another aspect of learning and its relation with play is determined. In the third part of the chapter, major philosophies in preschool education and their appearance in physical dimension of educational environments will be discussed in order to clarify the consistency between the philosophy and the design of the multipurpose

space.

3.1. Need and Purpose of Preschool Education

The advancement of pediatrics, mental health, education, psychology, and growing public concern in welfare of family and children have caused a gradual development in the preschool education. Moreover, the employment of mothers because of the economic problems has necessitated that preschool children be cared by other social organizations. Day care centers and nursery schools are included in these social organizations. Day care centers are institutional settings in which preschool children are cared for when their mothers are working or otherwise unavailable. Nursery schools, on the other hand, are preschool settings which prepare children for school, usually with periods of group activities and shorter hours than day care. The aim of kindergartens is to prepare 5-6 years of children to first grade education (Clarke-Steward & Friedman, 1987).

Early childhood education programs have often been justified because they meet the developmental needs of children. Generally, preschool education has two functions: The first one is to socialize the young children. Preschool educational environments are the places where children meet new social interactions. Through the activities such as eating, sleeping, and playing together, children begin to learn how to live with other people. They also realize their liberty through the conditions of preschool environment.

They become aware of the existence of themselves and the others. Through

team work, sharing, helping each other, and respecting the others' liberty and rights, children experience the feeling of socialization. Besides, teachers and caregivers are healthy models for young children who learn through imitation. The young child's development is largely a function of the interaction between the basic maturational patterns and encounters with the environment. The second function of the preschool education is to educate the young children. The activities that children are involved in preschool education help them elaborate certain skills and abilities rather than teach new things. Thus, early childhood educational environments, by creating a favorable circumstances, support the child's development and influence its direction (Frazier, 1968).

3.2. Multipurpose Space and Learning in Preschool Education

The appropriate environment for preschool children will nurture growth in all areas of development, such as physical, emotional, social, and intellectual. Concrete, manipulative materials arranged in interest centers will motivate the children to engage with activities, while creating the optimal learning environment for young children. Preschoolers are naturally curious and eager to explore their environment (Moore & Moore, 1979). The learning center approach to teaching creates a total learning environment which supports the development of each child as an individual (Ward, 1991). Children need space to learn through their own actions such as building, sorting, experimenting, counting, and pretending (Hohmann, Banet & Weikart, 1979). An environment of this nature lets children make choices and act on them. Early experiences appear to be a key influence in determining children's abilities for further learning

(Ward, 1991).

In this part, the role of interest centers in child development will be examined. Besides, two aspects of activity in learning; play and discovery will be discussed.

3.2.1. Role of Interest Centers in Development of Preschool Children

Multipurpose space in preschool educational settings refers to the environment where various activities related with education take place, and children are cared. Activity or interest centers are the places that are arranged with creative materials for exploration and play. Multipurpose space is a dynamic environment where activity centers are permanently ready to serve for children. In this respect, a total multifunctionality takes place in multipurpose space, while children are involved in different corners concurrently. The dynamism of multipurpose space also comes from the changing the physical aspects of activity centers through the combinations among them. For example, a combination of a dramatic play area and a block area changes the usage of these areas into a new appearance.

In relation to interest centers, five particular themes - environmental, creative, educational, emotional, and social development - are developed to emphasize the role of multipurpose space in learning.

Environmental Development: Interest centers are designed to meet

the broad goals of a program, and to meet children's need for activities, decision making and interaction. Children receive information from this environment and use it in their intellectual development. This information has the properties of life enhancement, providing a range of choices and experiences, and stimulating and challenging. By the implications of this information, children learn many things about texture, color, sound, aesthetics, etc. These beneficial implications are required to be developed by a series of well-defined, interrelated areas, in multipurpose space (Ward, 1991).

Creative Development: Creativity greatly contributes to children's sense of self-worth and individuality and increases the probability of unique contributions that they may ultimately make the society. An environment including materials that encourage self-expression and pretend play and strategies enhance the growth of original thought (Hendrick, 1990; Ward, 1991).

Creativity in young children can be stimulated by the alternative uses of materials. Through the interaction between loose materials and children, creative development in multipurpose space can occur. Nicholson (1971) stated that the number and kinds of variables in any environment determine the degree of inventiveness and creativity, and the possibility of discovery. This reality is one of the many important criteria to be considered in designing preschool educational environments.

Educational Development: Children learn to make meaning from their perceptions of the world around them. This is a process that involves

questioning, information gathering, interacting, organizing data, and generalizing. These actions are supported by preschool educational environments where children meet with others. This environment help to foster the ability to reason and to put the results of this reasoning to later applications. This development provides the strong foundation for continued success in learning (Frazier, 1968; Hendrick, 1990).

During the preschool years, play with other children and conversation with adults help children to develop conversational and other language skills. Therefore, the environment in where the language communication is available with peers and adults foster the language skills (Fogel & Melson, 1988).

Emotional Development: Preschool education provides opportunities for young children to develop their sense of autonomy and initiative in a setting that is consistent, trustful, and warm. Through the preschool educational environment, the emotional stability of young children which contributes to sense of well-being and self-confidence is emphasized. Emotionally healthy children are not excessively withdrawn or aggressive. They consume their energy to develop their total being. As a result, this development is carried to a society in which individuals avoid themselves to create worries and insecurities (Hendrick, 1990; Hendrick, 1975).

Social Development: Children in the period of early childhood begin to attain new social learnings. These attainments are successfully supported by the preschool environments. Preschool educational environments are places where children have the opportunity to meet and interact with

other people. Feelings of rivalry and competition begin to develop and appear to be intense level between the ages of four and six. This interaction develops the feeling of need for social involvement. Children gain skills that help them get along easily and happily with others, the more likely they are to enjoy life and to feel successful (Hendrick, 1990).

Preschool educational environments foster the prosocial behaviors like helping, sharing, giving to those in need, and cooperating. Young children also learn to respect to the rights of others. This development becomes one of the first step for a positive personality (Fogel & Melson, 1988).

After examining contributions of preschool educational environment in development of young children, the activity in the multipurpose space and its way of appearance will be discussed under the following topic.

3.2.2. Aspects of Activity in Learning

Children learn best by doing, and find interest and enjoyment in activity. Efficient learning depends on well chosen and well managed activities. The features that identify a good activity and distinguish it from a poor one are that

- it is well within the competence of the age and ability of the children using it
- it does not attract attention to itself at the expense of what is being learned
- it is enjoyable for those taking part
- it can sustain the interest of pupils involved for as long as it takes them to succeed in what they are learning
- it allows ample freedom for the child to express himself
- it does not make the consequences initial failure

too serious or disturbing
-it helps the child to gain a firmer grasp of what is learned by leading to a deeper understanding.

Activity can be used in three main ways:
- to develop a skill such as reading, drawing, singing, etc.
- to discover new knowledge through investigation, experiments, exploring, etc.
- to apply knowledge learned to useful ends such as the care of animals, farming, modelling, etc (Farrant, 1988: 133).

Movement and freedom to move are very desirable in any situation where activity is to be used. This has significant implications for the kind of furniture used in preschool environments, its arrangement, and even the design of schools themselves.

Activity methods require a higher standard of competence from the teacher because the forecast of extraordinary events in the multipurpose space is difficult. Therefore, teacher must be ready to make adaptations to changing situations. Learning that comprise active pupil participation is a cooperative effort.

3.2.2.1. Play

Play serves as an opportunity for experimentation in the process of learning. In playing, children combine the bits of skills into new wholes and find out what works and how it works (Clarke-Steward & Friedman, 1987).

In the United Nations Declaration of the Child's Right to Play, which was broadcast in 1959, Principle 7 states:

The child shall have full opportunity for play and recreation which shall be directed to the same purpose of education; society and public authorities shall endeavor to promote the enjoyment of that right.

In the Malta Declaration of the Child's Right to Play (1979), which was formulated by the International Association for the Child's Right to Play (IPA), it was declared as part of the International Year of the Child that;

Play, along with the basic needs of nutrition, health, shelter and education, is vital for the development of the potential of all the children.

As mentioned by Hendrick (1990), Johnson & Ershler (1982) offered a definition of play for preschool teachers that has a particular merit: "Play may be defined as that is intrinsically motivated, freely chosen, process-oriented, and pleasurable" (137). This definition allows us to determine the set of standards in play activity in multipurpose space. These standards and their interpretations are given by Hendrick (1990) as:

- Play is intrinsically motivated.
(interpretation) Will children choose to become involved in the curriculum I have planned because the activities are inherently satisfying or because they will be rewarded by the teacher?
- Play is freely chosen.
(interpretation) Does this play allow children to choose freely what they wish to do for at least a portion of the time they are at school?
- Play is process-oriented.
(interpretation) Will children find satisfaction while doing the activity and not just in the end result?
- Play is pleasurable.
(interpretation) Will the children have fun while they are participating in the activity? (18)

Physical Value of Play: When children use their bodies in physical

play, they feel deeply satisfied by knowing what one's body can do. For extrovert children, play works as an energy expenditure process that help them feel more comfortable through the usage of excessive amount of energy (Hendrick, 1990).

Curing Value of Play: Children's desires are immediate, intense, and personal. Inevitably, their desires are prevented numerous times from satisfying them. Though the amount of anger and aggression vary from child to child, all children experience the feeling of aggression in case they are prohibited to reach their desires. Depending on this, children need to redirect their aggressive feelings into channels that harm neither themselves nor others. Play serves as a discharging tool for children to relieve anger harmlessly (Hendrick, 1990).

As Hendrick (1990) quoted from Elkind (1983):

Play is, first and foremost, an individual's way of dealing with the stress of life. By transforming reality play makes unmanageable situations manageable at the same time that it provides socially acceptable outlets for stress... Children need to play for the same reason adults do- to enable them to go on with the difficult task of adapting to an ever more complex and bewildering society (29).

Fogel and Melson (1988) state that according to psychoanalytic point of view, young children have the opportunity to act out conflicts and fears in a safe environment, while they are playing. In this way, children can express aggressive impulses without fear of punishment. Another point, emphasized by psychoanalytic theory, is that the pretended themes of fantasy play let the young child satisfy unrealized desires and overcome

frustrations.

When children play, they are more completely themselves than any other time. Thus, play leaves children free to express ideas, and feelings that they cannot utter.

Social Value of Play: Certain characteristics of play distinguish it from other kinds of behavior. The real world is imitated in the safety of a secure surrounding. Play sometimes encourages competition between individuals or groups against each other and sometimes supports cooperation in between them. This cooperation leads children to new relationships that foster social knowledge. According to cognitive theorists, social play prompts awareness of the feeling of others that decreases egocentrism. Besides, it provides opportunities for creativity, empathy and prosocial behavior. As a natural consequence of play, the concepts of self-confidence, self-reliance, and independence are developed in children. Consequently, play provides the most appropriate training ground to develop the social consciousness through the interaction among children (Hendrick, 1990).

Education Value of Play: Play is interpreted in many preschool educational programs as free activity. In periods of free activity, children are allowed to choose one of a number of different kinds of activity such as drawing, modelling, craftwork or certain kinds of play with other children. The value of free activity is that it allows children to choose the activity they like best. Children also acquire a scope to experiment with the knowledge and skills (Farrant, 1988).

Ethical Value of Play: Sociodramatic play is a way of rehearsal of real life in a safe environment. When children imitate various roles, they learn what is right and what is wrong in the society. As a result of this, children learn ethical principles and develop the moral identity (Hendrick, 1990).

Principles for Encouraging Play: When teachers understand and accept the value of play in learning, they make a commitment to it subtly convey this message to children. In this atmosphere of acceptance and approval, children are involved in play eagerly (Hendrick, 1990).

In addition to commitment, there are some more obvious and general principles which are used to encourage the play. One such principle is that planning enough time for play to be generated is essential (Hendrick, 1990). It takes time for children to develop their play ideas fully. Another principle is that equipment must be stored in readily accessible areas. Postponing the play request of children may remove the desire for play.

One of the most important encouragements for playing is to provide plentiful materials. Having enough equipment to go around promotes comfortable and harmonious play. Thus, it is wise to provide at least two of whatever the items that are very popular.

Materials and equipment should also be age appropriate so that children love to use them in their play. Unless the materials are age appropriate, playing with them does not contribute to the development of children. Thus, the selection of toys and play materials must be done carefully in

order to provide the highest benefit in playing. Table 3.1. offers many suggestions for the kinds of appropriate materials and equipment.

Wherever play takes place, teachers should be aware of it and seek to continue and extend it. Although the dramatic play area and block corner are the most popular play areas, play can occur anywhere: at the manipulative table as children play zoo with small models and cubical counting blocks, or in a wagon which is transformed into an ambulance. Thus, an accomplished teacher tries to extend the boundaries of play, encourages imagination so that children can obtain the maximum benefit from the experience. However, role of the teacher should be the supporter, not the creator. It is also important to allow some space between teachers and children so that the youngsters do not feel suffocated by too much close attention (Hendrick, 1990).

All ages are approximate. Most suggestions for younger children are also appropriate for older children.

	Sensory materials	Active play equipment	Construction materials
2 year-olds and young 3's	Water and sand toys: cups, shovels Modeling dough Sound-matching games Bells, wood block, triangle, drum Texture matching games, feel box	Low climber Canvas swing Low slide Wagon, cart, or wheelbarrow Large rubber ball Low 3-wheeled, steerable vehicle with pedals	Unit blocks and accessories: animals, people, simple wood cars and trucks Interlocking construction set with large pieces Wood train and track set Hammer (370 g. steel shanked), soft wood, roofing nails, nailing block
Older 3's and 4 year-olds	Water toys: measuring cups, egg beaters Sand toys: muffin tins, xylophone, maracas, tambourine Potter's clay	Large 3-wheeled riding vehicle Climbing structure Rope or tire swing Plastic bats and balls Various sized rubber balls Balance board Planks, boxes, old tires Bowling pins, ring toss, bean bags and target	More unit blocks, shapes, accessories Table blocks Realistic model vehicles Construction set with smaller pieces Woodworking bench, sandpaper, nails
5 and 6 year-olds	Water toys: food coloring, pumps, funnels Sand toys, containers, utensils Harmonica, kazoo, guitar, recorder Tools for working with clay	Bicycle Outdoor games: bocce, tetherball, shuffleboard, jump-rope, Frisbee	More unit blocks, shapes, accessories Props for roads, towns Hollow blocks Brace and bits, screw-drivers, screws, metric measure, accessories

Table 3.1. Some Good Toys and Play Materials for Young Children
(From HENDRICK, JOANNE. Total Learning: Developmental Curriculum for the Young Child. New York: Macmillan Publishing Company, 1990. pp. 26-7)

Table 3.1. (cont'd)

	Manipulative toys	Dolls and dramatic play	Books and recordings	Art materials
2 year-olds and young 3's	Wooden puzzles with 4-20 large pieces Pegboards Big beads or spools to string Sewing cards Stacking toys Picture lotto, picture dominoes	Washable dolls with a few clothes Doll bed Child-sized table and chairs Dishes, pots, and pans Dress-up clothes: Hats, shoes, shirts Hand puppets Shopping car	Clear picture books, stories, and poems about things children know Records or tapes of classical music, folk music, or children's songs	Wide-tip watercolor markers Large sheets of paper, easel Finger or tempera paint, 1/2" brushes Blunt-nose scissors White glue
Older 3's and 4 year-olds	Puzzles, pegboards, small beads to string Parquetry blocks Small objects to sort Marbles Magnifying glass Simple card or board games Flannel board with pictures, letters Sturdy letters and numbers	Dolls and accessories Doll carriage Child-sized stove or sink More dress-up clothes Play food, cardboard cartons Airport, doll house, or other settings with accessories Finger or stick puppets	Simple science books More detailed picture and story books Sturdy record or tape player Recordings of wider variety of music Books and recording sets	Easel, narrower brushes Thick crayons, chalk Paste, tape with dispenser Collage materials
5 and 6 year-olds	More complex puzzles Dominoes More difficult board and card games Yarn, big needles, mesh fabric, weaving materials Magnets, balances Attribute block	Cash register, play money, accessories, or props for other dramatic play settings: gas station, construction, office Typewriter	Books on culture Stories with chapters Favorite stories children can read Children's recipe books	Watercolors, smaller paper, stapler, hole puncher Chalkboard Oil crayons, paint crayons, charcoal Simple camera, film

The appearance of play depends on the varieties which change according to children's developmental stages, and the quality which deals with time, change, challenge, suitability and cooperation. These issues will be examined in the following two subtitles.

Varieties of Play: The developmental progression of preschool period was described in the kinds of play by Piaget (1963). According to him, the child first engages mainly in the practice play, later on develops symbolic play/fantasy play which can be classified as the individual plays. When children coordinate activities with others, it is called social pretended play/sociodramatic play. The final stage in the development of play is the games with rules.

A similar way of categorizing to Piagetian theory was developed by Smilansky in 1968. Smilansky divided play according to functional play, constructive play, sociodramatic play, and games with rules.

Another stage theory was advanced by Mildred Parten in 1932. Parten observed preschoolers as progressing from unoccupied behavior through the stages of solitary, parallel, associative and cooperative play.

Table 3.2. summarizes these systems of categorizing play activity.

It is advised to note that Smilansky/Piaget model concentrates on intellectual growth whereas Parten's system focuses on social interaction (Fogel & Melson, 1988; Hendrick, 1990).

	Stage of Play	Description
PIAGET	Practice play	Repeated movements to consolidate, perfect, or elaborate a skill. Example: Going down a slide. (First, down the right way, feet first. Later, down backwards or head first.)
	Symbolic play	Play in which one thing stands for another. Example: Playing house. (Child uses play materials to represent some imaginary thing.)
	Games with rules	Play involving rules and competition between individuals or groups. Example: Hide-and-seek.
SMILANSKY	Functional play	Simple muscular activities and repetitive muscular movement with or without objects are used. The child repeats actions or initiates actions.
	Constructive play	The child learns use of play materials, manipulation of objects to construct something or create something. There is an attempt to create something. Example: Drawing a person, building a play dough house, measuring with water beakers.
	Dramatic play	The child takes on a role; he or she pretends to be someone else, initiating another person in action and speech with the aid of real or imagined objects.
	Games with rules	The child accepts prearranged rules and adjusts to them, controlling actions and reactions within given limits.
PARTEN	Solitary play	Child plays alone. Example: Child sits alone in the sandbox and fills pail with sand.
	Parallel play	Play in close proximity to other children but without interaction. Example: Two children sit next to each other in a sandbox, each filling a pail.
	Associative play	Children respond to each other during play but maintain separate goals. Example: Two children talk to each other while playing with sand in a sandbox.
	Cooperative play	Play is organized around joint activities. Example: Two children work together to build a sand castle.

Table 3.2. Stage Theories of Play: Piaget, Smilansky & Parten
 (From FOGEL, A. & MELSON, G. F. *Child Development: Individual, Family, and Society*. New York: West Publishing Company, 1988. p. 326
 combined with
 HENDRICK, J. *Total Learning. Developmental Curriculum for the Young Child*.
 New York: Macmillan Publishing Company, 1990. pp. 26-7)

All these theories emphasize that simple forms of play evolve to more complex forms of play. Therefore, social play appears later than both parallel and practice play. Besides, play that involves interaction among children increases with age whereas non-interactive play declines (Johnson & Ershler, 1981). During the preschool years, social play that involves role coordination, pretend activities, development of common theme, and turn taking frequently increases (Parten, 1932; Smith & Connolly, 1972; Rubin & Maioni, 1975; Rubin & Peppler, 1980).

Quality of Play: Quality of play is important as much as quality of education that is looked for everywhere by parents, but most of them are not aware of the fact that children learn through playing more than through any systematic school education. This is the basic reason for stating some criteria those should be taken into consideration while directing the children's play.

The quality of play depends on five criteria (Heseltine & Holborn, 1987), which can be named as time, change, challenges, suitability and cooperation. Regarding these, the following can be pointed out:

Time - the longer time a non-repetitive play activity takes and attracts the child's attention, the better the play quality is.

Change - the greater the capacity of play space and the equipment to be changed, and the more possibilities are offered to the child, the greater the play value is.

Challenge - the more opportunities the play space has to offer an increasing

level of challenges to children, the better the play value is.

Suitability - The more the play space can match different ages and needs at the right time, the greater the play value is.

After examining the varieties and qualities of play, which should be taken into consideration while deciding the interest centers in multipurpose space, another aspect of learning, that is, discovery should be examined.

3.2.2.2. Discovery

Discovery is a way of learning that has been widely used in preschool educational programs. Learning through discovery changes the position of teacher from the source of all knowledge to an adviser to his pupils. The teacher encourages direct action and interaction between the children and their learning material. Thus the disadvantages of formal teaching are eliminated.

In the discovery method, the best way of learning takes place in the context of clear objectives, orderliness and carefully planned but flexibly structured teaching strategies. For example, in a preschool program, discovery takes place in art & craft and science corner. Objectives may be selected as the improvement of classification ability. Children are initiated to engage with the activity such as separating the buttons in different size and color into the groups according to a property. With the discovery method, children compare and realize the similarities and differences among the buttons.

The discovery method is valuable because it both provides learning and fosters the feeling of confidence in preschool children. So it is that discovery method encourage all-round development in the child, thus helping to fulfill one of the basic aims of education.

Discovery has much in common with other activity methods. For example, play often has a role in it for discovery, and exploration is implicit. Discovery which takes place in the nature of play enables experimentation beyond the real level of development without dangerous consequences. This aspect of discovery makes it applicable in preschool educational programs (Farrant, 1988).

3.3. Major Philosophies in Preschool Education

Levy (1991) comments that according to Allan A. Glatthorn (1987), curriculum refers to:

. . . the plans made for guiding learning in schools, usually represented in retrievable documents of several levels of generality, and the implementation of those plans in the classroom; those experiences take place in a learning environment that also influences what is learned.

Therefore, curriculum may be viewed as a philosophy of education that is defined in both the content of instruction and the implementation of instructional strategies designed to enable the students to master the content; it is both form and process (Levy, 1991: 327).

Rebecca New (1990) comments on the relation of environment and curriculum as:

The use of space supports the curriculum. . . . The

environment and curriculum are inseparable.
Rooms connect in ways that promote community,
yet allow space for children's works-in-progress
that require weeks of effort (8-9).

As supported by the above comment, the organization of environment and the curriculum are interrelated parts of the preschool education. The major philosophical perspectives in early education and the characteristics of their supportive environment would be discussed.

Hendrick stated (1991) that Franklin and Biber (1977) discussed three psychological perspectives and illustrated how these are reflected in current preschool education. They identified these perspectives as the behavioristic learning theory approach, the Piagetian cognitive-developmental approach, and the developmental-interaction approach. In fact, no preschool is likely to be purely behavioristic or purely Piagetian, but rather it tends to follow one approach more than the others, while remaining somewhat eclectic.

3.3.1. Behavioristic Learning Theory Approach

Franklin and Biber (1977) characterize the behavioristic learning approach as being based on behavioristic psychology, which has as its basic tenets that "(a) observable behavior or performance constitutes the primary datum for the scientific investigation of learning processes and for approaches to behavior change and (b) the basic principles of learning are the laws of classical and operant conditioning" (3). This is commonly referred to as a behavior modification approach. Although the procedures of this approach recommend a rigid and calculated education, behavior

-

modification does encourage the development of precise analysis of behavior and teaching goals.

Observing children's current behavior to determine the preferred rewards is recommended by behaviorists before attempting to change children's behavior. According to what behavior would be more favorable, a reinforcement plan or schedule is developed. There have been two programs attempting to put this educational theory into deliberate, consistent practice are the ones by Bereiter and Eglemann (1966) and the Portage Project (Shearer, 1987).

Franklin and Biber also comment that programs presently based on behavior modification techniques seem to follow more traditional, academic source of education (Hendrick, 1991). A definition of this approach is given by Dewa Ward (1991) as quoted from Patterson (1977), Gagne (1974), and Craig (1989):

Formalized, academic kindergartens adopt a philosophy of systematic organization, direct instruction and mastery learning. The curriculum is teacher-centered with a focus on paper/pencil activities, phonic instruction, detail in handwriting, repetition and reinforcement in math concepts. The teacher's role is one of preparing and directing lessons with involvement in expository teaching while the children gain knowledge through the process of reception learning (157).

Since the academic education requires the concentration and persistence at tasks, the learning centers are highly structured, and mostly as in the form of physically separated rooms. The arrangement of the environment fits to the point of attention learning where social interaction and hand-on

learning are limited.

3.3.2. Piagetian Cognitive-Developmental Approach

As mentioned by Hendrick, the perspective that was developed by the theories and research of Jean Piaget and his colleagues was discussed by Franklin and Biber. This approach accepts the children as the source of action and as an interactor with the environment, rather than as being manipulated from the outside. The cognitive structure of the child gradually develops. It helps the child "make sense of his world and that govern 'his modes of transaction with the social and physical environment in which he lives'" (Hendrick, 1991: 10). The author also quotes from Franklin and Biber that "Since learning is an active process, and knowledge is constructed rather than 'acquired,' the child must be provided with an environment which furthers his own natural tendency to act on and with objects, to explore, manipulate, and experiment" (10).

Piagetians stress the importance of direct exploration and handling of objects in preschool education. The principles of Piaget became the guideline for all Piagetian curriculum for preschool education. In this sense, different programs share the same general philosophy. However, programs differ in emphasis point. Three major implementations of Piagetian educational philosophy are the Lavatelli Early Childhood Curriculum, the Weikart Cognitively Oriented Curriculum, and the Kamii DeVries Approach.

Lavatelli developed a preschool curriculum organized around three themes:

(1) classification; (2) number, space, and measurement; and (3) seriation. A series of activities are designed for each theme to use with small groups of five to six children. Since the program is structured, interest centers are designed in order to avoid the outside distractions. The amount space in interest centers is arranged according to the small number of children.

Weikart Cognitively Oriented Curriculum is less structured than the Lavatelli Curriculum. It was developed by David Weikart and his associates. In the program, a stimulating environment is created through the use of interest centers. For this purpose, different sections of a large, open space are arranged where materials are provided for children to sort, compare, and combine. The role of the teachers is to ask questions and to demonstrate activities in the interest centers. However, unlike the Lavatelli Curriculum, children initiate the activities rather than teachers (Fogel & Melson, 1988).

As mentioned by Fogel & Melson (1988), the Kamii DeVries Approach is even less structured than the Weikart program. It is believed that any attempts to teach children logical operations such as classification through questions and demonstrations are misguided. Instead, the best way to foster the cognitive growth is to provide an environment where social interaction, curiosity, exploration, and play are encouraged (Kamii & DeVries, 1974).

According to Franklin and Biber, there are crucial similarities in viewpoints of Piagetian-based educators and the developmental-interaction perspective. The primary difference between the two is that Piaget focused on only cognition (Hendrick, 1991).

3.3.3. Developmental-Interaction Approach

Although this approach uses the principles of Piagetian theory, the viewpoint of this approach is wider and more eclectic. It bases the concept that children pass through a number of predictable, orderly stages in their growth. It uses Erikson as the model of emotional development, Piaget in relation to cognitive growth, and Gesell and other more recent authors for stages of physical development (Hendrick, 1991).

The developmental approach is defined by Dewa Ward (1991) as quoted from Patterson (1977), Piaget (1973), and Craig (1989):

Developmental kindergartens adopt a philosophy of inquiry-learning. The curriculum is child-centered with most of the instruction accomplished through the use of learning centers and developmentally appropriate, manipulative materials. The teacher's role is one of facilitating learning by encouraging students to pursue interest and explore the classroom environment (Maxim, 1977). The teacher prepares the classroom environment, realizing that children learn intrinsically, through self-initiated actions (157).

Developmental-interaction approach accepts the interaction not only between the child and environment but also between various aspects such as physical, emotional, social, creative ones within the child. Child's feeling about his worthiness influence his ability to learn as well as his potential sense of mastery over cognitive materials increases his positive sense of self-worth (Weber, 1984; Zimiles, 1987).

With such a philosophy, learning through play and by means of actual experience is essential in a total curriculum. The environment that favors

such process learning refers to an open environment where self-selection and open choice is allowed to children rather than teacher's control in selection and timing over activities (Hendrick, 1991).

When implementing a good early childhood program, curriculum organization and classroom management must be in consideration. The curriculum organization is made up of three components: learning centers (or interest centers), skills groups, and units of study.

Learning centers are created with the division of an open and large classroom into a number of small areas (i.e. art, blocks, math, reading, science, social studies, dramatic play, writing, etc.) in which a specific skill is aimed to develop. The role of the centers is to provide interaction among children and to enable experimental learning.

Skills groups provide for flexible groupings for basic instruction and the opportunity for direct teaching in areas such as language experience, reading and math.

Units of study are organized in learning areas as the specific topics such as science and social studies (i.e. animal habits, self-concept, the circus, etc.) Activities in the developmental curriculum are designed for small and large group instruction and for learning centers. The unit approach works to integrate the curriculum throughout the entire classroom. It allows the children the opportunity to draw, read, write, and create within a content area (Day & Drake, 1991).

Povell (1991) states that Maria Montessori is the creator of a system called

as Montessori Method of Education. Montessori designed a "highly didactic, individualized, self-chosen, self-correcting system (that) can be found in today's accepted definition of quality early childhood education. . ." (Povell, 1991: 403). Montessori method of education incorporates in a 'prepared environment' in which materials and the equipment is arranged according to children's needs, both physically and conceptually. Material and equipment is freely available for the children to conduct independently.

The room or rooms should be furnished very simply and with child-size furnishings. Child-size chairs, tables, and child-size open-shelving is required. Montessori environment is designed to complement the activities and the children's participation in them.

In Montessori education, activities are organized under five subjects: Practical Activities consist of basic personal and social skill used in daily living. A second subject area consists of the Sensorial Activities, which serve to enhance the child's sense perceptions of the world. The other two subject areas are the Language Activities, which start the child reading and writing, and the Mathematics Activities, which introduce counting and arithmetic. The last subject area, called Culture Activities, exposes the child to such fields of inquiry as physical science, history, geography, anthropology, and biology (Gettman, 1987; Evans, 1971).

The philosophies discussed up to now represented two educational trends which are teacher-directed in academic education and child-directed in Piagetian and Developmental approach. What then are the characteristics of an environment that fosters a child's balanced development in relation

to those trends?

Day and Drake stated (1991) that according to Weikart (1978) and his colleagues "important social consequences of preschool curriculum choices were showing up in the elementary school years" (174). Children from teacher-directed programs consistently were rated lower on sociability, cooperation, and academic orientation than children from more child-directed programs.

Day and Drake (1991) state that according to Wilson (1983), preschool education environments can be defined in terms of the number of simultaneous segments (i.e., activities) operating at any one time. Education environments that rely on primarily on teacher-led group instruction are the least complex, with only one activity center in operation. The next level of complexity involves two activity segments operating simultaneously in a multipurpose space. In early childhood programs, this typically consists of teacher-led small group instruction (i.e., reading or math skill groups) and an independent seatwork segment planned for children who are not working with the teacher in skills group.

Education environments with more than two segments operating simultaneously are the most complex ones. Early childhood education environments that are organized so that children have the opportunity to work in both teacher-led and independent small groups, have hands-on learning activities, and have the opportunity to move at their own pace, often using learning centers as the mechanism for implementing this approach. Education environments with learning centers are multi-task

settings, with the number of segments in operation at any one time varying from three to fifteen or more.

Decisions on how best to set up the early childhood environment for the needs and interests of the child inevitably derive from a particular perspective or theoretical framework. David Elkind has said (quoted by Povell, 1991) that:

Young children's learning is permeable. Children do not organize their thinking and knowledge in subject matter areas such as reading, math, science, and art. Rather their thinking is organized around projects, activities, and frames. Each project, activity, or frame includes skills and information which at a later age might be grouped under one or another subject matter category, but which for young children are part of a global whole (404).

The following six developmental assumptions, quoted by Povell (1991) from Bredekamp (1989), will be utilized as the basis for designing a quality early childhood environment that will meet the developmental levels and caring styles of young children:

1. Children construct knowledge
2. Children learn through experimentation and manipulation
3. Children learn through constructive error
4. Children learn through play
5. Children learn through social interaction
6. Children's interests and "need to know" motivate learning (404-5).

In summary, active involvement by pupils creates higher engagement with the activities and active involvement is provided by multi-task education environments.

4. PSYCHOLOGICAL ASPECTS OF PRESCHOOL EDUCATIONAL ENVIRONMENTS

The psychology and social behavior of preschool children are profoundly affected by the physical character of the environment. Therefore, the concern of this chapter is to analyze the psychological dimension of preschool educational environments and to make inferences on considerations of physical dimension.

In the first part of the chapter, psychological and behavioral properties of the environment and their effects on physical dimension will be pointed out in detail. In the second part of the chapter, how social behavior is affected by certain arrangements of a multipurpose space will be discussed. The recommendations of researches of shape on the behavior of young children will be stated.

4.1. Psychological and Behavioral Influences of Environment on Preschool Children

The environment of a child is composed of physical and social factors. These physical and social factors have diverse effects in the development of children. Behavioral scientists and professionals are eagerly interested in children from the social and environmental point of view. Because

children who have little cultural and past experiences are more responsive against stimuli coming through the environmental conditions. The knowledge about these issues will provide the opportunity for achieving a suitable design of the environment with a positive impact on children's development.

Psychological and behavioral properties of environment are reflected in the concepts of personal space, privacy, territoriality, and crowding. Preschool children's understanding of personal space, privacy, territoriality and crowding are the basic concerns of this discussion which are helpful in analyzing the social implications of children in their environment.

4.1.1. Personal Space

We conceptualize ourselves as spatial entities and recognize that at any one time we occupy a space that is ours. The extent to which a feeling of 'self' extends beyond a person's body, that is the extent of one's body space, varies from one society to another (Hall, 1966: 118).

Hall defines the personal space as a "small protective sphere or bubble that an organism maintains between itself and others" (119). Gifford (1988) identifies that the personal space shrinks and stretches with circumstances and it controls the interpersonal relationships. Role behavior is also a major dependent in personal space, since appropriate spaces are necessary in order to carry out particular roles where appropriate distances and behaviors are associated with these roles.

It's an undeniable fact that children should have personal space rights in

social and physical environment. As mentioned by Önal (1988), Ittelson and his associates (1974) state that the personal space rights of young children are either nonexistent or at best very limited. The approach of people to children, even in case they are unknown, is at very close distances without any hesitation. Children, usually learn to tolerate this approach, if not enjoy this admiring stranger.

Personal space is culturally acquired. In each culture, children gradually learn the rules. Eventually they learn the rules so well that they no longer need to clog their moment-to-moment cognitive processing with them (Gifford, 1987). Gifford states that it is difficult to measure the personal space of infants since they have little independent mobility. However, by the age of eighteenth months, children do choose different interpersonal distances depending on the person and the situation (Castell, 1970).

The conditions of children's ethnic background and socioeconomic status which affect the personal space have been investigated by researchers. As stated by Altman and Chemers (1989), Aiello and Jones (1971) pointed out that middle-class White children stood farther apart than lower-class Black and Puerto Rican children. Black and Puerto Rican children also present less-direct body orientation (facing versus not facing). Jones and Aiello (1973) also compared the spatial behavior of upper-lower-class Black and middle-lower-class White children in different school grades. They found that in the first grade Black children stood closer together than White children, but this difference disappeared by the third grade and even reversed itself by the fifth grade. Furthermore, there were complicated sex effects such that Black girls stood closer together than

Black boys and White girls stood farthest apart. Black children of all ages faced each other less directly than White children did. This study suggests the importance of age and developmental differences and their interactions with sex and cultural differences. Scherer's study (1974) points out personal space behaviors of children coming from different socioeconomic status. According to a survey, both White and Black middle-class children used larger distances than their socioeconomic counterparts; the difference was stronger for Whites (Altman and Chemers, 1989).

When we consider the relationship between sex differences of children and personal space, Altman's results (1975) can be stated as follows: (1) Girls form more stable social distance patterns in earlier ages which reflect the earlier cultural training of girls in regard to rules for social interaction; (2) Personal space zone of males is greater than that of females; (3) Girls and boys generally maintain greater distance from males than from females (Wolfe, 1978). Furthermore, Wolfe (1978) stated that according to results of several studies executed by Saegert, Mackintosh, and West (1975), females present more prosocial behaviors in crowded environments while males become more aggressive.

Tennis and Dabbs (1975) also hypothesized that personal space varies both with age and gender. The personal space of boys and girls from five to eighteen was measured. According to the results, older children displayed larger interpersonal distances than younger children. But the age by gender interaction was also significant. Rather than boys or girls having larger personal space in general, older boys chose larger distances than older girls, but among the younger children there was no difference

between boys and girls.

When the researches on personal space began, it was believed that data about personal space would be a primary input for planning and design of buildings. Actually, the comments about personal space as an input in design may be suggestive rather than conclusive. But it is still one of the important considerations among others like local regulations, citing, other social factors, budgets, materials, and aesthetics. As quoted by Gifford (1987), Edward Hall has remarked that the "research on interpersonal distance cannot tell an architect how to design a building, but it certainly provide the architect with information that can be worked into a design" (128). Most of the studies about personal space have concentrated on the optimal furniture arrangements for group interactions. It is known that some arrangements seem to foster social interaction and some seem to hinder it.

When preschool educational environments are considered under the scope of above statements, personal space regulations should be considered in physical properties of environment. In the interest centers where social interaction among children is aimed to be encouraged, the sitting arrangements and angles can be determined according to this purpose. The qualities of a round table provide the equality to occupants in social interaction and visibility that seem appropriate in general area for group activities in preschool educational environments (Deasy & Lasswell, 1985).

Space organization and physical elements in the space may be functional in determining the boundaries of personal space. As it was stated by Arsoy

(1981), Sauveys (1974) indicated that children's games may determine the boundaries of their personal space. The games may regulate the level of interaction with the external world. This behavior also depends on the environmental context. Environmental context for a child includes interpersonal roles, the nature of the setting and the activities in those settings. Interaction distances depend on the familiarity with the elements of the environment rather than the arrangement of the environment.

However, the arrangement of physical elements in the environment has a role in the determination of required distance with the other people for the comfort of social interactions. The boundaries of activity areas should be arranged according to the number of children using that area. Moreover, the distance between the physical elements should provide a comfortable space for social interaction of children. At this point, the effects of cultural norms in maintenance of the personal space should be kept in mind.

4.1.2. Privacy

According to environmental researchers, privacy is conceived differently by everyone. A very general meaning of privacy is given by Altman and Wohlwill (1978) as "physically, psychologically, behaviorally being remained speculative and unexamined" (176) . According to Wolfe (1978), the concept of privacy presupposes the existence of other people and the objects, and the possibility of relationship with them. Thus, privacy means one's right to control the information that should be communicated to other persons. The control of the relationship appears in two ways:

Interaction management: privacy as interaction management is actually a form of noninteraction or a choice of the parameters of interaction with specified others including the nonhuman environment.

Information management: privacy as information management relates to the individual's desire to manage past and present information about him/herself and attempts to gauge his/her behavior in terms of future and present consequences (calculus of behavior) (Wolfe, 1978: 178).

The perception of privacy is directly related with the environmental dimension. Environmental dimension is composed of some factors which also determine the meaning of privacy:

Cultural element: the mores of a community limit the perceived options available to any person or group... and play a decisive role in the way an individual defines privacy situations,

Sociophysical element: privacy can be understood in terms of the ecological and physical properties of the environmental setting that circumscribe human behavior, including available technology, numbers of people and their relation to one another, types of tasks required, and specific ritualistic activities.

Life-cycle element: the cultural and sociophysical limits on possible privacy experiences will apply differentially to individuals at various stages of life cycle. The individual's concepts and patterns of privacy are not static throughout life (Wolfe, 1978: 178-9).

The elements of environmental dimension are the determinants of 1) the quantity and form of privacy granted and 2) the quantity and form of privacy that desired or exercised (Wolfe, 1978). For children, as for an adult, varying degrees of both socialization and privacy are needed in their social environment. The kinds of experiences children have in an

adult's world tell children what they are allowed to do. As children begin to talk and walk, adults begin to set limits, which are the beginnings of the child's understanding of transgression (Erickson, 1963; Simmel, 1971).

Information management first begins to appear when children realize that the authority will not always be present (Piaget, 1966). Initially, children believe that even they are not seen by parents, the parents informed about their behaviors. As the adult control decreases, children are allowed greater range of movement with longer periods of time. Children begin to sense the meaning of privacy in this period and it fosters the feeling of autonomy. The experience of physical or psychological loneliness becomes the determinants of privacy expectations in the future (Wolfe, 1978). At this point, a relation can be considered between the limits of privacy and educational approach that are teacher directed and child directed education. If self-directed approach is helpful in the development of autonomy for children, then giving a privacy (which means here control of children on activities) seems important in psychological development of children.

As children grow older, the control over them gradually decreases. They spend more time outside than home. This gives the children to develop the understanding of managing information about their behavior. School environments are both physically and socially more structured. Children share the activity environments with peers and they have little chance of avoiding physical presence of other children. Therefore to give children at least the management and preference of interaction circumstances seem necessary for the privacy needs of children.

In summary, children learn the limits and the uses of interaction and information management through the experiences of daily life. These experiences give children the understanding of societal norms, and the view of criticism to those norms. In this way, children's experiences with privacy limits provide a background for their sense of self-esteem, and help define the range of autonomy in the society (Wolfe, 1978).

Children's understanding of privacy changes with age. Children under eight give the definition related with autonomy/choice ("doing what I want to, being alone when I want to") as the meaning of privacy. Loneliness and managing information ("no one knows") is mentioned less often in ages under eight in comparison to other age groups.

Children's description of private places are entirely consistent (Wolfe et al., 1976). Older children describe outdoor places as their private places whereas younger children describe the rooms in the house, without associating predominance. Although all children describe the private places as "alone" places, youngest children (4-7 years) of research mentioned the presence of at least one person. The lack of noise is the general preference of all age groups in private environment. When "keep out" signs and the usage of specific furniture decrease with age, the usage of physical separation (apart/secluded) increases with age.

Therefore, according to the consequences of collected data in Wolfe's and his colleagues research (1976), Wolfe (1978) stated that "changes in children's concept of privacy provide a striking parallel to data on their changing daily experiences with interaction and information

management, especially in relation to their family environments" (200). Altman (1975) and others (Roberts & Gregor, 1971) have shown that different cultures have different patterns and forms of privacy. In societies, the cultural norms have a prominent place in the way an individual understands the limits of privacy. For example, according to a survey mentioned by Wolfe and his colleagues (1976); 33% Israeli-born children defined privacy as "ownership" as the reason "why a place was private," whereas U.S. children rarely cited ownership as a definition of privacy. Therefore, while investigating the privacy concept of children, the cultural background should also be considered.

When we consider the privacy experiences related with sex differences in children, Wolfe mentions various researches related to this topic. The researches compare "restrictedness" with "autonomy-granting" socialization practices. According to Maccoby and Jacklin (1974), there is no difference between males and females in independence granting. However, Saegert and Hart (1975) do not agree with this claim. Newson and Newson (1968), as an example, had found no difference in the range of movements inside or outside of a house in 4-year old boys' and girls'. However, when age grows older, privacy patterns and concepts differ according to sex (Wolfe, 1978).

If we summarize the general points for understanding of privacy in childhood mentioned up to now with the words of Wolfe (1978):

1. An individual's understanding of privacy is the outcome of the interdependence of phenomenological and normative factors, as they are embodied in the experience of concrete

situations and events.

2. Through an understanding of these experiences from a multidimensional developmental perspective, we could describe their privacy-related elements.

3. Using this approach we could begin to understand how and why an individual develops a desire for a given form or quantity of privacy.

4. This knowledge might serve as a basis for understanding the implications of presence or absence of certain kinds or amounts of privacy-related experiences for child development and for the quality of our lives as both children and adults (213-4).

The results of researches about this issue show that the concept of privacy in children evolves with their experiences in daily life. The ideas of children about privacy mostly base on information management and interaction management, though they do not state them with these terms. The definitions mostly include the environmental management (controlling access to places, the absence of noise), and a smaller number focus on autonomy/choice. Therefore, there isn't a single understanding of privacy.

Privacy experiences of children include separation while they grow up. Separation means here individualism and self-reliance. As children grow older, they experience the loneliness, freedom of movement, the possibility of restricting access to spaces, etc. Hence, when the questions were asked implying interaction management, children identified it in terms of "loneliness" in Wolfe's research. Their definitions about information management were as nondisclosure of information rather than sharing information. Environmental management was described as "not letting people in" and "no noise" (Wolfe, 1978).

It was proven by researches that the consistent presence with nonchosen group of people creates psychological problems and leads aggression. However chosen loneliness lessens this behavior. Wolfe states that according to the findings of Golan (1978) which were the results of the research conducted in children psychiatric hospital, the children who experience loneliness with their own will present fewer aggressive behavior than at the presence of other people. They could also talk about interaction management when their ideas about privacy are asked.

The consequences of privacy in developing self-esteem should also be considered. Self-esteem can be defined as "the evaluation individuals customarily maintain with regard to themselves " (Wolfe, 1978: 218). Self-esteem signifies itself with positive social participation, creativity, independence, leadership, self-reliance and self-respect. Golan (1978) points out that the self-esteem of children in self-occupancy rooms are higher than those in multiple occupancy rooms in two psychiatric hospital.

There are also some unanswered questions about privacy in childhood, as the followings: What other types of privacy-seeking behaviors does the subject implement in case privacy is limited and also what are the physically, psychologically and socially harmful effects on these behaviors? What is the correlation of certain privacy experiences with anxiety or stress? Do the private rooms provide privacy as autonomy or create new social and psychological problems like loneliness? What are the effects of privacy-related areas in childhood environments on development of skills? For example, it's known by researches that children learn new skills better when they are alone, but perform them better

when they are in groups (Wolfe, 1978). To what extent is this the privacy-related aspects of present school environments, which emphasize learning as an individual, competitive experience, not sharing intellectual information, being in the presence of others in performance?

When privacy and environmental design of preschool educational environments are in consideration, the question of how privacy expectations of children at interest centers are provided according to the purpose of learning activity arises. Especially in open space plan classrooms, lack of privacy is reported as a problem by investigators (Clarke-Steward, & Friedman, 1987). A primary design objective at this level is to create effective boundaries between activity areas that might otherwise cause conflict. When the visual and acoustic barriers are absent or inadequate where necessary, then the conflict appears. The arrangement of multipurpose space is an important issue in determining the privacy regulations. Therefore, the interest centers with high level of noise and physical mobility should be grouped in one corner of the multipurpose space and away from the other interest centers.

4.1.3. Territoriality

Places that people possess and defend as personally belonging to them are territories (Önal, 1988). People assign themselves special rights of both access and use in these territories. "Behavior that marks and depends these spatial possessions is called territoriality" (Jakle et. al., 1976: 39). According to Altman (1977), territorial responses may be explained as the personalizing and controlling geographical areas and objects. He also

points out that frequency in the use of a space and the personalization or defence of an area, are the indicators of territoriality.

There are many territories in the world and the best known system of classifying territories has been developed by Irwin Altman (Altman & Chemers, 1989). First group is primary territory which "owned by individuals or by primary groups and controlled by relatively permanent basis by them, and are central to their daily lives " such as children's private rooms, and corners (Gifford, 1987: 137). Secondary territories are less important than primary territories, but still have moderate importance for their occupants. For example, one's desk at work, favorite restaurant, locker in the gym and etc. For preschool children, the table and the sitting unit frequently used, and the locker may be considered as the secondary territory. Public territories are areas open to everybody for community usage. Beaches, sidewalks, hotel lobbies, train stores and ski slopes are public territories (Gifford, 1987). Abstract understanding of children about public territory may be the community playgrounds, at this respect.

Territorial behavior is not only an outcome of situations consisting of physical isolation and/or confinement, but it is also helpful in the definition and organization of various role relationships. While speaking about territoriality, as well as the adult's home or office, the cubicles of the nursery school children, have a territoriality component (Ittelson & et al., 1974). In addition to cubicles, a specific table or chair can be very important for young children. These places usually cause some conflict in the day care centers and nursery schools. "In moments of stress,

preschoolers generally retreat to their 'own' places, seeking comfort as much from these physical sites , as from protective adults" (Ittelson et. al., 1974: 145). These places may remind a child his individuality in the group setting. In the home environment, some specific places are approved as territories of a specific family member (primary territory). Ittelson and his associates (1974) mention that the number of occupants in the house, their age, status, and personal habits guide the use and possession of spaces that in a way to minimize conflict. In the territorial behavior, life style is an important issue, which includes factors of ethnic origin, economic level, religious background and the stage in the life style. Psychological characteristics of the individuals of a family may also determine the territories at home (Önal, 1988).

When the territoriality considerations are applied to preschool educational environments, it will reduce aggression and promote a sense of order and security. Of course, the shortage of space may not allow to allocate a territorial space for each child. But at least, using a mat on the table or a rug on the floor which determines the own place of each child enables him/her to study without interruption. Control over this space by inviting others develops the feeling of territoriality (Gettman, 1987).

4.1.4. Crowding

Crowding refers to the feeling toward dense environments. Crowding is defined by Parke (1978) as "a situation that does not permit the optimal degree of privacy or social distancing between individuals in a social environment" (70).

Lack of privacy occurs in overcrowded conditions, since too many people are sharing a given space. Although people are not fully aware of its effects, overcrowding often leads to social conflicts.

Crowding also influence the qualities of child behavior and children's choice of setting or activity. As it has been stated by Ittelson and his associates (1974), Hutt and Vaizey (1966) studied the effects of group size on children's behavior. According to them, children tended to reduce their social encounters and increased the aggressiveness in the largest group. A wide range of stress reactions appeared with behaviors that were specific to the size and composition of group.

McGrew (1972) has proposed two issues related to density effects: social density, referring the high number of person in an area or institution, and spatial density, meaning restricted space for a given number of persons. When there are many occupants in a large room, though the space is enough per person, social density is experienced. If the half-size of the room is used for the same number of people, then spatial density is experienced. It was found out that spatial density affects the children's play behavior more than the social density. McGrew (1972) pointed out that changes in the size of the space changed the frequency of running behavior and this behavior is not affected by the density of children. On the other hand, when space held constant and the density of children changed, the change in the running behavior hadn't been affected.

It was mentioned by Parke (1978) that parents who live in crowded homes use more punitive child-rearing techniques. Greater aggression of children

from crowded homes may be the result of the types of discipline used by the parents in crowded environments, although the aggression is not necessarily an outcome of increasing density. Parke (1978) continued with Swift (1964) who indicated that the association of crowding with aggression has not been consistent, since children adapt well to high density and different kinds of density that produce different effects. Gifford (1987) stated that Loo investigated the relationship between the high density conditions and aggressive behaviors of children. She had concluded that higher social density (about 1.5 square meters per child) produced more aggression (Loo & Kennelly, 1979). On the other hand, higher spatial density leads to a slight decrease in aggression (Loo, 1972). It had also been concluded that boys behave more aggressive than girls in high density conditions.

As Gump (1978) stated, the relationship between the number of person and their behavioral resources were investigated by Smith (1974). According to Smith, changes in available toys and apparatus caused changes in social behavior. Decreasing the physical behavioral resources produced several effects as: increasing the social interaction, larger groups and fewer "loners," more aggressive and more stressed behaviors. When toys were reduced but apparatus remained available (furniture, climber, etc.), children presented more sociality and inventiveness. However, the removal of apparatus and maintenance of toys did not lead the same result.

Rohe and Nuffer (1977) showed that in case the spatial density increases by dividing the room in half, the cooperative behavior of preschoolers were significantly reduces whereas the aggressive behavior increases.

When the activity areas are divided by partitions without canceling the access, the increase of cooperative behavior is observed. Finally, the choice of activities by children were affected by partitioning and by density. For example, children are discouraged to select activities requiring high concentration in high density conditions.

In general, the determinants of crowding are personal factors (personality, expectations, sex), social factors (number and actions of others, quality of relationships), and physical factors (space arrangements) . If the environmental design is the source of high density, partitions and behavioral zoning help to reduce the negative effect of crowding (Gifford, 1987). It was also pointed out by Trawick-Smith (1992) that this kind of approach in preschool environments keeps the attention of children more consistent on the engaged activity. Clarke-Steward and Friedman (1987) discuss that in some open classrooms, children tend to cluster around the teacher, and this tendency may contribute to children and teachers feeling crowded (Rivlin & Rothenberg, 1976). When activity centers have open spaces around their edges and when ceilings are high, it causes the feeling of less crowded (Ahrentzen, 1981).

4.2. Researches Conducted on Psychology and Space

Characteristics of Preschool Educational Environments

A brief review of literature indicates that physical arrangement of a multipurpose space is effective on the character of social behavior. The researches conducted on physical arrangement of early childhood programs supported this comment in terms of the arrangement of

equipment on children's behavior and the effects of various types of materials on on-task behavior (Day & Drake, 1991; Hendrick, 1991).

According to Jones (1973), activity areas with materials of high level of complexity prolong the involvement and attention in pupils. In addition to this, Rosenthal (1974) found that length of remaining period in an activity setting was attributable to the activity's holding power rather than to the child's attention span. Weinstein (1977) found that children's behavior can be changed in the desired way by changing the physical setting of a multipurpose space. With new arrangements, children moved into centers they have previously avoided, and exhibited a small range of behavior such as less large physical activity. Rosenthal also found that environmental factors only influenced the children's behavior if the activities/materials were of interest to the children. When there is an inclination in the engagement of children, the change in the arrangement of a multipurpose space will promote the desired behavior. Weinstein (1979) stated that the subsettings of a multipurpose space exert "coercive power" over children, constrain certain behaviors and encourage others in a review of the research on the physical environment of the school. She suggests that the variety of the environmental activities support the development of different children who require the different types of environment (Day & Drake, 1991).

Altman and Wohlwill (1978) pointed out that young children are particularly sensitive to the modification of the environment. Depending on this claim, Morrow and Weinstein (1982) suggest that the positive impact of development in young children is provided with the modification

of the environment. They claim that a well-designed classroom facilitates behaviors that enhance cognitive development. As Day and Drake quoted from Phyfe-Perkins (1979) that "skill of arranging the early childhood environment to support the maximum involvement of children with material and with each other is a skill that can and should be taught" (170-1).

As Povell states (1991), research has shown that if the environment of a classroom is changed, mixed-sex play can be promoted. Povell (1991) discussed that according to the results of another research conducted by Kinsman and Berk (1979), boys and girls study together more when the wall of shelves separating the housekeeping and block areas was taken down. On the other hand, contrary findings were reported by Feld who studied the relationship between teacher/child ratios and partitioned play areas. He tried to define the optimal behaviors and social interaction with peers, verbal interaction, fantasy play, and associative-cooperative play (Feld, 1980). There are many current comments concerned with the ways in which both of these areas of the classroom can be changed to encourage use by both sexes, concurrently. Classroom research demonstrated that in the block corner, boys generally build up and girls build out. To encourage participation by girls, it is advised to enlarge the block area as well as enlisting female teachers to participate in traditionally "male" activities.

The recent spread in the concern of psychology and sociology from the human to his environment makes it easier to consider a relationship between these professions and human's physical environment. The effects of socio-psychological factors are multidirectional. The diversity of these

factors incorporates with the ethical and cultural variations, sex differences, and sociological formation of communities. The continuous surveys related to the person-environment transactions provide important data about the design of physical environment. The environmental needs and expectations of children regarding the effects of social and psychological factors are undeniable. Children's understanding of personal space, privacy, territoriality have an evolutionary process in the early years of childhood and have an extremely different character when compared to adults. The negative effects of crowding in the development of children require attention from both psychological and social point of view. Therefore, the relation between children and socio-psychological properties of environment should be in consideration in the planning process of early childhood environments.

5. PHYSICAL ASPECTS OF PRESCHOOL EDUCATIONAL ENVIRONMENTS

Arranging the physical setting and materials in a way that facilitate and support the curriculum is a challenging business. The psychological, and social expectations of children which are effective in their development should also be considered.

While designing the multipurpose space, one important step is to examine the activity patterns of children that most properly suit the architectural plan. Furniture is used as a tool to create these patterns while protecting unnecessary intrusions among interest centers and providing functionality (Hendrick, 1991).

In this chapter, main activities and play areas in preschool educational environments will be discussed. The activities and play areas are grouped according to their mobility and noise level which are the most important determinants in the organization of a multipurpose space. Quiet areas must be created to balance the more noisy, high-activity ones. Afterward, the main items of furniture which are necessary to construct the activity places will be mentioned. The concern of the last part is the activity patterns and their relation with the architectural dimension. Depending on this, three types of organization; structured, open, and modified open plan in multipurpose space will be examined.

5.1. Activities and Learning Areas in Multipurpose Space

The arrangement of multipurpose space should contribute to the child's conceptualization of order and space. To be in contact with a clear and distinct environment, it helps children to focus their attention on curriculum instead of distracting them with irrelevant stimuli. Such an environment is created through uncluttered equipment and furniture arranged in an orderly fashion. The smaller total space available, the more careful must be the selection of what to include. Regardless of the room size, it is imperative to maintain neatness, orderliness, and general attractiveness, with adequate space around objects and areas in the room. Empty space around objects is necessary. When a child's attention is directed to an object, he must be able to see them without the obstruction of the adjacent objects.

The multipurpose space should consist of a series of well-defined and interrelated areas. Particular activity areas commonly included in preschools are the music and physical exercise area, dramatic play area, unit block area, television and computer environment, place for table-top activities, place for arts and crafts, and a place for story telling and reading (De Chiara & Callender, 1990). The materials included in these areas and the required design considerations will be discussed in the following parts.

5.1.1. Activity Places with High Physical Mobility

As stated in the second chapter, physical activity is very important for preschool children in order to develop their motor skills. Coordination of

movements are fostered by constant practice and recurrent use of materials in high physical mobility areas. Maher (1982) suggested that gross motor learning was largely completed by 4 years of age, and it is important since a child younger than 5 years old should not be over-stressed.

The activity place which are music and physical exercise area, dramatic play area, block area, art and craft area, audiovisual activity interaction place, manipulative toy area, and other areas related with multipurpose space will be explained in the following parts.

5.1.1.1. Music and Physical Exercise Area

The general area in the multipurpose space serves for group activities like singing, dancing, and physical activities. For this purpose, a large, open space of at least 14 square meters is required for 15 to 20 children.

Music activities can take place in the general area. Carts are needed here for a record player and a tape recorder, and closed shelving for items such as rhythm instruments, guitar and drums. Moreover, some shelves are needed for displays with a bulletin board above it. A sliding board over a fixed one would allow various displays to be exposed or covered at the teacher's will (De Chiara & Callender, 1990).

Physical exercises help children develop motor coordination. Dancing, running, hopping, catching ball, jumping on a mattress, throwing beanbags, rhythmic activities such as swinging and rocking and etc. are some beneficial activities for young children.

5.1.1.2. Dramatic Play Area

Dramatic play is one of the major type of play which involves taking on roles and models. Such play includes playing house, mimicking a parent going to work, pretending to be firefighter, a nurse, an astronaut, or a truck driver and so on. Every preschool environment which is composed of children from two to six year-olds should have a dramatic play area. In this area, some dress-up clothes and a table-and-chair set are required. In some cases, a two-story structure with a loft which looks like a warm house is also included. With dramatic play, children not only imitate whole patterns of behavior but also try fantasy and novel ways of interaction. They also understand the various social relationships, rules and certain other aspects of the culture through imitative play (Craig, 1989; Myhre, 1993).

Myhre (1993) adds some benefits of dramatic play as:

- interact with other children;
- share and take turns;
- role-play;
- exercise their imaginations;
- accept responsibility when cleaning up and putting toys away;
- break the barriers of sex stereotyping;
- deal with age/stage and personal relations;
- build literacy skills;
- enrich their language;
- extend their understanding of the environment;
- have fun (1993: 6).

As children are sharing, taking turns, and negotiating for props and roles during play, they get important practice in learning to get along with one another. While playing, children try to solve interpersonal

problems and situations. This helps children to control their feelings and to develop greater sensitivity to others.

While children role-play the family members or people in the community, they do understand what those people do and think, which helps them to build up knowledge and cognitive competence. Through this interaction with a symbolic world, children realize the meaning social relations through their experience.

Actually, pretending is a need for children who are trying to clarify some of their ideas about the world. Moreover, while children loose themselves in their roles, they feel pleasure which is not attainable in any other activity.

Children's communication with one another through the actions, signs, and labels promote the development of language and literacy skills. Engagement with the dramatic play fosters the correct usage of language in social life.

Dramatic play has no right and wrong answers. Therefore, it offers children opportunity to be successful and to feel good about their accomplishments as they engage in dramatic play spontaneously.

An appropriately planned dramatic play encourages the girls and boys to engage in activities that cross traditional sex-stereotypes. Myhre says that:

Sex stereotypes can be inhibiting and may prevent children from moving in the life directions to which

they are best suited. Boys, especially, find relaxing and becoming engaged in creative dramatic play more difficult when sex stereotypes prevail. They may need encouragement to make a special hat for the 'hat shoppe' or cookies to sell at the 'bakery' (1993: 8).

Therefore, in a liberally minded classroom, boys can cook, clean, or dress up, and girls can fix the car, or play mail person.

To make changes in the environment is a necessity for keeping childrens' attention and engagement desire alive. Dramatic play area is a flexible environment which enables the changes in materials. Adding new materials in dramatic play area provides the rearrangement of the center which arouses new interest among children. Misusing or damaging toys is a signal from the children that they have used the area enough and are ready for a change.

First step is to organize and collect material for dramatic play area. The empty boxes are saved for storage purposes. They are covered by colored paper and labeled with an appropriate title which gives them a neat and uniform appearance. The second step is to decide which prop boxes would be used at the beginning. Later, the collection of items is initiated. For this purpose, the staff and the parents should be asked for bringing used items for the prop boxes. The sources of the items can also be asked. For example, if a hair-salon box is being collected, the local barbers and hair-care centers are asked for used and throwaway items. Keeping the prop boxes in order is important as well as collecting the appropriate items. Once prop boxes are finished, they are stored in a designated area. The prop boxes should be under control for replacing the broken or

missing items with the new ones.

While determining the prop boxes, it is imperative to judge the appropriateness of the content for preschool children. The items or activities that are too complicated to manage for young children should be eliminated. The following prop boxes are given as suggestions to direct the people to create new ones (Myhre, 1993).

House-keeping area prop box: Children always love the traditional housekeeping area in a multipurpose space. Stove, sink, plastic food, pots and pans, utensils, dishes, table, chairs, doll beds, dolls, doll clothes, dress-up clothes, mirror, and shoes can be included in this prop box.

Jewelry-and-accessory prop box: This box works best if it is brought out for short periods of time. The box contains necklaces, earrings, rings, bracelets, eyeglasses, sunglasses, small mirrors, and jewelry boxes. However, the selection of items must be done very carefully in order to prevent prospective accidents. For example, since the small jewelry parts can be swallowed by children, they must be avoided.

Office prop box: This prop box generally holds great attention and provides long engagement. Thus, several of the same item can be required to ensure that everyone is busy and getting a turn. The items which may be included in the box are file folders, envelopes, telephone, typewriter, pens and pencils, hole punches, desk accessories such as pen holder, plastic paper files, and posters or pictures of office workers.

Flower-shop prop box: This prop box generates great fun for children.

Small garden tools, aprons, garden hats, garden gloves, posters or pictures of flowers, flower and garden magazines, plastic flowers, styrofoam squares, vases, baskets, cash register, play money, empty watering pitcher, empty seed packets are the ingredients of the box.

Bakery prop box: Play dough is used as the main material to manipulate into bakery items. Rolling pins, cupcake tins, cake pans, mixing bowls, hand-held mixers with cords cut off, measuring cups and spoons, spatula, dish clothes, and towels are used in the dramatic play.

Gas-station prop box: Squeegee, tire pump, lug wrench, toolbox, assorted tools, steering wheels, one real car tire to work on, posters from tire stores, and a large box decorated as a car are included. The box may be enriched with some large trucks from block area to create new interest among children.

Repair-shop prop box: Young children love taking apart small broken appliances such as alarm clock, iron, and radio. However, sharp and pointed tools should be avoided, and children must use safety goggles at all times. The box is composed of toolbox, broken appliances with cords cut off, plastic hard hats, and posters or pictures of mechanics at work.

It is advised to introduce the prop boxes to children in small groups to facilitate discussion and participation among children. Discussion may be about how to use the items safely and carefully. Some prop boxes particularly popular. Therefore, the opportunity for all children who want to play should be provided by adjusting the schedule. It seems necessary to decide

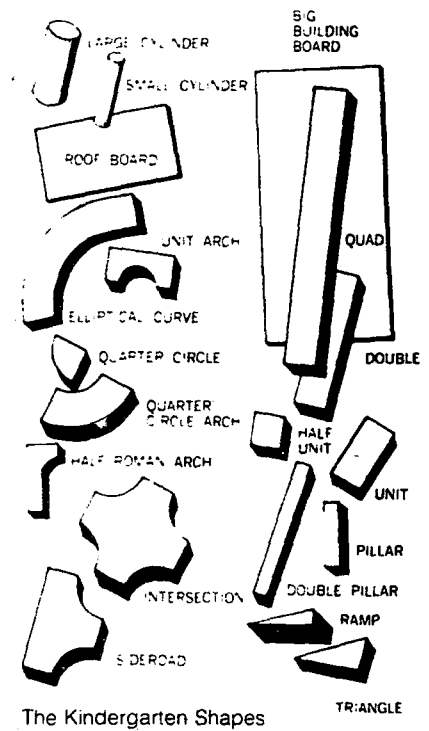
how many children will be in the dramatic play area at one time. The decision depends on the size of the space and the number of prop boxes that can effectively serve children.

The character of dramatic play area enables the integration with other play areas in the multipurpose space. For example, a traffic cop directing traffic may join the organization in the large-block area (Myhre, 1993).

5.1.1.3. Block Area

Block area is one of the most beneficial activity center for the development of children in a multipurpose space. Two forms of block playing take place in block area which are play with unit blocks and play with large hollow blocks.

As a matter of fact that unit blocks are accepted as one of the finest learning tools in any setting referring to children in ages of 3 to 6. Unit blocks refer to special wooden blocks which the sizes are fractions and multiples of a carefully designed unit block. As particularly important for preschool children, each size change in blocks is made only in one dimension of the block (Figure 5.1.). Table 5.1. represents the suggested equipment for unit block building. When unit block units are used well, they foster five major, interrelated aspects of child learning which are physical, emotional, social, intellectual, and intuitional development in children.



Photos from City and Country School,
146 West 13th St., New York, NY 10011.

Drawings from Community Playthings,
Rt. 213, Rifton, NY 12471

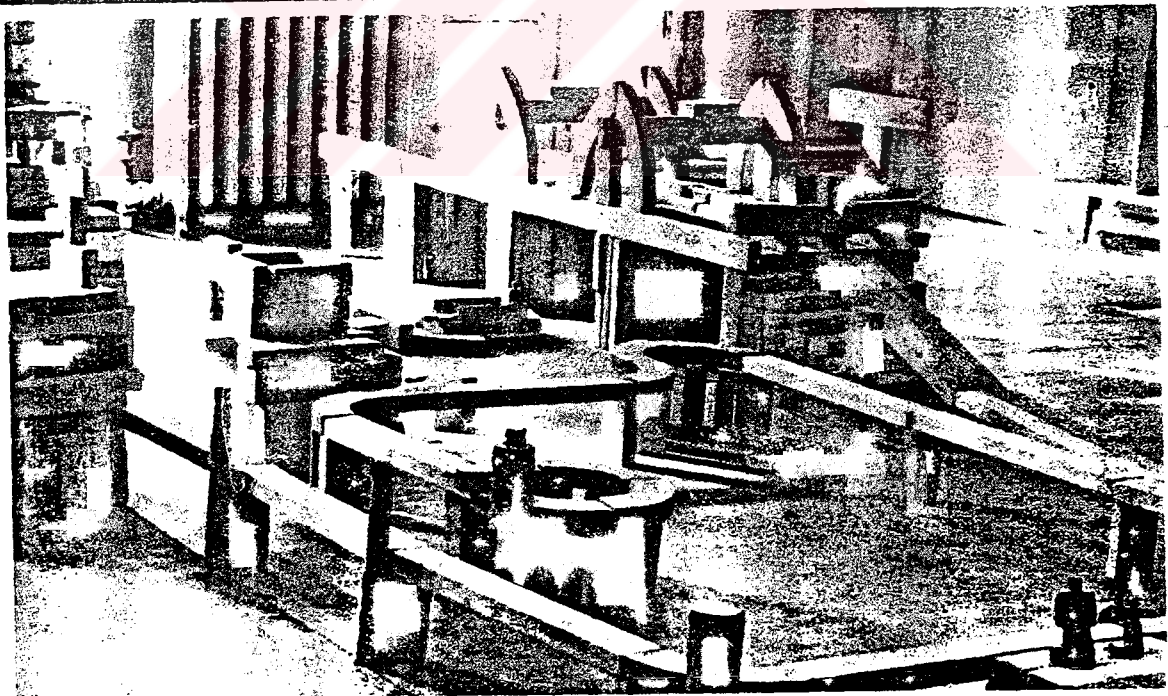


Figure 5.1. Various Shapes of Unit Blocks and Two Sample Constructions
(From CARTWRIGHT, SALLY. "Play Can Be the Building Block of Learning." *Young Children*. 7 (1988): 45.)

Set of blocks for a group of 15 to 20 children			
	3 years	4 years	5 years
Half units	48	48	60
Units	108	192	220
Double units	96	140	190
Quadruple units	48	48	72
Double pillars	24	48	72
Pillars	0	12	16
Small cylinders	20	32	40
Large cylinders	20	24	32
Quarter circles	12	16	20
Quarter circle arches	8	16	20
Triangles	4	8	12
Roof boards	0	12	20
Ramps	12	32	40
Y switches (not illustrated)	2	2	4
Right angle switches (not illustrated) and/or intersections	0	4	8

Table 5.1. Suggested Equipment for Block Building
 (Adapted from HENDRICK, JOANNE. *Total Learning: Developmental Curriculum for the Young Child*. New York: Macmillan Publishing Company, 1990. p. 429)

Physical development: From the simplest pile of blocks to the complexities of cantilever, both large and small motor coordination and sensitive eye-hand integration are developed through unit block building. Moreover, they learn maneuver with finesse between the structures, achieving balance, control, and spatial awareness.

Social development: Unit block building promotes working together among children. Since block building is a group activity, children learn to respect others' works and opinions. Group working also invites children getting along with others, satisfaction in contributing to the group, and responsibility for both child and combined effort of the group.

Emotional development: As Cartwright (1988) says:

Unit blocks are a dramatic material to work with. Even a small child can make something that stands out in three-dimensional boldness, thereby deriving a sense of stature and power. Firm, clean, and squarely cut, blocks are consistent, predictable, and nonthreatening. Because construction asks for creative initiative, it affords satisfaction. These emotional components of unit block experience invite a child's participation in its safe miniworld of play, allowing expression and sometimes resolution of difficult feelings (44).

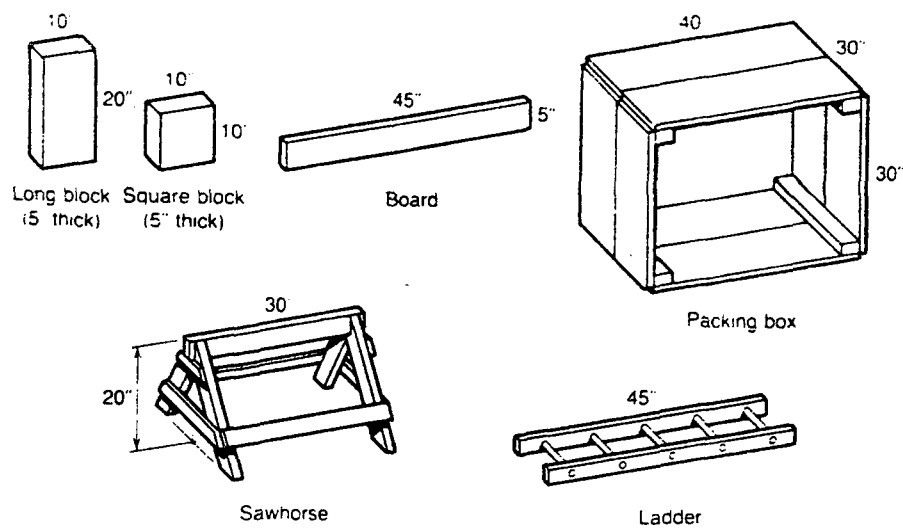
Since unit blocks don't link together like Lego™, children have to work patiently to balance them that develops certain skills, and persistence.

Intellectual development: Concrete operations such as one-to-one correspondence, counting, matching, sorting, fitting blocks to spaces, and using fractional parts of a whole in meaningful relationships are included in unit block building. Block building is a kind of problem solving.

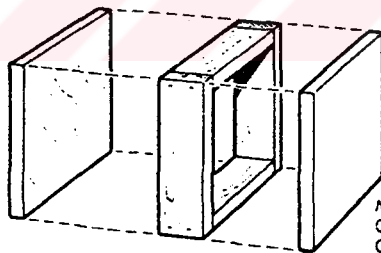
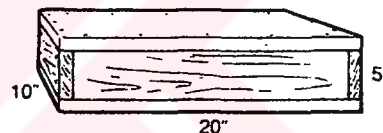
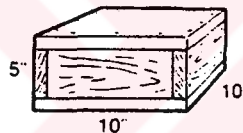
Therefore, it encourages productive thinking and experimentation. Children persistently build the blocks, until they get satisfied. While doing that, children communicate verbally which develops language use and reading readiness.

Intuitional development: Since the unit blocks are produced from natural wood, children feel the friendly warmth of the material. Cartwright states that "Unlike realistically detailed toys, which precisely dictate recognition and use, blocks convey nonrepresentation and simplicity along with the friendly warmth of wood. They appeal to a child's inner resources for intuition, fantasy, imagination, compassion, and insight" (1988: 46). In unit block area, children can learn by their own initiative play activity. It helps to develop the feeling of independency in young children (Cartwright, 1988).

Large hollow blocks, boards, and packing boxes, small ladders and saw horses are designed to fit each other for accurate, and safe building. They are also produced in size fitting to the body dimensions of young builders. They are light enough to carry, yet sturdy enough to hold children. Using well-made equipment stimulates children's learning endeavor. The blocks should be neatly cut, glued, nailed, and corners and end grains well sanded (Figure 5.2. -as a copyrighted design).



Materials: White pine, #2 grade (make sure knots are tight and solid)
 Apply three coats of nongloss polyurethane
 Rough sand broad surfaces to prevent blocks from slipping when stacked
 2 1/2 gal. galvanized finishing nails
 Waterproof glue



Nail and glue sides first. Nail and glue top and bottom onto this frame, *fully enclosing* the block. Top and bottom extend to outer edges

Roofing boards, 1" x 5" x 40", and packing boxes, 30" x 30" x 40", may be constructed of pine to fit these blocks.

Note: Designed by Sally Cartwright from Pratt originals at City & Country School. Copyright © 1979 by Sally Cartwright, Community Nursery School, Tenants Harbor, ME 04860.

Figure 5.2. Preschool Hollow Blocks and Associated Equipment
 (From CARTWRIGHT, SALLY. "Learning With Large Blocks." *Young Children*. 3 (1990): 39.)

To provide the play with blocks in affection, storage should be effective. Blocks should be stored visibly, sorted by sizes, on low, open shelves adjacent to the space to be used for building. (Figure 5.3. & Figure 5.4.). Block

silhouettes are marked on the shelves to show which blocks fit where. For indoor block building, at least 3.05 x 3.7 meter square floor area, that is not used for other activity, covered with unpatterned carpet is good for up to eight children playing at once. For preschoolers, about 20 blocks (10 long and 10 square) with 10 boards are adequate.



Figure 5.3. A View from Block Corner
(From CARTWRIGHT, SALLY. "Learning With Large Blocks." *Young Children*. 3 (1990): 41.)



Figure 5.4. Children Playing with Blocks
(From CARTWRIGHT, SALLY. "Learning With Large Blocks." *Young Children*. 3 (1990): 38.)

Generally, large hollow blocks are used in combination with dramatic play materials. When accessories are available, children behave more imaginative. It is wise to avoid structured materials and toys. Instead of costumes, variously shaped, sized, and textured pieces of clothes are used. When elaborate metal or plastic toys are used, block play often suffers. Therefore, it is advised to use an abundant assortment of small unit blocks (only for accessories, not for building) rather than representational toys and hardware. These small unit blocks become the items such as cups, telephones, tools, sandwiches, machinery, flight control and so on. A few 1.2 meter lengths of 0.6 cm. thick rope, each with an eyespliced in one end, are appropriate additions. However, children must be warned for the

rule no rope around necks. Crayon, paper, and masking tape should also be included because children often need to make signs for their play.

It is also advised that building with large blocks should be clearly separated from unit block building. Because large block dramatic play differs from play with unit blocks. Cartwright states that:

These two forms of block play differ just as the child's life-sized world differs from the world of small toys. Child-life-sized dramatic play is often close, personal, and subjectively compelling, and it involves the whole child. In contrast, the micro-world of unit blocks allows the child to manipulate a number of small toys at a distance. Involvement is less personal, and the child often sees a total situation with actual, physical perspective. Unit blocks and toys also become concrete symbols for real life. As such they provide the child with practice for the more abstract, written-word symbols that come later in reading. Large block dramatic play, on the other hand, in which the child herself is a participant, gives that immediate, holistic experience that urges its own effective insight (1990: 41).

5.1.1.4. Art and Craft Area

Art has the role in early education of helping children to feel more confident and self-esteem. In multipurpose space, young children should have easy access to basic art materials. In this area, few children at a time paint pictures; make finger paintings, collages and mobiles; or play with clay, modeling, compound, paste, crayons, marking pens and some other materials such as cornstarch and water, and clay. It is important to keep away unsafe art supplies such as powdered clay, paints requiring solvents, dyes with chemical additives, permanent markers, instant papier-mâché

that may contain lead or asbestos, epoxy, instant glues, or other solvent based glues (Clemens, 1991).

The art and craft area should be away from the heavy room traffic and should have limited access. A sink is required to wash the hands and to clean paintbrushes and sponges. It is preferable to have two sinks; one at the appropriate height for the teacher and the other for children. If only one is available, it should suit to children's height.

Two kinds of storage space in the art and craft area are desired. First one is used to store sheets of newsprint (usually sized as 46 by 61 cm.) and colored construction paper in a way that children are able to reach easily. Crayons, marking pens, and paintbrushes can also be stored here. The second storage space is used for such things as scissors and paints which should be closed and out of the reach of the children. These storage cabinets can also serve as room dividers.

The art and craft area should have enough space for two or more children to work at one time. Three or four easels side by side could be provided by sloping a long piece of plywood or masonite out from a wall or room divider. The latter arrangement requires to provide more work area in less space, and it allows the young painters to admire each other's work. Easels should be easy to clean, and the tray that holds the paints and brushes should be removable for cleaning.

In this area, a table is necessary which should be large enough to accommodate four children playing with clay, using finger paints, or

pasting collages. The table should be about 46 cm. high and have a work area of 4.57 square meter or more (De Chiara & Callender, 1990).

Young children feel the accomplishment and recognition by others through the art activities. These feelings are reinforced if children's paintings are displayed. However, displaying all the paintings simultaneously destroys the clarity and attractiveness of the room. If a display space is provided at child's eye level for five or six 46 by 61 cm. pictures, and if the pictures are changed frequently, each child can see his work exhibited many times in a year (De Chiara & Callender, 1990).

Provisions should be made for hanging paintings to dry. A place for at least 12 paintings to dry at one time will be enough (De Chiara & Callender, 1990).

5.1.2. Audiovisual Interaction Activity Place

The computer environment which is based on audiovisual interaction is grouped under this category. It is characterized with visual attention and interactivity. Therefore, the placement of this area in the multipurpose space should be considered according to its own limitations.

Computers have an increasing role in early childhood education. However, teachers and administrators should evaluate what role computers should play in the early childhood curriculum. When adding a computer environment to the multipurpose space, the activities are determined which best suit for the computer. It is also important to decide what computer

experiences are appropriate and beneficial to young children.

The computer is an educational tool that provides children a unique way of dealing with information. Computer experiences must be designed and selected for young children to reflect a sound developmental approach to learning. Thus, before a computer is placed in the multipurpose space, it should have been considered what and how children are expected to learn from computer instruction (Haugland & Shade, 1988; Burns, Goin & Donlon, 1990).

Haugland and Shade (1988) stated that Papert (1980) has applied Piaget's developmental theory of learning to children's experiences with computers. According to him, discovery-oriented interactions with computers enhance children's learning.

As mentioned by Burns, Goin, and Donlon (1990), several reasons can be counted to use a computer in the curriculum:

- Parents want their children exposed to this important technology early in life.
- Computers can provide a level of interaction that more static materials cannot provide.
- The complexity of computer games is high.
- Computer feedback is fast and interesting.
- Computers provide feedback that the teacher might not have time to supply (e.g., in Talking Textwriter, a child can hear a word pronounced over and over, as many times as she or he likes).
- Children can explore a new environment through computers (63).

The placement of a computer center in the multipurpose space is important. The first consideration is that the computer must be located near a power outlet. This brings a limitation to the placement of computer center.

However, it is better than a snaking of extension cords across the floor of a multipurpose space. The best place for computer station is near by a quiet activity area. But this does not mean that the participation and talking among children won't be involved. However, computer work requires the focusing of attention and sharing of information between participants, which is difficult to achieve when working near a loud center such as the block corner.

The effective usage of computer is provided by appropriate scheduling and staffing. Since working at the computer is one choice among several, regulating a turn taking among children in daily schedule provides effective usage. According to Burns, Goin, and Donlon (1990), it was found the computer station is most effective when used by a group of two or three children working together. One computer for a group of 18 children could be used in a daily schedule.

Adding a computer to the multipurpose space should be reasonable. The chosen software is expected to be consistent with established program goals. It should also be flexible that provides numerous ways of problem solving. Finally, the environment for computer usage should be carefully considered in the design of the total environment (Burns, Goin & Donlon, 1990).

There are also some other audiovisual learning materials. It is possible to have 16 milimeter and 8 milimeter film projection machine in the center. System is brought to teaching area on demand. Usage in large group involves acoustic problems; so, it may be required to have a curtain on a

track in open space to enclose the area and focus attention. It is advised to use a portable screen. It is also possible to use rear screen projection with earphones in package units.

Another alternative for film projection may be video cassettes which are highly portable. Video, TV monitors, and earphones can be provided as a permanently located system in a corner of the audiovisual environment.

Slides, film strips, and overhead transparencies are located at interest center. A tilted screen for overhead transparencies; projectors, and electric outlets for all the equipment are needed (Leggett, et al., 1977).

5.1.3. Noiseless Activity Places

The activity centers where basically a noiseless environment is required and personal activity is dominant rather than group participation are grouped under noiseless activity places. Reading and listening corner, and manipulative toy area constitute this category.

5.1.3.1. Reading and Listening Corner

Reading and listening foster the usage of language and correct pronunciation of words. Moreover, creativity of children is promoted. Children use the reading and listening corner individually or together, to look at books, to be read by the assistant or the teacher, or to listen to a story on a tape recorder.

The reading and listening area is a quiet place, so it should be away from

the music and physical exercise area, block area, art and craft area, and dramatic play area. The space is advised to be well defined either by walls and dividers, by cabinets, or by a difference in the ceiling height, floor elevation, lighting, or color and texture of floor or walls. De Chiara and Callender (1990) stated that if this area is elevated two or three steps above the general area, it would present an arrangement that conveys a feeling of its being special, separate, and cozy. In case it is elevated, it can also serve as a platform for dramatic play activity, and the children can sit on the steps when they are being read to.

The reading and listening corner should have sufficient display-shelf space for showing the front cover of 20 to 25 books. The highest shelf should not be more than 106 cm. from the floor, and should preferably be 91 cm. only. If the shelving cannot be adjusted, there should be at least 35.5 cm. between the two selves. Nine hundred seventy five cm. total shelving provides enough space for books (De Chiara & Callender, 1990).

A place to display one book and related small objects and pictures works fine in the reading and listening area. For this purpose, an adjacent bulletin board is used near by the display.

In addition to book shelves and display area, it is highly desirable to have a low shelf or table, available to as many as six children at a time, on which to place specialized learning equipment (De Chiara & Callender, 1990).

5.1.3.2. Manipulative Toy Area

Playing with manipulative toys enhances what children learn when playing with blocks. In this area, children learn colors and develop perceptions of size and forms as well as of mathematical concepts. Colored pegs and pegboards, lockboards, small unit blocks, Lego™, puzzles, felt boards and geometric forms, nuts and bolts, nesting cups, and similar toys are the materials included in this area.

The manipulative toy area is basically a quiet area where children work individually. It can be a unique area, or part of the area for reading and listening. Two or three two-shelf, open cabinets are required to display the manipulative toys. Puzzles are best displayed on sloping shelves so the children can see them all as they select the ones they want to use. A cabinet above the manipulative toy area works fine to store toys and puzzles not currently in use. The number and the complexity of puzzles are increased as the year progresses. A table that can accommodate at least four or five children should be located near the display cabinets (De Chiara & Callender, 1990).

5.1.4. Other Areas Related with Multipurpose Space

There are some other areas which support or control the function of multipurpose space. These are tutoring booth, storage space, and observation space.

Tutoring booth is essential for teaching one child at a time. It should be an enclosed space that enables a child to be free of distractions while working with a teacher or with specialized teaching equipment. This space might also be used for testing the child or simply as a place where a child can be alone with an adult. These activities are important, and such a space should be provided even if the size of the multipurpose space is reduced. In some cases, it might be feasible to create an enclosed space in the main room accommodating a small group of five or six who could work away from the distractions of the rest of class. If only one teacher is available in the main room, the walls should be transparent to allow the teacher's visual control.

Storage space ensures an orderly and neat room, and reduce the number of stimuli present at any one time. It can also serve as a utility area for the teacher and should contain a large sink for preparation of paints and for cleaning up.

An observation area enables the parents to observe the classes and to become more involved with the education of children. Observation space includes one-way glass with a louvered panel, microphones, and earphones.

The observation area is preferred to be 30-60 cm. higher than the regular multipurpose space. That would give the observer a good view over the low room dividers and would leave the wall space below the observation windows free for cabinet and display space (De Chiara & Callender, 1990).

If the organization and division of multipurpose space do not permit the

placement of an observation space, another alternative can be an observation room with a closed-circuit television setup. It provides viewing at a location removed from the classroom.

Another consideration is that the observation area should open directly on the corridor or outside, allowing observers to come and go without interfering with the children and the teachers (De Chiara & Callender, 1990). The space requirements of activity places are summarized in Table 5.2.

The multipurpose space is a diverse activity environment mentioned as above. The role of these activity places and their organization require critical assessment. As Monighan-Nourot and Van Hoorn (1991) discuss, Tizard and colleagues (1976a,b) caution that too many choices of play activities may distract children. Monighan-Nourot and Van Hoorn also says that "distractions may be reduced, however, by provision of well-bounded play areas with clear pathways to connect them" (46). Teachers who provide children with well-protected niches for their play better enable children to concentrate on and sustain their play (Corsaro, 1985; Ramsey & Reid, 1988).

Activity	Space, sq m		Storage	Display	Other
	Min	Opt			
General area	45.7	61.0	Carts, closed selves for music equipment	2 centrally located shelves 1.2 m long. 38-50 cm. apart; bulletin board	Planter; hot plate and refrigerator (or in additional storage, below); tables (can be tables from other areas if easily movable)
Block alcove	15.2 (Can be 7.3-9.1 if play can expand to general area)	22.9	Shelving 4.9 m long, 28 cm. deep, at least 25 cm. high, plus supplementary shelving in movable cabinets to be added through school year		
Manipulative toy area	30.5	45.7	2 or 3 two-shelf open cabinets; sloping selves for puzzles; cabinet for toys not in use	Open and sloping selves (see Storage, left)	Table for 4-5 children; should be quiet area
Reading and listening area	(Combined with manipulative toy area)		Closed case for duplicate books out of children's	98 cm. of low, open shelving for 20-25 books showing front reach covers; shelf and bulletin board for special exhibits	Table or low shelf for tape recorder accommodating up to six children
Art area	30.5	45.7	Open shelves for news-print and construction paper; shelves accessible only to teacher for paints, scissors	Sufficient to hang six 45.7 x 60 cm. paintings	Easels; sinks (one for children -may be shared with dramatic play area; one for teachers- may be in additional storage area); table 45.7 cm. high with area of 4.57 sq m; space for paintings to dry

Table 5.2. A Summary of Space Requirements
 (From DE CHIARA, JOSEPH & CALLENDER, JOHN. *Time Savers' Standards For Building Types*. 3rd Edition. New York: Mc-Grew Hill Publishing Company, 1990. p. 206)

Table 5.2. (cont'd)

Activity	Space, sq. m		Storage	Display	Other
	Min	Opt			
Dramatic play area	30.5 (Possibly to be increased or decreased progressively)	45.7	Drawers and open shelving for dress-up clothes; dolls; open shelves and peg board in cooking area		Full-length mirror; sink (can be shared with art); tables and chairs in cooking area
Tutoring booth(s)	13.7 (each)	15.2 (each)			Enclosed for privacy; if only one teacher is available, partitions should be glass
Cubicles	18.3	27.4	For pupils' clothes and other belongings; should be 137 cm. high, 32 cm. wide, 32 cm. deep		
Toilets	12.2	15.2			
Additional storage	9.1	30.5	Refrigerator, hot plate (see, General Area, above)		May serve as teacher's utility area
Total	205.7	308.3			
Observation space	Can be combined with additional storage area				

5.2. Items of Furniture

Leggett and his colleagues stated that “the next generation of schools must attempt to link spaces graciously, varying in ceiling height and floor depth, relate to the outdoors effortlessly, and resemble a real landscape-varied, inviting, and beckoning one to enter” (1977: 93). Creating such an environment requires not only an effective organization and design in the multipurpose space but also proper selection of furniture for activity centers. Multipurpose space is an environment where the flexible use of space is necessary because of the variety of activities and the variety of group sizes. This condition demands constant rearrangement of furniture and different combinations of items. Thus, furniture can be the most important way to achieve this flexibility. Equipment, too, plays a large part in the effectiveness of the space.

According to Leggett and his colleagues (1977), three criteria should be kept in mind while furnishing the activity centers:

The space should (1) be a place that a child can dominate rather than be dominated by; (2) encourage movement of pupils, allowing the immediate formation of groups of any size to suit educational needs; and (3) provide comfort, beauty, and stimulation (110).

Items of furniture which will be discussed in the following titles are categorized as work surfaces, sitting units, storage and display units, partitions, and platforms.

5.2.1. Work Surfaces

Work surfaces are the basic pieces of furniture in the multipurpose space and comprise of tables, desks, and work benches (Figure 5.5.). Since the mobility and rearrangement is high in the activity centers, work surfaces should have certain characteristics serving for the dynamism of a multipurpose space. Firstly, work surfaces are required to be easily movable and modular. If these items are on wheels, the wheels should be lockable. The coordination with the sitting units should also be considered (Leggett, et al., 1977). Table tops with trapezoidal shapes and free shapes work fine to create larger work surfaces by nesting for group activities. This characteristic of work surfaces permit variety in arrangement which is valuable for flexibility in a multipurpose space. Several styles of work surfaces have been designed which are made of wood, steel, aluminium, and composite plastics (Wilson, 1953). Items having wide variety of heights (standing, lying on floor) and shapes work fine for different activities. Standing heights could accommodate storage below. Stacking feature is desirable in work surfaces for easy storage purpose. Surface of tables and work benches should be suitable for work with clay, paints, and tools (Leggett, et al., 1977).

5.2.2. Sitting Units

Sitting units are the most frequently moved and rearranged items of the preschool environment. This characteristic of the sitting units necessitates them to be light, and movable. Actually, the solution to the sitting problem may have many different alternatives. Children would presumably prefer

a choice; carpeted floor, cushions, lounge chairs or sofas, and platforms with a carpeted surface all can serve in association with conventional sitting and homey touches, such as a few rocking chairs or items such as inflatable plastic or beanbag-type chairs or cushions (Figure 5.6.). Consequently, sitting should be selected from a combination of conventional stacking chairs, carpeted floors, platforms, steps, benches, stools, lounge furniture, puncture-proof inflatable chairs, beanbag chairs, a saw horse, a table top, a ladder, a multiuse cube, or a large rubber ball. It may not be necessary to provide conventional chair-desk arrangements for every child. As expected to be in every part of preschool education, furnishing should be creative to encourage the children to think and behave so.

Although most of the floor area would be carpeted, some portion might be hard-surfaced for the indoor use of wheeled toys, water play, art and craft work, or dance activities. Some thought should be given to removable waterproof floor coverings (Leggett, et al., 1977).

5.2.3. Storage And Display Units

Storage units can be divided into two groups: The first group comprises of the stationary ones such as high storage walls, upper wall storage cabinets, stationary shelves and hangings, cabinets and clothing cubicles. The second group includes the storage components on wheels which carry the materials for activity centers. Low storage cabinets on wheels, cabinets with open and sloping shelves, and carts are the components of this group (Figure 5.5., Figure 5.6. & Figure 5.7.). These movable storages are used both to carry the material to activity centers and to arrange temporary work

areas in activity centers (Figure 5.8. & Figure 5.9.) (Leggett, et al., 1977; Wilson, 1953).

Dimensions of cabinet and storage components should be standardized to permit different kinds of units fit together in combinations. Designing a small number of skeleton frames permits to produce a variety of different finished cabinets. These simple cabinet frames can be completed with different partitions, different types of shelving, different drawer sizes, and different counter tops. This provides for all special activity center cabinetwork needs (Wilson, 1953).

It is advised to use the low cabinet units which are designed with adjustable basis to serve as work counters. This flexible arrangement permits the counter height to be adjusted for children in different heights (Wilson, 1953).

Free standing display boards for art works are used in various forms. They meet the needs for art displays and they provide space for larger exhibits (Wilson, 1953).

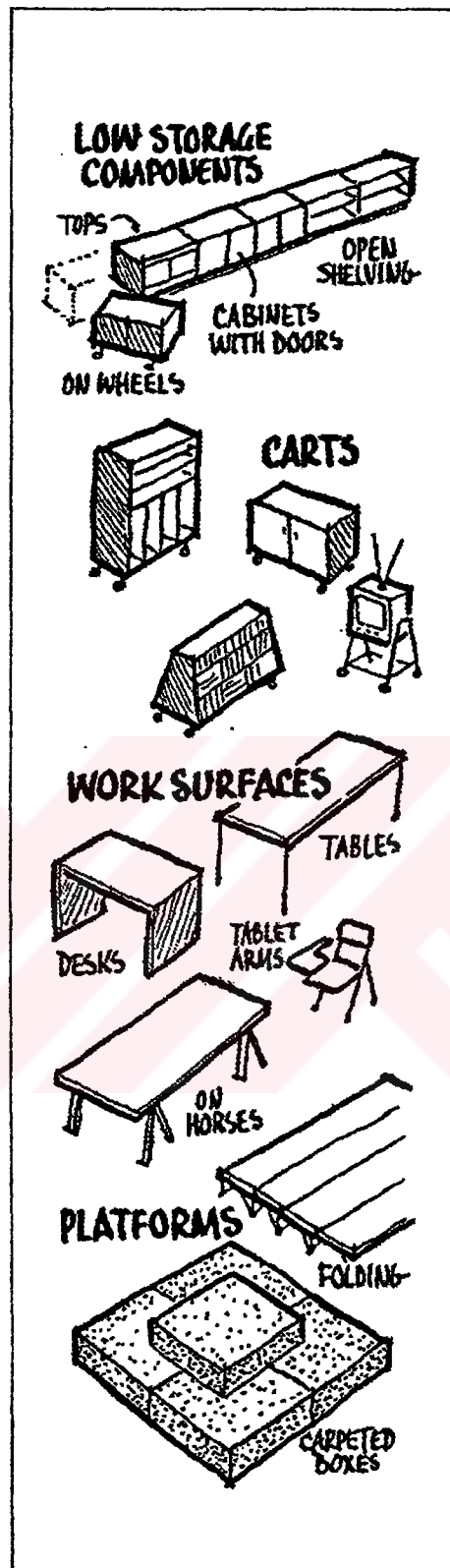


Figure 5.5. Storages on Wheel, Work surfaces, Platforms
 (From LEGGETT, STANTON, & et al. Planning Flexible Learning Spaces. New York: McGraw-Hill Company, 1977. p. 97)

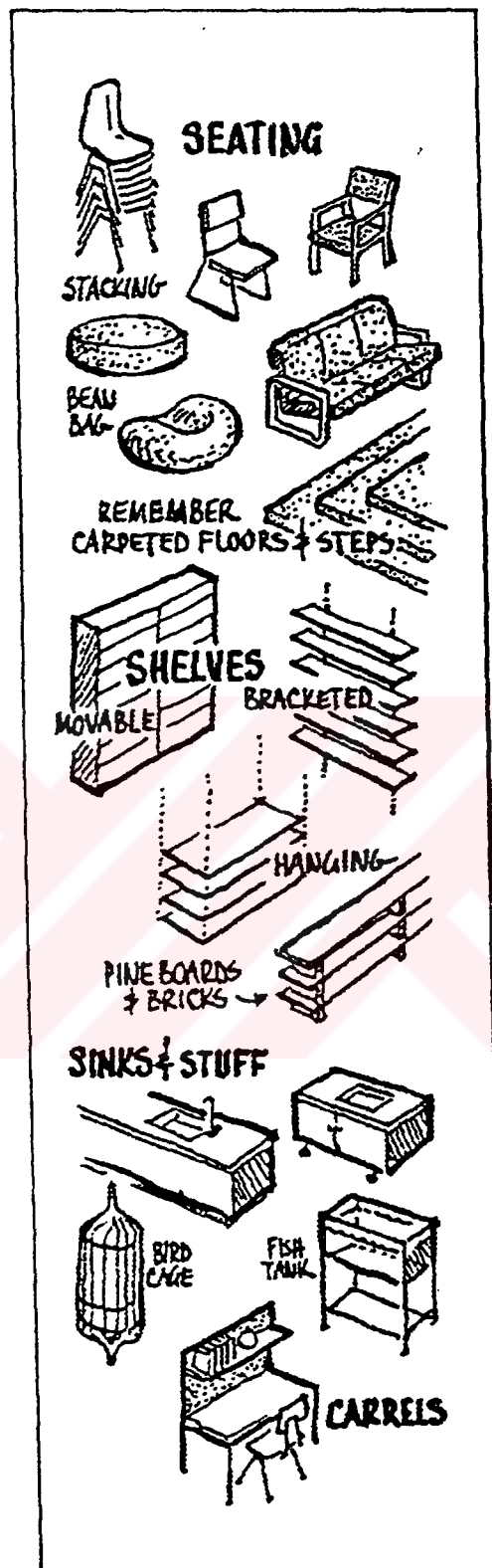


Figure 5.6. Sitting Units, Shelves, and Other Furnishings
 (From LEGGETT, STANTON, & et al. Planning Flexible Learning Spaces. New York: McGraw-Hill Company, 1977. p. 98)

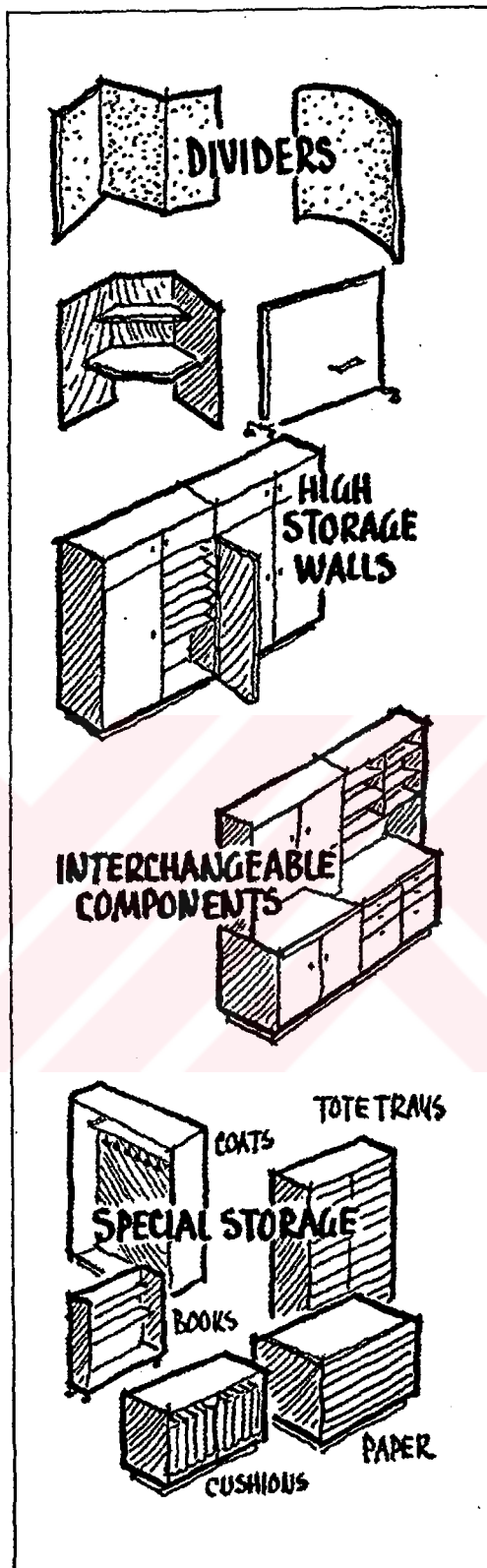


Figure 5.7. Partitions, and Some Storage Units
 (From LEGGETT, STANTON, & et al. Planning Flexible Learning Spaces. New York: McGraw-Hill Company, 1977. p. 96)

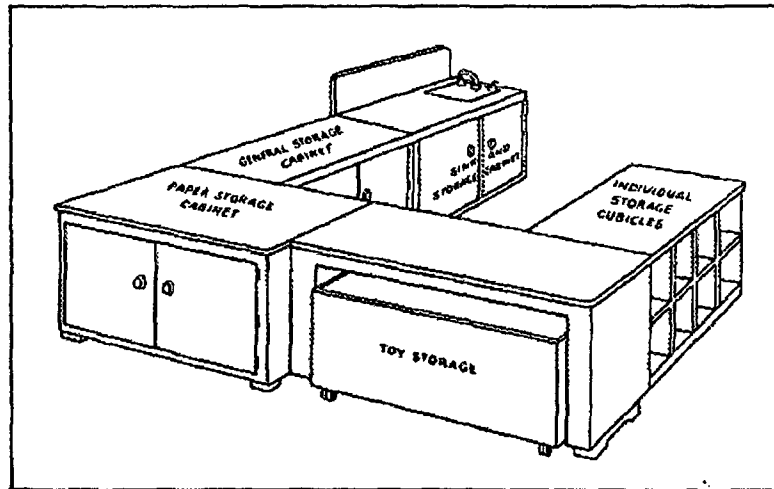


Figure 5.8. U-shaped Work Area Formed with Combination of Various Storage Units
(From WILSON, RUSSELL E. Flexible Classrooms. Detroit, Michigan: Carter Company, 1953. p. 26)

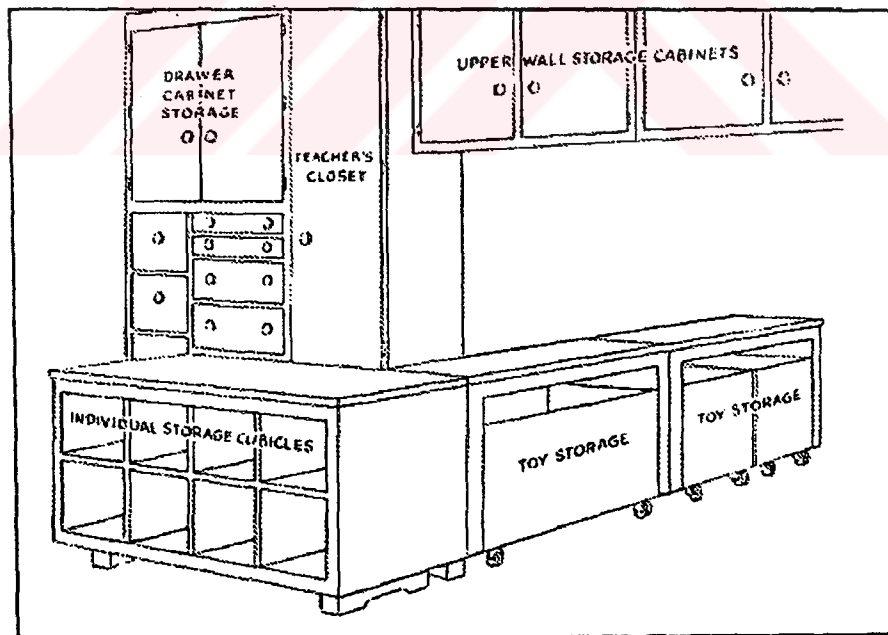


Figure 5.9. Three Types of Toy Storage Cabinets in Combination
(From WILSON, RUSSELL E. Flexible Classrooms. Detroit, Michigan: Carter Company, 1953. p. 29)

5.2.4. Partitions

Partitions which are the constructive elements of flexible educational environments are used to provide privacy for interest centers (Figure 5.7.). Partitions are generally available in at least two heights. Higher partitions provide visual privacy while standing, whereas the lower ones cut the line of sight of children, but allow the teacher to control the other parts of the multipurpose space. Partitions are also used as acoustical screens. When used for this purpose, the surface of the screen is usually covered with fabric. Under this surface, a sandwich construction consisting of a sound-absorbing material, a sound deadening core, and another sound absorbing-material, and fabric surface exist. The partitions can be used more than a mere room divider. They can become part of a system hanging equipment and furniture in the room.

A fully detailed partition system could accept tack board, and serve to hang a desk or similar accessories to the wall (Leggett, et al., 1977). The variety of partitioning systems are given in Table 5.3.

5.2.5. Platforms

Platforms are carpeted and uncarpeted movable boxes used generally in large group area for several purposes. They can be used singly as platform, seat, and model stand. When they are used in groups, they serve as stage, forum, stairs, audience seating, and choral stage.

Kind	Variations	Notes
Fixed (relatively)	Bearing partitions	Although both types of partitions can be moved, these are frequently costly and time-consuming tasks. In new construction, avoid these or locate them where the main space can be changed.
	Partitions heavily related to utilities	
Demountable	Non-wall-bearing masonry such as concrete block	Inexpensive, relatively simple to change. However, the process is dirty and takes time.
	Panel system (many types available)	Systems vary in cost. Where labor costs are high, these systems maybe as inexpensive as painted concrete block.
		Desirable characteristics to look for when making selection: Good sound reduction. Durability. Good-quality finishes. Locks to ceiling system. Electric wiring integral or easy to install. Accepts panels for light controls, heat and cooling controls, clock, audio-visual and retrieval system. Attractiveness. Guaranteed easy and inexpensive move. Low initial cost.

Table 5.3. Representative Partitioning Systems for Enclosed Space
 (From LEGGETT, STANTON, & et al. *Planning Flexible Learning Spaces*.
 New York: McGraw-Hill Company, 1977. p. 107)

Table 5.3. (cont'd)

Kind	Variations	Notes
Movable	Folding partition (many kinds available)	Expensive; allows for space to be open or closed on demand with little energy required in the change. Desirable characteristics to look for when making selection: Good sound reduction when closed. Durability. Attractiveness. Good-quality finishes. Wall is usable when closed. Ease in operation. Good hardware.

Children may prefer to use the uncarpeted platforms as work surface for painting, writing, and working. Carpeted or smooth-surface platforms are approximately 122 cm. by 122 cm. by 20, 40, or 60 cm. high; provided either with lockable casters suitable for a carpeted surface. The top of the platforms should be hinged so that the interior may be used for storage. A new three dimensionality on the floor can be attained by the combination of platforms as seen in Figure 5.10. (Leggett, et al., 1977).

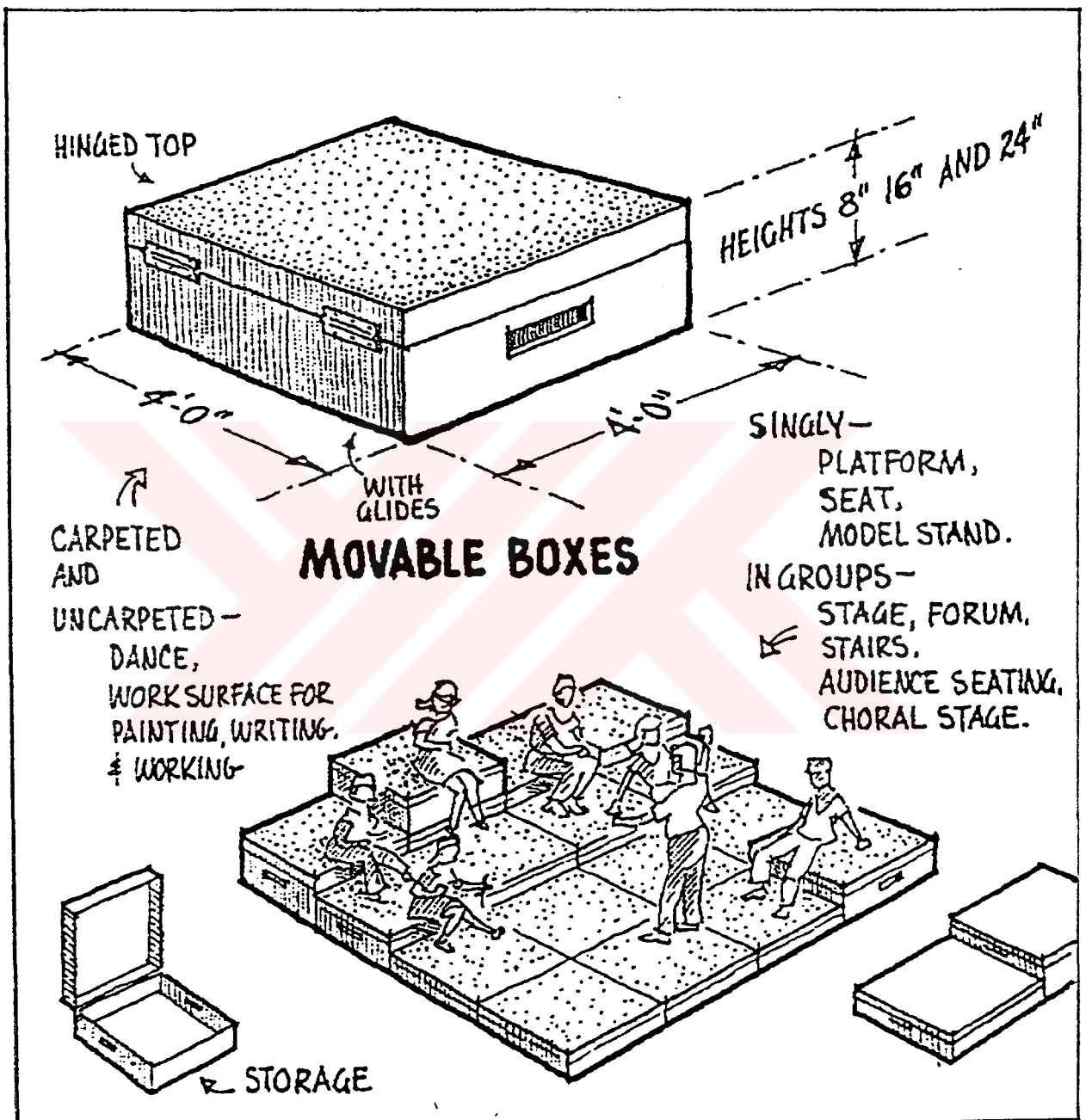


Figure 5.10. Platforms
 (From LEGGETT, STANTON, & et al. Planning Flexible Learning Spaces. New York: McGraw-Hill Company, 1977. p. 142)

Kind	Variations	Notes
Dividers	Simple demountable partitions instinctively look for.	The first thing staffs
	Self-supporting Hinged; angled; curved; surfaces used for tack board or chalkboard	If an open space is separated by dividers into classroom like spaces, there is a clear and present message that something isn't working.
	Complex	Simple dividers can be used with desks, tables, shelving, etc.
	Self-supporting Capable of accepting components: shelves, desk tops, chalk and cork, drawings, tables, etc.	Multiuse things cut down on clutter.
High Storage Components	Self-supporting storage walls	
Interchangeable Components	Doors and shelves	Most good open plans push these against walls.
	Locking	
	Nonlocking	
	Drawers Combination cabinet and drawers	
High Storage Components	Coat storage Hanging space in a big box, sometimes wheeled	
	Special storage boxes for: Chairs Tables Art supplies Easels Cushions Paper Tote trays Self-learning systems Audiovisual equipment General storage Tool storage Costume storage Music storage Display	Multiuse. Sturdy but light. Movable, with large wheels that will move a weight readily over carpet, or portable by use of simple air cushion, or hung on tracks from the ceiling.

Table 5.4. Furnishings in The Flexible Plan
 (From LEGGETT, STANTON, & et al. Planning Flexible Learning Spaces.
 New York: McGraw-Hill Company, 1977. pp. 99-100)

Table 5.4. (cont'd)

Kind	Variations	Notes
Low Storage Components	Interchangeable parts Counter tops Wheeled or otherwise portable Cabinets with locks and shelving Cabinets with tote trays Counter tops Drawers: varied sizes Counter top Open shelving	Drawers used for large paper are very heavy units.
Carts	Portable over carpet Interchangeable Audiovisual materials Tool carts Science carts Book carts (library) Special collections	Carts and low wheeled cabinets are among most useful items in the flexible space.
Work Surfaces	Combined with storage Movable Desks Tables Workbench Workcounter Tablet or desk armchair	Electric outlets needed Electric outlets needed
Platforms	Light; portable; nonslip Folding platforms	Relate to ceiling height
Seating seats in a	Chairs Carpeted floor Platform Comfortable furniture: Sofa, etc. Beanbags Inflated furniture	Tend to have too many large space.
Shelves	Book shelves Open shelving	Varied height. Basic material organization. Locate where centers of interest or subject matter are located.

Table 5.4. (cont'd)

Kind	Variations	Notes
Sinks	Provide, using quick connections	Provide safety overflow for waste line when using a quick-connect system.
Wildlife	Environmental chambers Cages Growth chambers Germinating beds	A small sample.
Carrels	Provided as work station, sometimes with audiovisual outlets up to complete retrieval system	Use with caution. There is some tendency to overprovide and overequip.

5.3. Organization of Multipurpose Spaces

When a preschool curriculum is subtly developed that aims to support the development of children in every field, there is no one formula for selecting and arranging materials within any space or room. Multipurpose space is divided into learning or activity centers which provide space for children to learn in groups or by themselves, having the materials necessary for active learning. Whatever is the organization of the physical environment is in a multipurpose space, it should challenge children be socially, physically, and intellectually active, and motivate them to think and explore (Barbour, & Seefeldt, 1992).

When deciding the activity centers, the activity formats of children are one of the most important factors. Although the variety of activity formats that could be used in a multipurpose space seem endless, only a few formats

are actually used in practice. As quoted in the article of Day and Drake (1991), Wilson stated that classroom environments can be defined in terms of the number of simultaneous segments (i.e. activities) operating at any one time (1983). Classrooms can be classified according to activity segments in operation. Classrooms that are based on teacher-directed group instruction take place in only one activity segment in operation and accepted as the least complex activity format. Another format that is the next level of complexity comprises of two activity segments operating simultaneously in the classroom. In early childhood programs, this typically consists of teacher-led small group instruction (i.e., reading or math skill groups) and an independent seatwork segment planned for children who are not working with the teacher in the skills group.

Classrooms with more than two segments operating simultaneously are the most complex activity format. Early childhood classrooms that are organized so that children have the opportunity to work in both teacher-led and independent small groups, have hands-on learning activities, and have the opportunity to move their own pace, often using learning centers as the mechanism for implementing this approach. Classrooms with learning centers are multi-task settings, with the number of segments in operation at any one time varying from three to fifteen or more (Day, & Drake, 1991). According to the results of the research conducted by Day and Drake (1983), five and six year old children are found to be more engaged with activities in classrooms that featured eight or more learning centers. This result should lead designers and organizers to think about the necessity of variation in activities in a multipurpose space.

The following parts of the chapter will discuss the organizational patterns of multipurpose spaces serving for various activity formats and goals of preschool education.

5.3.1. Structured Space Plan

In structured space plan multipurpose spaces, activity areas are divided by permanent partitions from floor to ceiling, which are most of the time walls, and any access is provided by a main corridor connecting the activity centers. The surrounding distractions are avoided through this enclosed system. It's a known fact that there is a strong relationship between physical character of the educational environment and the method of learning (New, 1990). In structured space plan educational environments, a teacher instructs the classroom as a whole. As a result of this approach, fixed desks are arranged facing the teacher. Since the flexibility is not considered in the classroom, movable storages and the other items are disregarded. In structured classes, children usually spend their time on lessons directed by the teacher (Clarke-Steward, & Friedman, 1987; Fogel, & Melson, 1988).

The role of structured space plan classrooms on academic achievements of children have been sceptical. As Clarke-Steward and Friedman argued, according to Lukasevitch and Gray (1978), children in the structured classrooms did better on tests of mathematical concepts and problem solving. However, as Fogel and Melson (1988) stated, Epstein and McPartland (1979) found that there is no difference in terms of academic achievements of children between structured and open space plan classrooms.

5.3.2. Open Space Plan

The construction of open space educational environments has been encouraged by two quite different points of view. Open philosophy which can be identified by learning through self initiation of children supported ideologically the open space plan in education. Secondly, encouragements to built more economic buildings in initial cost rather than to spread the expenses to a long term for the construction of the total facility (Gump, 1978). Whatever the supportive background of open space in education is, this type of plan in preschool education has brought some advantages from the developmental point of view of children.

In the open classrooms; large, open areas, activity centers, and work tables are set up to allow the children to move freely about the room and to work together with other children. In such a system, educational materials are carried on wheeled storage and display units. Activity centers are located in different corners of a large and open space. Physical and visual access among activity centers is directly available (Fogel, & Melson, 1988).

In the open space educational environments, scheduling is flexible, and children are free to choose the daily activities they want to engage. Teachers behave like organizers rather than initiators. They guide children in activity centers but not direct, they discuss the subject matter with children without lecturing.

In open plan classrooms, children were observed to be more initiative,

cooperative, autonomous, and creative. Moreover, the activities that are vital in the development of preschool children are more adaptive to the organization of open space classrooms (Fogel, & Melson, 1988; Clarke-Steward, & Friedman, 1987).

The drawbacks of open classrooms have been still speculative among authorities. Several investigators reported several problems about open classrooms, including noisiness, overstimulation, and lack of privacy. Because there are few barriers to sight or sound in open classrooms, distraction poses another problem for young children. The activities in the space should be scheduled subtly so that the distracting ones such as slide shows, musical instruments, cooking demonstrations would not block the other activities. In some cases, new activities may require some amount of time to be set up, and this causes interruptions that children spend lots of time looking around doing nothing. Therefore, open classrooms are accepted worse for distractible, immature, and disadvantaged children (Clarke-Steward, & Friedman, 1987). As a solution to the disadvantages of open classrooms, construction of modified open space classrooms can be a suggestion.

5.3.3. Modified Open Plan

Modified open plan is characterized by rearrangeable walls that can readily be taken down and put into different places through demountable partitions. Modified open plan presents a structure that eliminates the disadvantages of open plan and also enables the modification in the multipurpose space depending on the changing needs of the environment. Designers should

consciously consider time as a function of change in setting. The size of groups may change during the middle years of preschool education. It is possible to start a year in separated activity areas and regularly reduce the number of partitions, putting two groups together when children will profit from the experience and increasing the sense of openness during the year. If a program requires so, it is possible to replace walls in an open space. Modified open plan also enables the organization of open space arrangement for compatible activity centers while providing partially isolated environments for incompatible ones through the usage of partitions. For example, it seems possible to place the block area, dramatic play area, and music and physical activity area in an open space, meanwhile separating the reading and listening area by partitions when still direct physical access is available between them.

For modified open space, ceiling and floor should have some certain characteristics. At the ceiling, there should be a modular system related to the wall panels. The ceiling lighting, lighting controls, and, if warm and cool air is introduced by the ceiling, some orderly way to provide the airflow, or any ceiling utilities must be designed so that the orderly arrangement of walls does not interfere with these functions.

The floor system should be continuous under the partitioning system. If carpet or resilient tile is used, the material should extend under the partitions so that it is simple to change the partition location. Any existing floor services must be responsive to the grid (Figure 5.11.) in which the partition system works (Leggett, et al., 1977).

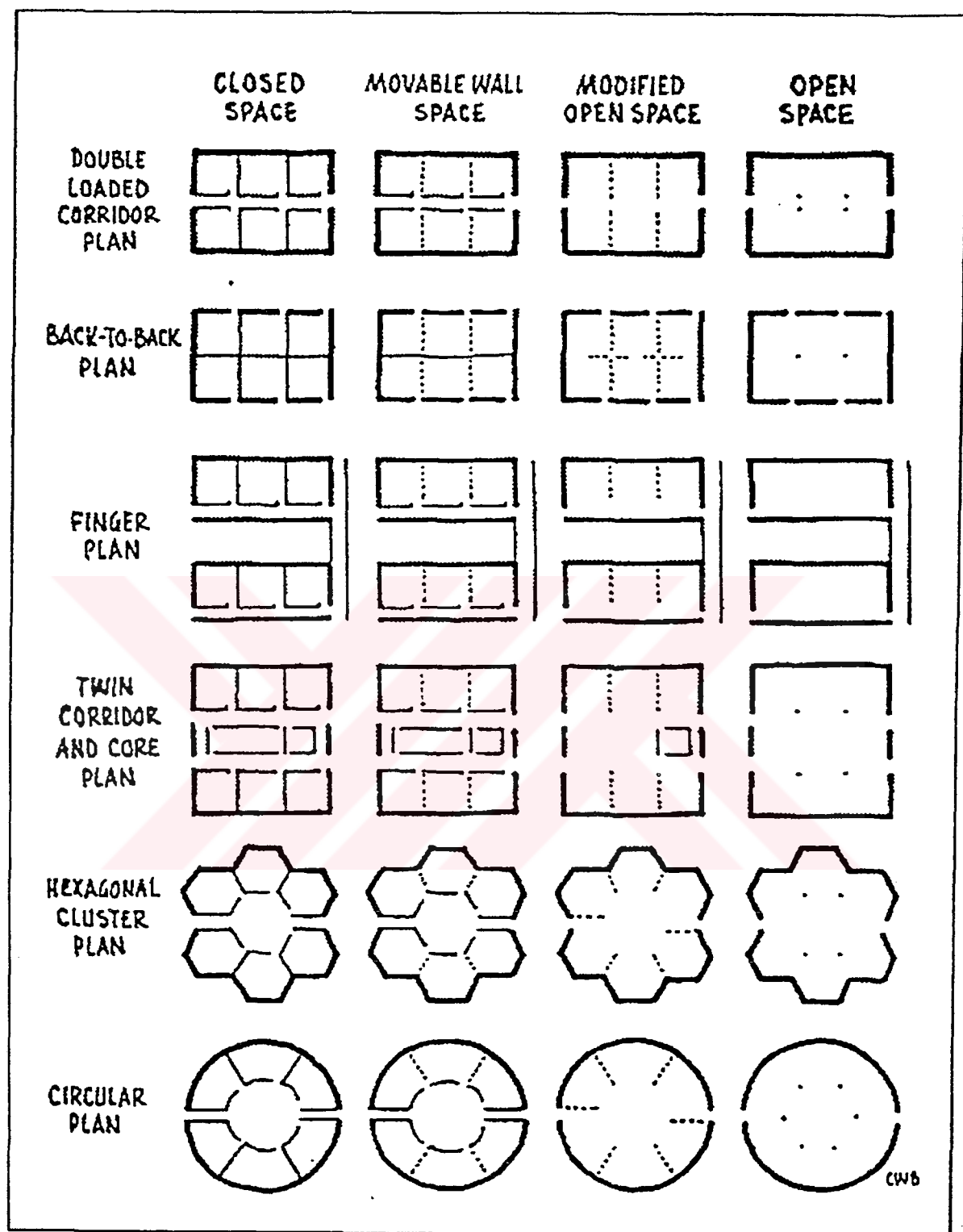


Figure 5.11. Various Organizations of Multipurpose Space in Different Architectural Patterns
 (From LEGGETT, STANTON, & et al. Planning Flexible Learning Spaces. New York: McGraw-Hill Company, 1977. p. 94)

The usage of structured space, open space, and modified open space education environments differ from each other. Figure 5.12. illustrates the comparison of these organizations.

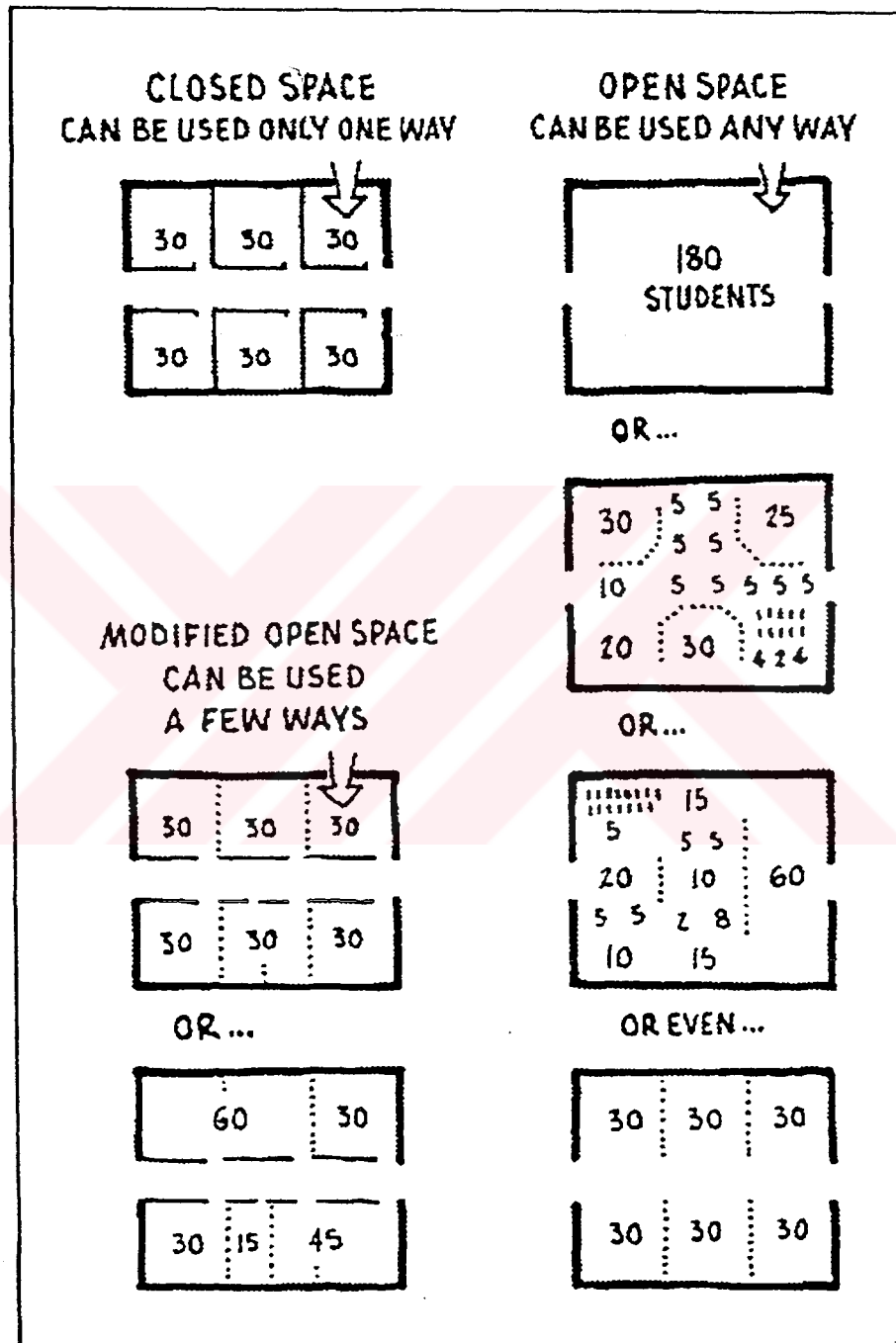


Figure 5.12. Comparison of Organizations of Multipurpose Space in Usage
(From LEGGETT, STANTON, & et al. Planning Flexible Learning Spaces. New York: McGraw-Hill Company, 1977. p. 105)

6. GENERAL CRITERIA FOR THE DESIGN OF A MULTIPURPOSE SPACE

General criteria for the design of a multipurpose space can be classified into five main categories. These titles will be discussed under the following issues.

6.1. Basic Requirements

Flexibility in a multipurpose space is necessary so that the design of the environment can be adapted to changing needs in shape, size and total configuration. As mentioned in the previous chapter, this aim is achieved by the furniture system having the capacity of expansion, contraction, and the mobility of components. To arrange the environment without interrupting the schedule, the equipment and the furniture must be light enough to be easily moved. The items of furniture system should be made of interchangeable and compatible standard modules, so that they would allow new arrangements in the activity centers. The material and assembling details of furniture are expected to be durable to bear the assemblies and disassemblies.

The products that can be used double-duty can conserve space and money. Minimizing quantity is very important in the flexible plan concept since

so much is on view in a given space. Although it is desirable to have many kinds of things stimulating the children's imagination, it's equally desirable to limit quantities of the same things. Functional requirements of the multipurpose space can be provided with minimum number of components.

Attractiveness of the environment is important as well as functionality. A multipurpose space should be appealing, and practical. Purchasing well designed basic equipment is certainly necessary in accomplishing this issue, as in using harmonious colors, and including a variety of textures (Hendrick, 1986). According to Heseltine and Holborn (1987), colors can be used to stimulate or reinforce the feelings of children in play area. Activity places can be colored to encourage particular type of attitude. In noiseless activity places and in audiovisual interaction activity place where children are expected to sit and talk quietly, the usage of curves and flowing lines is advised with the predominance of blues, browns, and natural colors. On the other hand, in activity places with high physical mobility and noise, sharp irregular lines combined with bright, primary reds and yellows in decoration and planting should predominate. A conscious usage of colors in activity places stimulates the physical and emotional senses. Strong and contrasting colors help the eye to differentiate the objects and to perceive the depth. Because of the visual limitations of preschool children, they prefer the colors which stand out such as reds, oranges, and yellow, and since these are stimulating colors, their provision suggests activity.

6.2. Health and Safety Requirements

Preschool children have a great deal of energy and have to spend this energy in a safe and healthy environment. The first of two vital facts to remember when designing preschool educational environments that will ensure the safety of children is that children use built environment differently to adults. As previously stated, they make deficient judgements about the environment. Children are also more vigorous users of built environment than adults. Children run rather than walk and use parts of the environment as play equipment. Around the age of four or five, children climb, slide, swing, jump from one point to another with an improving skill. This characteristic of children requires to avoid the built environment that having any feature capable of being climbed, squeezed through, slid down, or swung from (Sinnott, 1985).

The other vital fact to remember is that children's body proportions differ considerably at different ages. The ratio of length of legs to total height varies from 1:3 in the newborn to 1:2 in the adult; at birth the ratio of vertical head height to total height is 1:4 whereas in adults it is 1:7 1/2. The horizontal dimension of the head in small children exceeds the maximum body depth. This leads to accidents where a child slips feet first through an opening and being caught by the head. Thus, maximum spacing of bars, openings, and gaps should not exceed 60 mm, according to standards reported in the U.K (Sinnott, 1985).

The satisfactory design for safety of windows is one of the most important consideration. Window grills which may be removed, or friction window

pivots which may lose their grip should be avoided. Horizontally pivoted windows designed specially for use in tall buildings have not been made accident proof against the normal behavior of small children. Majority of these windows extend down to sill level. This may cause the children squeezed through the window and fall down. The current standard BS 990 (British Standards Institution, 1972a) requires the windows to be fitted with a safety device to limit the distance the window can initially be opened for ventilation. The device has to be released when the window is turned over for cleaning. The maximum size of the ventilation opening in the code of practice CP 153 (British Standards Institution, 1969) is 100 mm (Sinnott, 1977). Safety catches, especially spring-loaded ones instead of gravity-type, work good for the safety of windows.

The solution for the window safety should be considered in the design process so that reliance does not have to be placed on safety devices. Children climb onto window ledges and furniture to see out the window. So the low-level sub-light should be in laminated safety glass of suitable thickness to prevent penetration, and the pane, or panes possibly, should be narrow as an additional precaution (Sinnott, 1977).

For the safety of the environment, there are some criteria in the design of stairways which should be under consideration. Gaps between stair treads and balustrades are potential danger to children. According to comprehensive regulations introduced in 1975 (Statutory Instruments, 1975), space that a 100 mm diameter sphere could not pass through was then permitted. Restricted space is one reason for unsafe design in stairways. The stairs should preferably be covered with carpet, but it

should be kept in mind that worn stair-carpet may be the reason of an accident. Handrail should be well-rounded so that it can be readily grasped in an emergency. A turn in a stairway is advantageous for safety. If an intermediate landing is provided between the flights , then the distance a child likely to fall is reduced (Sinnott, 1977).

Glazed doors are typical accident sources for children. Some of these doors consist merely of a sheet of ordinary 6 mm annealed glass with an aluminium strip down each vertical edge. At top and bottom glass runs in a groove. If there is an accident and the glass is broken the whole sheet collapses, the edging strips falling with the glass. The code of practice CP 152 (British Standards Institution, 1972b) recognized the need for laminated or toughened safety glass in doors and other potentially dangerous situations (Sinnott, 1977).

Some other criteria to be considered in the activity centers are as following: The rugs and carpets should have nonslip back in order to avoid children to fall down. The corners and edges of the furniture should be rounded to prevent injury to children. Swinging doors are not appropriate for preschool educational environments. Besides, the dyes including toxic chemicals must not be used for surface finishing. Water-based interior nontoxic paint for drywall or plaster surfaces is preferable to latex or oil-based paints from a respiratory health stand point (Crowther, 1992). Hairy upholsteries like plush which may be swallowed by children are not appropriate. To grow up physically and psychologically healthy children, enough space should be provided for them. For this purpose, between 9.1 and 15.2 square meter of indoor free floor space per child has

been recommended (Povell, 1991).

Design of a feature should never be based on the assumption that children receive constant supervision, nor on the assumption that the feature will always be used in the way that the designer intended. Designers must realize that children will take advantage of any feature that gives them an opportunity to experiment or explore. Reliance must not be placed on the correct use of appliances, physical fitness, good temper, sobriety, experience or awareness of danger (Sinnott, 1977).

6.3. Maintenance

There is another aspect of the development of the physical environment to consider: the overall impression that the physical environment conveys with the maintenance. Orderliness and cleanliness play vital roles in that impression. Therefore, the characteristics of materials used in furniture carries a great significance. It is appropriate to use varnished or lacquered shelves, cabinets and so on, rather than painted ones. Because they require less frequent refurbishing. It is advised to use easily cleaned plastic surfaces on tabletops and chairs. In particular, the chairs soil easily. So, the ones that will hold up under frequent washing and do not require repainting like the ones with plastic backs and seats are good choices. Upholstery used in other types of sitting units is advised to be easy-cleaning, inflammable, and nonsweating (Hendrick, 1990). The components of the furniture should be easily replaced in case of any damage. The materials used in furniture is expected to be scratch resistant (Leggett, et al., 1977). However, scratched and marred surfaces can be recovered with plastic

similar to Formica™, but which can be cut with scissors and glued with a special adhesive. Waxing all wood and plastic furniture with paste wax before using initially and after washing cuts work and saves surfaces. Some thought should be given to the floor covering of the activity centers. Although carpeting creates the coziest environments, cleaning is an important problem in art and craft area. Thus, vinyl coverings such as linoleum work best in this kind of areas. On the other hand, carpeting adds comfort, noise control, and softness to the room. Tightly woven ones are best for easy vacuuming. Small area rugs that can be shaken out and moved easily are nice if they don't wrinkle too much. The use of nonskid mats underneath is appropriate. Maintenance of learning and play materials is provided by appropriate storage and current care (Hendrick, 1990).

6.4. Environmental Requirements

One of the most important environmental requirement in a multipurpose space is the noise control. Especially, in open space plan preschool educational environments, children's voices coming from high physical activity centers become an important disturbance for the other activity centers. In this respect, acoustical treatment of partitions are required. The most effective ones of these partitions are those composed of a cardboard honey comb system wrapped in fabric. These partitions work as double walls through creating a double space to reduce sound transmission. Additionally, the large and hard surfaces made of glass or plastics should be avoided in order to prevent sound reflection in noisy activity places.

In a well designed multipurpose space, both natural and artificial lighting should be available (Evans, Saia & Evans, 1974). Especially in the audiovisual interaction activity center, lighting should be appropriate for computer, audiovisual and other imaging equipment. Glare, as the most important lighting problem, is caused by luminaires that are not properly sited or aimed, lamps that are not properly shielded to give diffuse light, and surfaces with high reflectivities too close to a lamp/luminaire. To prevent this problem, no lamps should be positioned that it shines directly into the eyes of children. Whenever glare could be a problem, lamps should be chosen with some of direction control in the form of a louvre, diffuser, etc. If possible, luminaires allowing at least 15° adjustment in two planes should be preferred instead of fixed luminaires. Back-light movable objects may cause glare, so they are avoided. Lastly, lamps should not be placed close to highly reflective surfaces (Cumming, 1987).

Heating is another important environmental criteria that should be pointed out here. Children frequently sit or roll along the floor. So the best way of heating a multipurpose space seems the baseboard heating. However, any other kind of heating system which provides a constant and healthy temperature (20 °C or 68 °F) can be used (Headley, 1973; Evans, Saia & Evans, 1974).

The control of humidity in a multipurpose space is a health requirement. As a result of heating, some amount of water vapor is emitted to the space which leads to condensation on windows and walls. To prevent excess moisture, ventilation is compulsory (Martin & Oughton, 1989). Ventilation is also used for cooling purpose, and required to qualify the inside air in a

multipurpose space. Planning of a multipurpose space, and location of interior doors or other openings can be critical to good natural ventilation. Ventilation is most easily provided by screened patio glass sliding doors or awning-type or casement double-glazed windows. It is possible to use a mechanical ventilation system. However, it should be kept in mind that the more that the thermodynamics of the architecture is the heating, cooling, and ventilating system, the more the need for a mechanical system can be lessened or avoided. Natural materials such as wood, wool, and cotton help in balancing humidity levels in interior spaces. However, when the natural ventilation is impossible or in places with dry climate, it would be necessary to balance the humidity level in interior space by a moisturizing system or an apparatus (Crowther, 1992).

In providing an acceptably comfortable environment in a multipurpose space, the air should be free of particulate pollutants, and harmful or irritant gaseous pollutants, including odors. Contaminants usually are brought from their sources to interior space by means of airstream (Cunningham, 1989). There are abundant type of air cleaning filtration machines in the market place which can be combined with ventilation system. Machines using multiple filters with a prefilter for submicron particulate filtration, activated charcoal for undesired gases can greatly improve indoor air quality (Crowther, 1992).

6.5. Ergonomic Considerations

One of the most important consideration in the design of a preschool educational environment is the suitability of furniture and preschool

children from ergonomics point of view. In a preschool educational environment, young children and adults appear to be two different entity by means of dimensions and suitability to the environment. Although designing an environment that answers the needs of two potential groups at ones makes the job more difficult, the aim should be to provide the conditions serving for these two different scale (Figure 6.1.). Unless the environment satisfy the ergonomic requirements, there is no meaning of the other properties like cheapness, aesthetic values, convenient usage of materials, and etc.

The period of early childhood comprises of the ages 3 to 6 years old. Because there is not any scientific study conducted related to the measurements of preschool Turkish children the necessary dimensions related with the age group which would be helpful in the design of multipurpose space are taken from Dreyfuss charts (Diffrient, Tilley, & Bardagjy, 1990). All given dimensions will be helpful to determine the necessary clearance and reach dimensions in the design of the furniture and the organization of the environment.



Figure 6.1. Two Scales Prevalent throughout Playroom of the Stanford Day Care Center
(From McDonald, Donald. "Architecture For Kids: Deinstitutionalizing The Design of Child-Care Centers." *Day Care and Early Education*. 17.4 (1990): 7.)

In Figure 6.2. and 6.3., the average dimensions of children 3 and 6 years old are given. Measurements of seat height, table height, leg room, and eye to table are given to determine the conditions of a healthy sitting posture for children. When the seating surface is too high, the underside of the thigh becomes compressed which cause blood circulation to be constricted. In addition, if the soles of the feet does not contact with the floor surface, body stability is weakened. When the height of the seat is too low, the legs may become extended and positioned forward, depriving them of any stability. In addition the movement of the body forward will also cause the back to slide away from the backrest and deprive the sitter of proper lumbar support. Shoulder width is used to consider allowances for seating around tables. It can also be useful in establishing clearances for circulation in activity places. Easy high reach would be helpful in determining the location of switches, and the height of selves where children are allowed to take materials. Elbow height data are essential in establishing comfortable heights for work counters, work benches, and other work surfaces used while standing. Although shoulder height data has a limited use to the design of interior spaces, it may be helpful in considering obstructions to visibility while standing in the planning of activity places. Standing height is the vertical distance from the floor to top of the head which could be useful in determining the minimum distances of overhead obstructions from the floor (Panero & Zelnik, 1979).

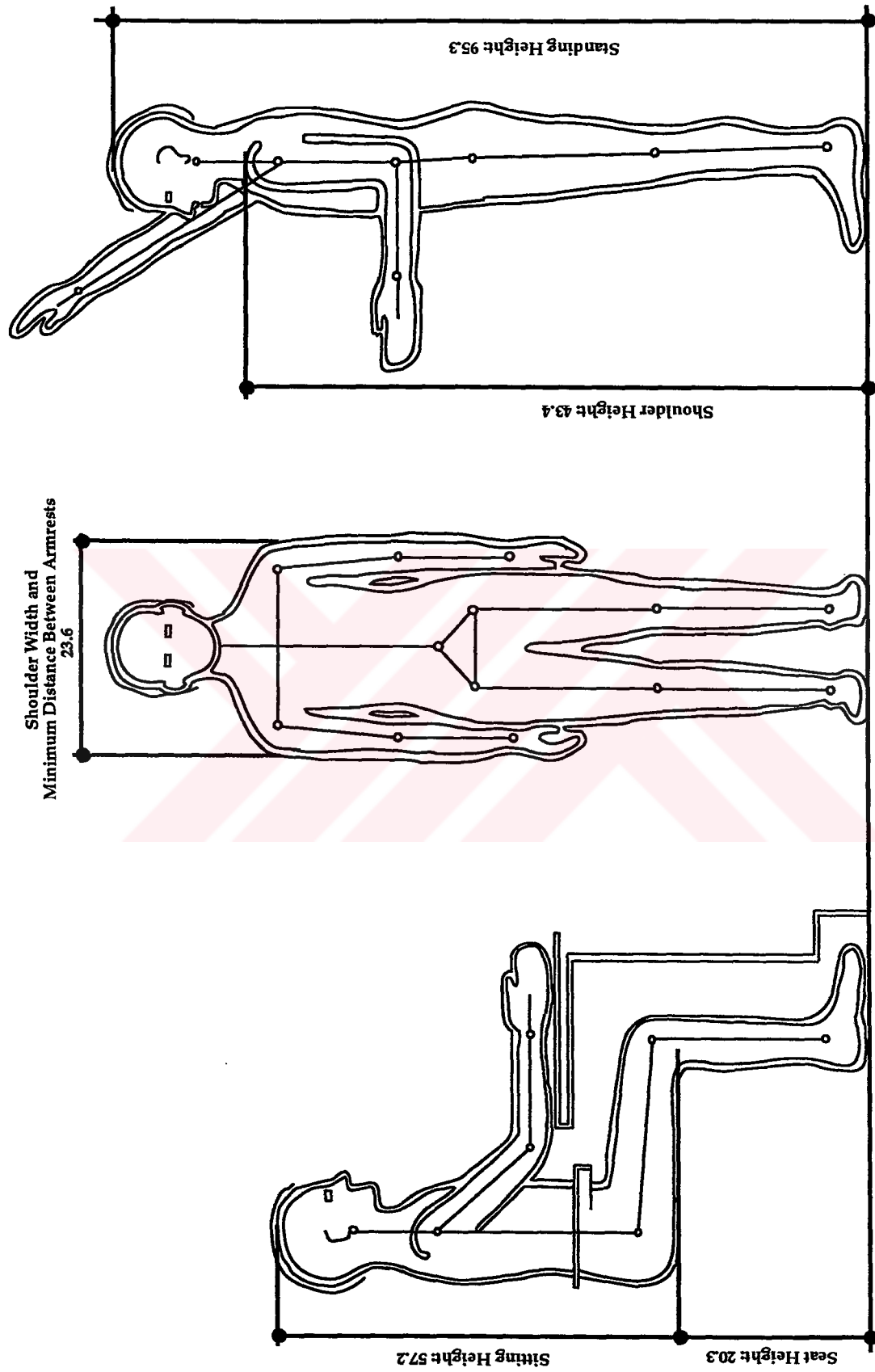


Figure 6.2. Average dimensions of 3 year-olds.
(From Diffrient, N., Tilley, A., & Bardagly, J.,
Humanscale 1/2/3/. A Portfolio of Information.
Charts Designer's H. Dreyfuss.
Massachusetts: The MIT Press, 1990)

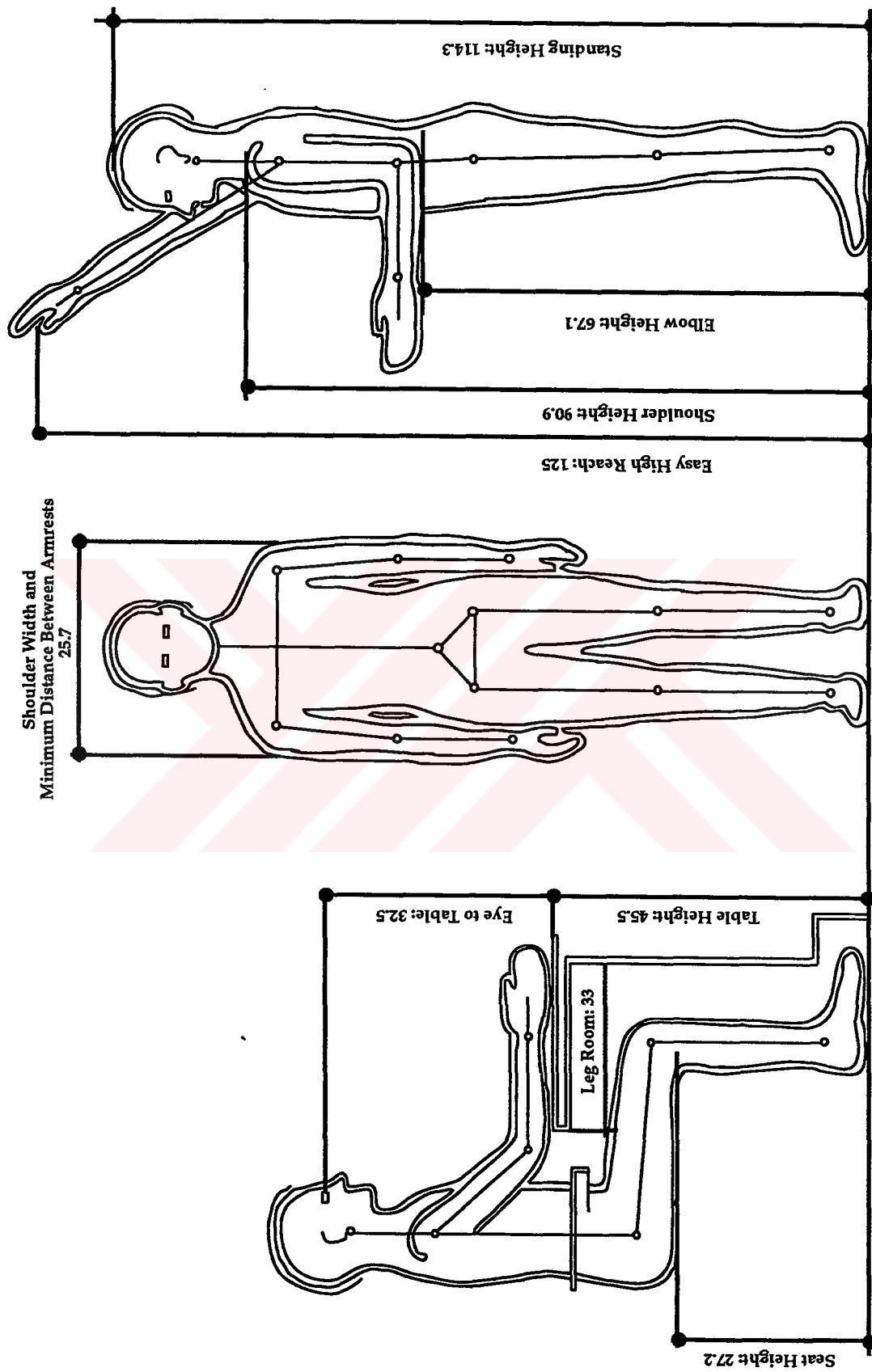


Figure 6.3. Average dimensions of 6 year-olds.
(From Dreyfuss Charts (1a, 1b, 2b), 1990)

Generally, when designing the interior spaces, objects mounted on the wall which may be dangerous for children are neglected. Besides, corners of the furniture in level of standing height of the children may create problem. Consideration of standing height data in planning of activity places would reduce the potential accidents.



7. CONCLUSION

The main purpose of this study is determined as to point out the basic design criteria in preschool educational environments whose users having quite different perception, interpretation, and expectation from adults. Furthermore, the thesis analyzes preschool educational environments not only a new physical environment for young children after home but also as a new social circumstance where the psychological aspects are available. It is also concluded that to achieve long-lasting and positive contributions to the development of children; the curriculum, and psychological considerations should be in consistency with the physical properties of the environment.

In order to determine the requirements of an environment, the potential group should be stated. Within this framework, the characteristics and properties of children have to be examined. Early childhood is studied from the physical and motor, cognitive, social, emotional, and linguistic developmental points of view. To stress out the necessity of child-mind evaluative approach in the design of preschool environments, the approach of children to environment has been discussed in detail.

Examining the need and purpose of preschool education was the second step. Following this, the context of learning taking place in the activity centers are determined as play and discovery. Play was defined as a process

through which children learn, and realize the social and physical environment. Many types of play have been pointed out in order to be familiar with the necessity of basic activities and related materials which have been discussed in the fifth chapter. In the third part of the chapter, major philosophies in preschool education; behavioristic learning theory approach, Piagetian cognitive developmental approach, and developmental-interaction approach have been examined to stress out the tight connection between curriculum and its reflectance in physical dimension of preschool educational environments. Actually, it seems impossible to implement totally pure educational philosophies. However, the consistency between the curriculum and design of the environment is compulsory. Therefore, when creating preschool environments, designers should be conscious how the environment would serve to the purposes of curriculum. Unless the organization of environment has consistency with the curriculum, functionality would be lost. If children are supposed to be stay in activity^o places in predetermined hours, there is no need to design an open space environment where the availability of activities in any time is implied. David Elkins (1991) stated that: "No classroom or school (organization) can truly be developmentally appropriate if its underlying philosophy is psychometric (that is based on behavioristic learning theory approach)" (101). Rebecca New (1990) also discussed that use of space support the curriculum. If the curriculum goals do not coincide with the organization of environment, it becomes apparent in children's waning interest. Consequently, the aim of summarizing these educational approaches was to clarify their principles and correspondent physical appearance so that the consistency between

them would not be blurred in application.

The relation between psychology and social behavior of preschool children, and the physical character of the environment is obvious. Therefore, expectations of children from the environment depending on their conceptions about personal space, privacy, territoriality and crowding should be considered. Depending on this issue, the advises about the design of preschool environments pertained from researches should be used in order to shape the behavior of young children.

Preschool educational environments should provide necessary conditions by which beneficial and long-lasting effects are evaluated for the development of children. Under the scope of this approach, some beliefs which have become the source of design considerations in a multipurpose space have been stated. These beliefs which allow for exploration, experimentation, and inquiry all within a structured, yet creative, learning environment can be summarized in the following points:

First of all, children grow and develop at unique, individual rates that are often unrelated to chronological age. (Many learning activities at a variety of challenge level should be provided in an effort to meet the needs of all children. Even within the range of preoperational learning, there are many levels). As another point, children's natural curiosity and eagerness to learn are enhanced if children are free to follow many of their natural interests. (Piaget has said that children learn best through direct, immediate involvement with the environment. They learn through sensory input of observation, manipulation, and testing) (Day and Drake, 1991). Learning

is what children do; it is not something that is done to them. Play is the child's way of working and learning. Children acquire many skills through play. They try new roles, solve problems, learn how to make sense of the environment, and practice social skills. Children also learn many things from each other, including respect for themselves and others, ways of learning how to learn, and the sense of responsibility and achievement. A specially constructed, rich learning environment, filled with concrete and sensory learning materials, is essential helping children to learn. The environment is the vehicle for learning, and it must provide the materials the child needs for exploration and learning. In a learning atmosphere based on trust and structured freedom, children are encouraged to use their own initiative and to be self-reliant. Children need reassurance and security, but they also need challenge. They need and respond to praise for a job well done. The uniqueness of the child, as reflected in his or her individuality and learning style, should be appreciated and valued.

Finally, as the most important challenge of this study, whatever the selected curriculum and organization is in a preschool educational environment, the needs of the young children can be provided by a comfortable, safe, and stable environment designed by purposeful considerations. In such an environment, children would have opportunities to be physically active, to explore and meaningfully interact with the world around them, and to interact with , learn from, and be appreciated by other children. They would also be stimulated and supported to develop cognitively, socially, emotionally, and physically in their own time and in their own ways.

Further Study

As a result of information compiling process used to structure this study, it was found that there is no data about the anthropometric dimensions of Turkish preschool children. Thus, a scientific study must be conducted to determine these dimensions so that appropriate decisions could be arrived for the design of environments serving to Turkish preschool children.

Another point which should be investigated is that the conception of Turkish children about personal space, privacy, territoriality, and crowding. Since the mores of a community restrict the options available to any person, attitudes of Turkish children are expected to differ from those of other cultures. Depending on this, dimensions and conditions derived from these attitudes which might be helpful in the design of interior spaces would likely change.

REFERENCES

- ALTMAN, I. The Environment and Social Behavior. California: Cole Pub. Co., 1977.
- ALTMAN, I. & CHEMERS M. M. Culture and Environment. Cambridge: Cambridge University Press, 1989.
- ALTMAN, I. & WOHLWILL J. F. Children and the Environment. New York: Plenum Press, 1978.
- ARISOY, BETÜL. "A Research on Pre-school Children's Micro/Indoor Nursery Environments". Unpublished Master Thesis, Ankara: Middle East Technical U, 1981.
- BARBOUR, NITA H. & SEEFELDT, CAROL A. "Developmental Continuity: From Preschool Through Primary Grades." Childhood Education. Annual Theme Issue, 68.5 (1992): 302-4.
- BREDEKAMP, S. Guidelines for Appropriate Curriculum Content and Assessment in Programs Serving Children 3 Through 8 Years of Age. Draft. Washington, D. C.: National Association for the Education of Young Children, 1989.
- BURNS, M. SUSAN, GOIN, LAURA & DONLON, JAN TRIBBLE. "A Computer In My Room." Young Children. 6 (1990): 62-7.
- CARTWRIGHT, SALLY. "Play Can Be the Building Block of Learning." Young Children. 7 (1988): 44-7.
- . "Learning With Large Blocks." Young Children. 3 (1990): 38-41.
- CHRISTIANSON, HELEN M., ROGERS, MARY M. & LUDLUM, BLANCHE A. The Nursery School: Adventure in Living and Learning. Boston: Houghton Mifflin Company, 1961.
- CLARKE-STEWARD, A. & FRIEDMAN, S. Child Development: Infancy Through Adolescence. New York: John Wiley and Sons, 1987.
- CLEMENS, SYDNEY GUREWITZ. "Art in The Classroom: Making Everyday Special." Young Children. 6 (1991): 4-11.
- CRAIG, GRACE J. Human Development. New Jersey: Prentice Hall, Inc., 1989.
- CROWTHER, RICHARD L. Ecologic Architecture. Boston: Butterworth Architecture, 1992.

- CUNNINGHAM, GEORGE. "Air Quality." Building Design and Human Performance. Ed. N. C. Ruck, New York: Van Nostrand Reinhold, 1989. 29-39.
- CUMMING, NEIL. Security: A Comprehensive Guide to Equipment Selection and Installation. London: Architectural Press, 1987.
- DAY, B. D, & DRAKE, K. N. Early Childhood Education: Curriculum Organization and Classroom Management. Alexandria, VA: Association for Supervision and Curriculum Development, 1983.
- DAY, B. & DRAKE, K. "Developmental and Experimental Programs-Key to Quality Education and Care of Young Children." Early Childhood Education. Eds. B. Persky & L. H. Golubchick, Lanham: University Press of America, New York: Doctorate Association of New York Educators, 1991. 163-82.
- DE CHIARA, JOSEPH & CALLENDER, JOHN. Time Savers' Standards For Building Types. 3rd ed. New York: Mc-Graw Hill Publishing Company, 1990.
- DIFFRIENT, N., TILLEY, A. & BARDAGJY, J. Humanscale 1/2/3, 4/5/6, 7/8/9. A Portfolio of Information. Charts Designer's H. Dreyfuss. Massachusetts: The MIT Press, 1990.
- ELKINS, DAVID. "Developmentally Appropriate Practice." Early Childhood Education. Eds. Barry Persky & Leonard H. Golubchick, Lanham: University Press of America, New York: Doctorate Association of New York Educators, 1991: 93-102.
- EVANS, E. BELLE, SAIA GEORGE & EVANS ELMER A. Designing a Day Care Center. Boston: Becon Pres, 1974.
- EVANS, ELLIS D. Contemporary Influences in Early Childhood Education. New York: Holt, Rinehart and Winston, Inc., 1971.
- FARRANT, J. S. Principles and Practice of Education. English Language Book Society (ELBS), Singapore: Longman Singapore Publishers Pte Ltd., 1988.
- FOGEL, A. & MELSON, G. F. Child Development: Individual, Family, and Society. New York: West Publishing Company, 1988.
- FRAZIER, A. Early Childhood Education Today. Milwaukee: ASCD Elementary Education Council, 1968.
- GETTMAN, DAVID. Basic Montessori. Learning Activities for Under-Fives. New York: St. Martin's Press, Inc., 1987.
- GIFFORD, ROBERT. Environmental Psychology. Boston: Allyn and Bacon, Inc., 1987.

- GUMP, PAUL V. "School Environments." Human Behavior and Environment: Advances in Theory and Research. Eds. Irwin Altman, & Joachim F. Wohlwill. Vol. 3. New York: Plenum Press, 1978. 131-74.
- HALL, E. T. The Hidden Dimension. Garden City, New York: Doubleday, 1966.
- HAUGLAND, SUSAN W. & SHADE, DANIEL D. "Developmentally Appropriate Software for Young Children." Young Children. 5 (1988): 37-43.
- HEADLEY, NEITH E. Foster and Headley's Education in the Kindergarten. New York: American Book Company, 1973.
- HENDRICK, JOANNE. The Whole Child. New Trends in Early Education. Saint Louis: The C. V. Mosby Company, 1975.
- . Total Learning. Developmental Curriculum for the Young Child. New York: Macmillan Publishing Company, 1991.
- HESELTINE, P. & HOLBORN J. Playgrounds: The Planning and Construction of Play Environments. London: The Mitchell Pub. Co. Ltd., 1987.
- JAKLE, J. A., et al. Human Spatial Behavior. Massachusetts: Ouxburg Press, 1976.
- LEGGETT, STANTON, et al. Planning Flexible Learning Spaces. New York: McGraw-Hill Company, 1977.
- LEVY, JILL. Introduction. By eds. B. Persky & L. H. Golubchick, Early Childhood Education. Lanham: University Press of America, New York: Doctorate Association of New York Educators, 1991. 327-8.
- MARTIN, P. L. & OUGHTON D. R. Faber & Cell's Heating and Air-Conditioning of Buildings. London: Butterworth & Co. (Publishers) Ltd., 1989.
- MCGREW, W. C. "Interpersonal spacing of preschool children." The Development of Competence in Early Childhood. Eds. J. S. Bruner & K. J. Connolly, London: Academic Press, 1972.
- MONIGHAN-NOUROT, PATRICIA & VAN HOORN, JUDITH L. "Symbolic Play in Preschool and Primary Settings." Young Children. 9 (1991): 40-50.
- MORROW, L. M. & WEINSTEIN C. S. "Increasing Children's Use of Literature Through Program and Physical Design Changes." The Elementary School Journal. 83 (1982): 131-7.
- MYHRE, SUSAN M. "Enhancing Your Dramatic-Play Area Through the Use of Prop Boxes." Young Children. 7 (1993): 6-11.

- NEW, REBECCA. "Excellent Early Education: A City in Italy Has It." Young Children. 9 (1990): 4-10.
- ÖNAL, AYŞE MÜGE. "Children in the Physical Environment. An Approach to Design For Children: A Day Care Proposal in Beytepe-Ankara". Unpublished Master Thesis. Ankara: Middle East Technical U, 1988.
- PANERO, JULIUS & ZELNIK MARTIN. Human Dimension & Interior Space. New York: Watson-Guption Publications, London: The Architectural Press Ltd., 1979.
- PARKE, ROSS D. "Children's Home Environments: Social and Cognitive Effects." Human Behavior and Environment: Advances in Theory and Research. Eds. Irwin Altman & Joachim F. Wohlwill. Vol. 3. New York: Plenum Press, 1978. 33-81.
- PATTERSON, C. H. Foundations for A Theory of Instructional and Educational Psychology. San Francisco: Harper and Row, 1977.
- PIAGET, J. Play, Dreams and Imitation in Childhood. New York: Norton, 1963.
- PIAGET, J. & INHELDER B. The Child's Conception of Space. New York: Norton, 1967.
- POLLOWY, ANNE-MARIE. "The Child in the Physical Environment: A Design Problem." Alternative Learning Environments. Ed. G. Coates, Stroudsburg & Pennsylvania: Dowden, Hutchinson & Ross, Inc., 1974. 370-81.
- POVELL, PHYLLIS. "Designing the Environment of A Quality Childhood Center." Early Childhood Education. Eds. B. Persky & L. H. Golubchick, Lanham: University Press of America, New York: Doctorate Association of New York Educators, 1991. 403-9.
- SCARR, SANDRA & WEINBERG, RICHARD A. "The Early Childhood Enterprise: Care and Education of the Young." American Psychologist. 41.10 (1986): 1140-6.
- SINNOT, W. R. "Safety Aspects of Domestic Architecture." Children, the Environment and Accidents. Ed. R.H. Jackson, Tunbridge Kent, U.K.: Pitman Medical Publishing Ltd, 1977. 76-90.
- SINNOTT, RALPH. Safety and Security in Building Design. New York: Van Nostrand Reinhold Company, 1985.
- TRAWICK-SMITH, JEFFREY. "A Descriptive Study of Spatial Arrangement in a Family Day Care Home". Child and Youth Care Forum. 21.8 (1992): 263-76.
- TUAN, Y. F. Space and Place. London: Edward Arnold Ltd., 1977.

- TUNÇEL, A. "Architectural Design Principles of the Kindergarten Building." Unpublished Master Thesis. Middle East Technical University, Ankara: 1981.
- WARD, DEVA. "Kindergarten Education in Public Schools: Developmental vs. Academic." Early Childhood Education. Eds. Berry Persky & Leonard H. Golubchick, Lanham: University Press of America, New York: Doctorate Association of New York Educators, 1991. 157-62.
- WILSON, RUSSELL E. Flexible Classrooms. Detroit, Michigan: Carter Company, 1953.
- WOLFE, MAXINE. "Childhood and Privacy." Human Behavior and Environment: Advances in Theory and Research. Eds. Irwin Altman & Joachim F. Wohlwill. Vol. 3. New York: Plenum Press, 1978. 175-222.
- ZIEGLER S. & ADREWS H. F. Methods in Environmental and Behavioral Research. Eds. R. B. Bechtel, R. W. Marans & W. Michelson, New York: Van Nostrand Reinhold Company, 1987. 301-36.

SELECTED BIBLIOGRAPHY

- AHRENTZEN, S. "The Environmental and Social Context of Distraction in the Classroom." Design Research Interactions. Eds. A. E. Osterberg, C. P. Tiernan & R. A. Findlay. Ames, Iowa: Environmental Design Research Association, 1981.
- AIELLO, J. R. & JONES, S. E. "Field study of the proxemic behavior of young school children in three subcultural groups." Journal of Personality and Social Psychology. 19 (1971): 351-6.
- ALTMAN, I. Environment and Social Behavior: Privacy, Territoriality, Personal Space and Crowding. Monterey, Calif.: Brooks Cole, 1975.
- ALTMAN, I. & CHEMERS M. M. Culture And Environment. Monterey, CA: Brooks/Cole, 1980.
- CASTELL, R. "Effects of familiar and unfamiliar environments on proximity behavior of young children." Journal of Experimental Child Psychology. 9 (1970): 342-7.
- CORSARO, W. Friendship and The Peer Culture in The Early Years. Norwood, NJ: Ablex, 1985.
- DEASY C. M. & LASSWELL THOMAS E. Designing Places for People: A Handbook on Human Behaviors for Architects, Designers, and Facility Managers. New York: Watson-Guptill Publications, 1985.
- EPSTEIN, J. L. & MCPARTLAND J. M. "Authority Structures." Educational Environments and Effects. Ed. H. J. Walberg. Berkeley, CA: McCutchan, 1979.
- ERIKSON, E. Childhood and Society. 2nd ed. New York: Norton, 1963.
- FELD, T. M. "Preschool Play: Effects of Teacher/Child Ratios and Organization of Classroom Space." Child Study Journal. 10.3 (1980): 191-205.
- FRANKLIN, M. B. & BIBER, B. "Psychological Perspectives and Early Childhood Education: Some Relations Between Theory and Practice." Current Topics in Early Childhood Education. Ed. L. G. Katz, Vol. 1. Norwood, N. J.: Ablex Publishing Co., 1977.
- GAGNE, ROBERT M. Essentials of Learning for Instruction. New York: Holt, Reinhart and Winston, 1974.
- GLATTHORN, A. A. Curriculum Renewal. Alexandria, VA: ASCD, 1987.

- GOLAN, M. B. "Privacy, Interaction and Self-Esteem." Unpublished Ph. D. Thesis, City University of New York, Environmental Psychology Program, 1978.
- HOHMANN, M., BANET, B. & WEIKART, D. P. Young Children in Action. Ypsilanti, Michigan: High/Scope Press, 1979.
- HUTT, C. & VAIZEY, M. "Differential Effects of Group Density on Social Behavior." Nature. 209 (1966): 1371-2.
- ITTELSON, W. H., et al. An Introduction to Environmental Psychology. New York: Rinehart and Winston Inc., 1974.
- JOHNSON, J. E. & ERSHLER, J. "Developmental Trends in Preschool Play as a Function of Classroom Programs and Child Gender." Child Development. 52 (1981): 994-1004.
- . "Curricular Effects on the Play of Preschoolers." The Play of Children: Current Theory and Research. Eds. D. J. Peppler & K. H. Rubin, Basel, Switzerland: S. Karger, 1982.
- JONES, E. Dimensions of Teaching- Learning Environments: Handbook for Teachers. Pasadena, CA: Pacific Oaks College Bookstore, 1973.
- JONES, S. E. & AIELLO, J. R. "Proxemic behavior of Black and White first, third, and fifth grade children." Journal of Personality and Social Psychology. 25 (1973): 21-7.
- KAMII, C. & DEVRIES, R. "Piaget for Early Education." The Preschool in Action. Ed. R. K. Parker, 2nd ed. Boston: Allyn & Bacon, 1974.
- LOO, C. M. "The effects of spatial density on the social behavior of children." Journal of Applied Social Psychology. 4 (1972): 372-81.
- LOO, C. M. & KENNELLY, D. "Social density: its effects on behaviors and perception of preschoolers." Environmental Psychology and Nonverbal Behavior. 3 (1979): 131-46.
- LUKASEVITCH, A. & GRAY R. F. "Open Space, Open Education and Pupil Performance." Elementary School Journal. 79(1978): 108-14.
- MACCOBY, E. E. & JACKLIN C. N. The Psychology of Sex Differences. Stanford, Calif.: Stanford University Press, 1974.
- MAHER, L. The Needs of Children in The Play Environment. Paper to National Seminar, Australia, 1982.
- MAXIM, GEORGE. Learning Centers for Children. New York: Hart Publishing Company, Inc., 1977.
- MOORE, RAYMOND S. & MOORE, DOROTHY N. School Can Wait. Provo, Utah: Brigham Young University Press, 1979.
- NEWSON, J. & NEWSON, E. Four Years Old in an Urban Community. England: Pelican Books, 1968.

- NICHOLSON, S. "The Theory of Loose Parts." Landscape Architecture, 10 (1971): 44-53.
- PAPERT, S. Mindstorms: Children, Computers and Powerful Ideas. New York: Basic Books, 1980.
- PARTEN, M. "Social Participation among Preschool Children." Journal of Abnormal Psychology. 27 (1932): 243-69.
- PHYFE-PERKINS, E. Children's Behavior in Preschool Settings: A Review of Research Concerning the Influence of the Physical Environment. (ERIC Document Reproduction Service No. ED 168 722), 1979.
- PIAGET, J. The Moral Judgement of the Child. New York: Basic Books, 1966.
- . Six Psychological Studies. NY: Random House, 1967.
- . To Understand is to Invent. New York: Grossman Publishers, 1973.
- RAMSEY, P. & REID, R. "Designing Play Environments for Preschool and Kindergarten Children." Play As A Medium for Learning and Development: A Handbook of Theory and Practice. Ed. D. Bergen, Portsmouth, NH: Heinemann, 1988. 213-40.
- RIVLIN, L. & ROTHENBERG, M. "The Use of Space in Open Classrooms." Environmental Psychology: People and Their Physical Settings. Eds. H. Proshansky, W. Ittelson, & L. Revlin. 2nd ed. New York: Holt, Rinehart & Winston, 1976.
- ROBERTS, J. M. & GREGOR, T. "Privacy: A Cultural View." Privacy. Eds. J. R. Pennoch & J. W. Chapman, New York: Atherton Press, 1971.
- ROHE, W. M. & NUFFER, E. L. The Effects of Density and Partitioning in Children's Behavior. Presented at the 85th meeting of A.P.A. San Francisco, Calif., 1977. Mimeo.
- ROSENTHAL, B. A. "An Ecological Study of Free Play in the Nursery School." (Doctoral Dissertation, Wayne State University, 1973). Dissertation Abstracts International, 1974, 34: 4004A-4005A.
- RUBIN, K. H. & MAIONI T. L. "Play Preference and Its Relation to Egocentrism, Popularity, and Classification Skills in Preschoolers." Merill-Palmer Quarterly. 21 (1975): 171- 8
- RUBIN, K. H. & PEPPLER, D. J. "The Relations of Children's Play to Social Cognitive Growth and Development." Friendship and Childhood Relations. Eds. H. Foot, J. Smith & T. Chapman, New York: Wiley, 1980.
- SAEGERT, S. & HART, R. "The Development of Sex Differences in Environmental Competence of Children." Women in Society. Ed. P. Barnet, Chicago, Ill: Maroufa Press, 1975.

- SAEGERT, S. & MACKINTOSH, E. & WEST, S. "Two Studies of Crowding in Urban Public Spaces." Environment and Behavior. 7 (1975): 159-84.
- SCHERER, S. E. "Proxemic Behavior of Primary School Children as A Function of Their Socioeconomic Class and Subculture." Journal of Personality and Social Psychology. 29 (1974): 800-5.
- SHEARER, D. E. "The Portage Project: A Home Approach to the Early Education of Young Children with Special Needs." Approaches to Early Childhood Education. Eds. J. L. Roopnarine & J. E. Johnson, Columbus, Ohio: Merrill Publishing Co., 1987.
- SIMMEL, A. "Privacy is not An Isolated Freedom." Privacy. Eds. J. Pennock & J. Chapman, New York: Atherton Press, 1971.
- SMITH, P. "Aspects of the Playgroup Environment." Proceedings of the Conference: Psychology and the Built Environment. Eds. D. Canter & T. Lee, London: Architectural Press, 1974.
- SMITH, P. & CONNOLLY, K. Patterns of Play an Social Interaction in Preschool Children. Ethological Studies of Child Behaviour. Ed. N. B. Jones, Cambridge: Cambridge University Press, 1972.
- SWIFT, J. W. "Effects of Early Group Experience: The Nursery School and Day Nursery." Child Development Research. Eds. M. Hoffman & I. Hoffman. Vol. 1. New York: Russell Sage Foundation, 1964.
- TENNIS, G. H. & DABBS, J. M. "Sex, Setting and Personal Space: First Grade Through College." Sociometry. 38 (1975): 385-94.
- TIZARD, B., PHILPS. J. & LEWIS, I. "Play in Preschool Centers I.-Play Measures and Their Relationship to Age, Sex, and I.Q." Journal of Child Psychology and Psychiatry. 17 (1976a): 251-64.
- . "Play in Preschool Centers II.-Effects on Play of The Child's Social Class and The Educational Orientation of the Center." Journal of Child Psychology and Psychiatry. 17 (1976b): 265-74.
- WEBER, E. Ideas Influencing Early Childhood Education: A Theoretical Analysis. New York: Teacher College Press, 1984.
- WEINSTEIN, C. S. "Modifying Student Behavior in an Open Classroom Through Changes in Physical Design." American Educational Research Journal. 14 (1977): 259-60.
- WILSON, B. K. "Effect of Task and Authority Structures on Student Task Engagement." Paper presented at the meeting of the American Educational Research Association, Montreal, Quebec, Canada, April, 1983. (ERIC Document Reproduction Service No. ED 230 416).

WOLFE, M., SCHEARER, M. & LAUFER, R.S. "Private Places: The Concept of Privacy in Childhood and Adolescence." Paper presented at the meeting of the Environmental Design Research Association, Vancouver, British Columbia. City University of New York Graduate School: Center for Human Environments, No. 76-8, May 1976.

ZIMILES, H. "The Bank Street Approach." Approaches to Early Childhood Education. Eds. J. L. Roopnarine & J. E. Johnson, Columbus, Ohio: Merrill Publishing Co., 1987.



APPENDIX

Checklist of General Criteria for the Design of A Multipurpose Space

A. Basic Requirements

1. Try to provide flexibility in activity places through the expansion, contraction, and mobility of furniture so that new arrangements could be set.
2. Use double-duty products and items of furniture in order to conserve space and money.
3. Try to create an appealing environment with the appropriate usage of color and texture combinations consistent with the nature of activity places.

B. Health and Safety Requirements

1. Avoid built environment having any feature capable of being climbed, squeezed through, slid down, or swung from.
2. Provide the maximum spacing of bars, openings to be less than 60 mm.
3. Avoid friction window pivots, and horizontally pivoted windows extending down to sill level. Use a safety device obeying the rules of current standards.
4. Use laminated safety glass in low-level sub-lights.
5. Provide the space between stair treads and balustrades to be less than 100 mm.
6. Provide enough space in stairways for circulation, and cover the stairs with carpet.

7. Use a well-rounded hand rail.
8. Avoid glazed doors, and use laminated or toughened safety glass in doors.
9. Use nonslip rugs and carpets, and avoid hairy upholsteries.
10. Round the corners and edges of furniture, and avoid swinging doors.
11. Do not use dyes including toxic chemicals for surface finishing.
12. Consider total space of a multipurpose space to provide enough space per child which is in between 9.1 and 15.2 square meter of indoor free floor space.

C. Maintenance

1. Prefer varnished or lacquered shelves and cabinets rather than painted ones.
2. Use easy-cleaning, inflammable, and nonsweating upholsteries in sitting units.
3. Use scratch resistant furniture.
4. Use appropriate floor coverings in activity places which are not in conflict with the nature of activity in maintenance point of view.

D. Environmental Requirements

1. In order to control the excessive noise in a multipurpose space, consider the acoustical treatment through partitions, and suspended ceiling. Avoid large and hard surfaces made of glass or plastics in noisy activity places.
2. Locate the luminaires in appropriate places in order to avoid glare. Avoid lamps placing close to highly reflective surfaces.
3. Use an appropriate heating system which provides a constant and healthy temperature (20 °C or 68 °F).
4. Provide the requirements of a healthy ventilation in a multipurpose

space through natural and mechanical ventilation.

5. In dry climates, use a moisturizing system or apparatus in order to balance humidity level in interior spaces.

6. Preferably, use an air cleaning filtration machine which can be combined with mechanical ventilation system.

E. Ergonomic Considerations

1. Consider the child data as an entity in the design of a multipurpose space.

2. Use items of furniture which serve to the needs of a comfortable body posture of preschool children.

3. Consider clearance dimensions for comfortable circulation in activity places.

4. Avoid obstructions which may prevent visual accessibility, or become potential danger depending on the body measurements of preschool children.

T.C. YÜKSEKÖĞRETİM
DOKÜMANTASYON MERKEZİ